



STÖBER

DriveControlSuite



DriveControlSuite Version history

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STÖBER

System requirements

The following minimum requirements for the PC system apply to the installation and operation of the DriveControlSuite commissioning software, including the integrated PASMotion Safety Configurator component, for configuring the extended safety technology:

- Operating system: Windows 10 (32-bit, 64-bit *) or Windows 11 (32-bit, 64-bit *)
- Processor: Intel Pentium 4 (2 GHz, Dual Core) or equivalent
- Memory: 2 GB
- Free disk space on the hard disk: 1 GB
- Graphics: 1024 × 768 pixel resolution, 65536 colors
- Font size: 100% (default)
- Interfaces: 100 Mbps Ethernet (Fast Ethernet, copper)
- Display of documentation: Adobe Acrobat Reader version 7.1.0 or later**

*) Only DriveControlSuite

***) Only PASMotion Safety Configurator

Before installing PASMotion Safety Configurator, a regional setting must be selected for the operating system that matches the language or character set used (Windows: country or region).

DriveControlSuite V 6.7-C

With this release, the **SX6** safety module is now also available for drive controllers from the SB6 series and enables the Safe Brake Test (SBT) for all compatible series. The new **profile generator** also enables even more precise axis movements now and the new **Script mode V2** offers increased user convenience when automating your drive projects. In addition, the **Drive Based Center Winder** application has been enhanced with a number of minor updates. Firmware-related updates and optimizations are only available for the EtherCAT fieldbus variant.

- **SX6 safety module**

SB6, SC6, SI6: The SX6 safety module now enables you to use extended safety technology via Safety over EtherCAT (FSoE) for drive controllers from the SB6 series. The SX6 safety module now also supports the Safe Brake Test (SBT) for all compatible series.

- **Profile generator**

SB6, SC6, SI6: The new profile generator with clever calculation of motion profiles now enables you to achieve even higher precision for axis movements.

- **Motion profile calculation**

The new profile generator ensures smoother axis target entry and a more seamless transition to the subsequent motion command, thanks to clever calculation for reaching the set position. The optimized calculation of motion profiles reduces axis lag, is noticeable through smoother motion during velocity override, and ensures softer catching when released onto a moving axis.

- **Motion plausibility check**

For quality assurance, the profile generator has been expanded to include new plausibility checks: for example, if actual values must be used to calculate the motion profile. For example, the axis now triggers a fault if it is no longer possible to stop in the current direction of motion by reducing jerk or acceleration and the target is in the opposite direction (event: 90: Motion block; cause: 3: Plausibility).

- **Acceleration, deceleration, jerk**

If the set jerk is too low, the new profile generator now uses an internally calculated minimum jerk to achieve the specified set acceleration within 2 s. In addition, the settings for acceleration, deceleration and jerk can now be changed while the axis is in motion.

- **Script mode V2**

The Script mode offers the following new features for you. For detailed information, refer to the online help at DriveControlSuite (Menu: Help for DS6 > Help for DS6; Key: [F1]).

- **Commands**

In Script mode, the basic functionality of the commands remains the same, but there were numerous optimizations to the attributes and return codes, as well as the associated documentation. The command for adding a direct connection has been omitted (command: `connect`). Instead, 2 new commands have been added. You can use them to initialize the DriveControlSuite and transfer additional IP addresses or establish an online connection in accordance with the last assignment (commands: `init`, `setOnlineAssigned`).

- **Command script (*.ds6s)**

In Script mode V1, the actual command script (*.json) had to be transferred to DriveControlSuite with an additional batch file (*.bat) and executed. The command script (*.ds6s) can now be executed directly via double-click using the new file extension of the script file; the additional batch file (*.bat) is no longer required. From DS6 V 6.7-C, it is also necessary to specify the version of the Script mode and a directory for creating a log file in the `settings` script section of the command script (*.ds6s) (attributes: `version`, `logFilePath`).

- **Convert command script (V1 → V2)**

To make the transition to the new version of the Script mode easier for you, you can convert existing script files using DriveControlSuite (V1 → V2). You can access the `Convert command script` window either via the menu bar (menu: File > Script mode > Convert command script) or automatically by executing an outdated command script with DriveControlSuite V 6.7-C or higher.

- **Drive Based Center Winder**

The Drive Based Center Winder application offers the following new features for you. For detailed information, refer to the corresponding Drive Based Center Winder manual in version 04 or higher.

- **Calculate frictional torque**

Based on the operating points you determined, DriveControlSuite now calculates frictional torques M_{Rstat} and M_{Rdyn} to compensate the static and dynamic friction of the axis (parameters: L110, L120; Wizard: Compensation).

- **Mute material tear monitoring**

Material tear monitoring can now be muted either manually or automatically by activating the center winder for the duration of a start delay (source: L383; Start delay: L384).

- **Scale winding diameter**

SB6, SD6: If an analog input is used as the source, you can define a value range for the analog input for scaling the winding diameter according to your application via L22[0] – L22[1] from which the winding diameter is linearly interpolated in accordance with L23[0] – L23[1] (unit: % → mm).

- **Display of actual material tensile force, actual dancer position**

The actual material velocity is now calculated for all winding methods in the same way as the calculated actual material tensile force (display: L471). The filtered actual dancer position is now displayed in L99.

More new features

- **Synchronous servomotors: One Cable Solution**

SB6, SC6, SI6: When configuring a synchronous servomotor with One Cable Solution (EnDat 3, HIPERFACE DSL), the function of the X4 encoder connection is now taken from the motor library. Manual parameterization is no longer required (encoder connection: H00).

- **Reconfigure motor: X4 function**

In the configuration dialog, you can now select whether you want to adopt the value from the motor library for the function of the encoder connection X4 or retain the current setting if the motor has been reconfigured after the fact (selection: H00 X4 function).

- **Projecting third-party motors**

The configuration dialog now has a new motor library, *Template for third-party motors*, to make it easier for you to project third-party motors. For detailed information on configuring third-party motors and motor libraries, see the online help at DriveControlSuite (Menu: Help for DS6 > Help for DS6; Key: [F1]).

- **Retrofit ES synchronous servomotors**

The new STÖBER Archive motor library allows you to conveniently configure synchronous servo motors from the ES series, eliminating the need for time-consuming manual parameterization. STÖBER System Support will be happy to provide you with the STÖBER Archive motor library on request.

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

In addition to the observer and the speed estimate, the *Calibrate sensorless vector controller* action now measures the saturation coefficients of the magnetization at the nominal point of the asynchronous motor (saturation coefficient: B55; Action: B45).

- **Process data mapping: Event cause**

The cause of the active event E82 can now be included in the process data mapping (cause: E43, E44).

- **Synchronous operation: Master position measurement**

SB6, SC6, SI6: In applications of type Drive Based Synchronous, the additional master position measurement function is now available for all STÖBER drive controllers of the 6th generation.

- **Graphical programming: Change log**

In addition to the *Structure check* tab, there is a new *Change log* tab that logs the last changes made in edit mode and allows you to repeat or undo specific changes.

- **Parameter switching**

SB6: Parameter switching is now also available for drive controllers from the SB6 series.

Optimizations

- **Operating unit: Acknowledge fault**

SB6: When using the CiA 402 device control, a fault can now be acknowledged via the operating unit without having to activate local operation first (operating unit: [ESC] button).

- **Multi-axis scope**

SC6, SI6: With dual-axis controllers, the scope image for axis B can now be updated, i.e. overwritten with a new scope image, if axis A is not participating in the scope image.

- **MC_MoveSpeed command**

The 8: MC_MoveSpeed motion command is now denied if it is parameterized with an acceleration or deceleration of 0 m/s².

- **EtherCAT: DC-Sync, PDO configuration**

PLL latching during node synchronization in the EtherCAT network via distributed clocks has been optimized for special combinations of cycle times of the controller and the drive controller. In addition, the total length of the process data is now also recalculated in the A255 = 2: Pre operational state state if the process data mapping is changed via the controller during device start-up.

- **CiA 402: Status word, device state machine**

In applications of type CiA 402 with control-based operating mode csp, csv or cst, for active limitation (A516, bit 11) the status word now also indicates that the axis is following the set value (A516, bit 12). In addition, when changing from a drive-based operating mode (pp, vl, pv, pt) to a control-based operating mode (ip, csp, csv or cst), the stop signal no longer needs to be reset manually.

- **Drive Based Center Winder: MC_Stop**

In applications of type Drive Based Center Winder, the 5: MC_Stop motion command is only triggered with the Execute signal now, instead of being triggered immediately when the command is selected.

- **Drive Based: Buffered subsequent motion block**

SB6, SC6, SI6: In applications of type Drive Based, in motion block operating mode the revolution length can now be exceeded for axes with an endless travel range by buffered subsequent motion blocks with relative positioning commands without triggering a fault (event: 90: Motion block, cause 2: Target Position in reverse direction; travel range: I00 = 1: Endless; command: I401 = 2: MC_MoveRelative, 3: MC_MoveAdditive).

- **Graphical programming: Structure check**

In the structure check, there is a new entry for subsequently changing the connection type from input to output for connections that have already been connected.

Discontinuation

- **Electronic cam disk**

The electronic cam disk has been completely removed from applications of type Drive Based Synchronous; the electronic gearbox is still available for synchronous operation.

DriveControlSuite V 6.7-B

This release certifies the extended safety technology with SX6 for drive controllers from the SB6 series.

DriveControlSuite V 6.7-B SP1

This release is a product update and includes general optimizations.

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 ≠ 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).

DriveControlSuite V 6.6-B

In addition to new options for configuring **Predictive Maintenance**, this release also includes many major and minor optimizations relating to DriveControlSuite.

▪ Predictive Maintenance

Predictive Maintenance opens up new possibilities for the more specific configuration of your individual use case.

• Gearbox selection: Motors, pinions, gear racks

In addition to simple gearboxes, combinations of gearboxes with motors and pinions are now also available in the local PRM database for the manual configuration of Predictive Maintenance.

• Gearbox selection: Special gearboxes

Predictive Maintenance is now also available for gearboxes in special designs. STÖBER System Support (systemsupport@stoerber.de) will be happy to provide you with a PRM database (*.pmd) on request which contains your special-design gearboxes. You can use the new button in the wizard to access the PRM database and configure Predictive Maintenance for your special gearbox (wizard: Predictive Maintenance; button: ).

• Load matrix

The buttons for sending and exporting the load matrix have been revised to make them easier to understand. In addition, the successful sending and exporting of the load matrix is now confirmed in the form of a message and an entry in the Messages window, which displays the target directory when exporting the load matrix. When calculating the load matrix, a positive reference torque is now also used if the polarity of the axis model is negative (polarity: I03).

More new features

▪ Update DriveControlSuite

Even without administrator rights, you can now search for updates for DriveControlSuite via the menu bar (Help for DS6 menu > Search for updates). The new Search for updates window shows you the latest version available for download along with the associated release notes and allows you to download the setup file. If you wish, you can now also check for updates automatically when you start DS6.

▪ Save configuration

SC6, SI6: If the supply voltage of the control unit is interrupted when saving the configuration, the drive controller will no longer start without an executable configuration the next time it is switched on. Instead, when it is switched on again it will have a fault until the saving process has been completed (fault: 40: Invalid data; cause: 9: A00 interrupted - data loss).

▪ Fault memory

For the events in the fault memory, the UTC time at the time of the event is now recorded in addition to the operating time of the drive controller. For easier readability, the UTC time is converted to the local time at the location of DriveControlSuite (which may differ from the time zone of the drive controller in which the event was logged).

▪ SD card

SC6, SI6: Starting from access level 3, it is now possible to check whether an SD card is present in the drive controller via remote access – such as for Predictive Maintenance or in case of service (parameter: E68, bit 4).

▪ Additional comparator function

In Drive Based applications, the wizards of the additional INT8, INT16, IN32, and REAL32 comparator functions now check the inputs and provide visual feedback in case of unsuitable data types.

▪ Additional phasing function

In Drive Based Synchronous applications, the additional phasing function has been added to the wizard (wizard: Additional functions). The Phasing wizard has been supplemented with the parameters for parameterizing an additional cause for the quick stop of the phasing (parameters: G76, G216).

- **DBCW: Frictional torque in %**

In Drive Based Center Winder applications, the frictional torques for compensating for the static and dynamic friction of the axis are no longer specified in Nm, but in % (frictional torques: L110, L120; reference value: C09) for greater convenience during parameterization. If you update the project configuration, the friction torques must be updated accordingly.

Optimizations

- **Control unit: Current measurement**

SD6: There have been optimizations for newer control units to counteract the erroneous triggering of a fault that occurred under specific conditions when the power unit was switched off (fault: 34: Hardware fault; cause: 7: Current measurement).

- **Import parameter values**

Parameter values can now also be imported for very large external project files. In addition, the loading times for importing multiple parameter values from the same external project file have been optimized.

- **PROFINET: Device name, process data transmission**

The checking rules for the device name of the drive controller have been extended in accordance with the PROFINET naming conventions (parameter: A273). For drive controllers from the SD6 series, the check of the maximum permitted data length for process data transmission has also been corrected from 48 bytes to 72 bytes (wizards:

Received process data RxPZD, Transmitted process data TxPZD).

- **PROFIdrive: Overcurrent**

SC6, SI6: The control unit of the drive controller has been optimized to counteract event 33: Overcurrent as a result of a missing new set value from the controller.

- **EtherCAT**

In the EtherCAT area, there have been numerous minor optimizations to the functions and wizards.

- **EoE: Additional IP addresses**

It is now also possible to establish a connection within EoE networks by adding additional IP addresses using the Address range option (Direct connection window > Additional IP addresses context menu).

- **ESI file**

The processes for creating and editing the ESI file have been accelerated. When creating the ESI file, there is now an entry in the Messages window with the target directory of the ESI file. There have also been adjustments to the calculation of the CRC by the EtherCAT wizard: First, when an ESI file is created for the first time, no superfluous custom module is created for drive controllers with standard mapping. Second, when new drive controllers are created in TwinCAT, the automatic assignment of the modules now also works with user-defined process data mapping.

- **Process data: Address range**

The Received process data RxPDO and Transmitted process data TxPDO wizards now check whether parameters correspond to the permitted address range for manufacturer-specific communication objects, i.e. whether the line of the parameter is less than 512 (e.g. B511, C511, etc.) when making changes to the standard mapping.

- **DBCW: Standard mapping**

Due to the restriction of the parameters to the permitted address range for manufacturer-specific communication objects for EtherCAT, the standard mapping of the Drive Based Center Winder application has changed, as the parameters for the actual material velocity have been set to lower coordinates (parameters: L650 - L656 → L450 - L456).

- **Script mode: saveValues**

In Script mode, the saveValues attribute is now evaluated for the setOffline command.

- **Reverse documentation**

The selections for parameters have been grayed out for reverse documentation and can no longer be changed using the mouse scroll wheel.

- **Wizards**

The wizards have been optimized for you in general in some areas.

- **Status display**

SE6: The Status display wizard now shows when a safety function is active and links to the Monitoring: Safety function wizard. The STO safety function, which is still displayed directly in the Status display wizard (parameter: E49, bit 4), is an exception to this new feature.

- **Inputs and outputs used**

Corrections have been made to the display of the inputs and outputs used (wizard: Inputs/outputs used).

- **Nameplate data**

The Nameplate data wizard now only displays existing data from the electronic nameplate and highlights discrepancies between nameplate data and actual data more clearly using the mismatch symbol (≠).

- **One Cable Solution**

Depending on the One Cable Solution used, the EnDat: Information or HIPERFACE DSL: Information wizard is now displayed.

- **Calibrate motor, calibrate brake**

The Calibrage du moteur wizard has been expanded to include the leakage coefficient and saturation coefficient of magnetization and the Calibrate brake wizard has been expanded to include the permitted direction and the standstill window for the brake test (parameters: B54, B55; B306, B307).

- **Restore reference, MC_MoveVelocity**

The sources for the MC_MoveVelocity mode and for restoring the reference can now be parameterized in the Application digital signals: Data source and Application: Control/status word wizards (parameters: I113, I130).

DriveControlSuite V 6.6-A

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-L

This release contains many new features for **Predictive Maintenance** relating to the load matrix, life performance indicator and available gearbox types. **Additional functions** open up new possibilities in type Drive Based applications, while a new wizard increases commissioning convenience for **PROFIdrive** applications.

▪ Predictive Maintenance

You can expect the following new features for Predictive Maintenance. Information on Predictive Maintenance can be found in the manual for the respective drive controller as usual, and now in the DS6 online help as well.

• Life performance indicator

The gear ratio and instances where the maximum emergency stop torque M_{2NOT} was exceeded by 90% are now taken into account for calculating the life performance indicator. Another new feature: the weakest bearing at the time of calculation is used as a reference (parameter: R120 – R122).

• Maximum service life

Predictive Maintenance now recommends replacing the geared motor once it has been in operation for 100000 h or more (operating time: R123). Maximum service life is a separate indicator and is not taken into account when calculating the life performance indicator.

• Load matrix

The load matrix functions now have their own wizard (wizard: Load matrix). When sending the load matrix, you can now view a preview of the data, store contact information (name, company, email) and include additional information or questions via a free text field. If there is no online connection between DriveControlSuite and the drive controller or if the project contains reverse documentation for the drive controller in question, the buttons for sending or exporting the load matrix are now inactive. The CSV export of the load matrix has been optimized for further processing with spreadsheet programs and now includes a language-dependent separator.

• 3D load matrix

A new wizard now visualizes the load matrix data for you in the form of a 3D model that you can freely rotate and scale (wizard: Load matrix 3D).

• Gearbox selection

Predictive Maintenance now also supports single-type multi-stage gearboxes and is therefore available for a wide range of gearbox types, such as C, F, K, KL, S, P, PH, PHQ and PE. Two-speed gearboxes, combined gearboxes and KS and KX gearboxes are currently not supported. In addition, the table for gearbox selection now also contains the description for the code from the type designation in the bearing design, shaft design and gearbox option columns.

• Database ID

You can also parameterize the database ID for unique identification of the geared motor during the manual configuration of Predictive Maintenance now (parameter: R119).

▪ Additional functions

The Additional functions wizard has been reworked in all applications and has the following new features.

• Additional counter function

Drive Based applications: The new additional counter function provides you with up to 4 independent counters with which you can implement smaller automation tasks directly in the drive controller, such as direct or indirect control of the digital outputs (parameters: N40 – N47; wizard: Counters).

• Additional motor potentiometer function

Drive Based applications: The additional motor potentiometer function has been expanded to include 2 new setting options in which initialization is triggered with Enable-off (parameter: G368; selection: 4, 5). In addition, the associated wizard has been arranged more clearly (wizard: Motor potentiometer).

• Additional comparator function

Drive Based applications: In addition to the INT32 and REAL32 comparators, there are now comparators for the INT8 and INT16 data types, including associated wizards (parameters: C134 – C149; wizards: INT8 comparators, INT16 comparators).

- **Additional fieldbus-controlled analog output function**
 CiA 402, Drive Based applications: The additional function for controlling analog outputs via fieldbus can now be conveniently parameterized with its own wizards, e.g. for the indirect control of an actuator at the analog output (wizards: Fieldbus-controlled analog output 1, Fieldbus-controlled analog output 2). The additional function is available for fieldbus communication via EtherCAT, PROFINET and now also for CANopen.
- **Additional extended cam control unit function**
 Drive Based applications: The extended cam control unit is now also available for drive controllers of the SC6 and SI6 series, as brake connections X2A and X2B have been able to be used as digital outputs if no brake is connected since DS6 V 6.5-K and associated firmware (prerequisite: F00 = 0: Inactive).
- **PROFIdrive: Drive data**
 PROFIdrive applications: A new wizard makes commissioning easier thanks to an overview of the drive data (reference torque, reference speed, maximum speed) that must be transferred unchanged to the TIA Portal (wizard: Drive data).

More new features

- **Graphical programming**
 You can expect the following new features in the graphical programming.
 - **Program overview**
 You can now use the toolbar to display an overview window that shows all blocks on the current level and highlights the currently visible section of the drawing area with a rectangle. You can use the program overview to navigate across the drawing area by moving the rectangle for the visible section with the cursor. You can scale the program overview by dragging the edge of the window larger or smaller with the cursor.
 - **Parameter description**
 If you create your own parameters with parameter blocks, you can now create parameter descriptions for them (Properties window, Description tab). The parameter description is displayed in the both parameter list in the lower margin area and the graphic editor as a tooltip when you hover over the parameter block with the cursor.
 - **Signal properties**
 The properties of signals (signal name, initial value, remanence) are highlighted by symbols on the signal line and are now easier to distinguish using tooltips.
 - **Show block in graphic editor**
 On the Search tab, in the Result area > Structure view, you can now display a hit in the graphic editor by double-clicking.
- **S1 operating button**
 SC6, SI6: From hardware version ≥ 50 , there is the S1 operating button on the top of the device (nameplate: HW ≥ 50 ; parameter: E52[1] ≥ 50). From firmware version V 6.5-L, you can use the S1 operating button to perform actions such as saving the configuration in non-volatile memory, temporarily deactivating the fan or acknowledging faults. You can also use the S1 operating button to reset the IP address of the drive controller by holding it down when switching on until both LEDs are off for the first time (approx. 3 seconds).
- **Scope: Free channel scaling**
 You can now freely scale both the channel (y-axis) and the time axis (x-axis) in the image editor by entering the desired scaling factor directly in the respective field and, if necessary, defining the desired unit for the time axis (ns, μ s/us, ms, s). Free channel scaling makes it easier to compare channels or parameters with different scaling, e.g. for comparing set and actual values.
- **Wake & Shake action**
 There is now a separate action (parameter: B50) for commutation finding via Wake & Shake when using incremental encoders in combination with a brake.

- **Reference retention during device replacement**

SC6, SI6: The axis reference is now retained when replacing the device if you proceed as follows: save the configuration of the drive controller on the SD card for the referenced axis. Replace the drive controller and start the new drive controller with the SD card inserted. Save the configuration on the new drive controller, remove the SD card and then restart the drive controller. The axis remains referenced after the device has been replaced and restarted.

- **Brake control, release override**

You can now select the source for the brake release override using the new parameter F06. External brake control by a controller is now carried out using the new parameter F101. For drive controllers of the SC6 and SI6 series, the F92 parameter has been replaced by F108 and F97 by F07, in keeping with the SD6 series. Parameter F07 now serves as an interface to the firmware for all series.

- **Brake chopper: On limit**

SC6, SI6: As with drive controllers of the SD6 series, our system support can now set the on limit of the brake chopper for the SC6 and SI6 series as well if required: for example, if you are using a linear motor with a 1-phase feed-in and weak insulation (parameter: A24).

- **Monitor synchronous operation**

SC6, SI6: In type Drive Based Synchronous applications, it is now also possible to monitor synchronous operation for double-axis controllers; information on parameterization can be found in the associated manual in version 03 or later.

- **EtherCAT: ESI file**

If you create a new ESI file from DriveControlSuite, it now contains a comment with the DriveControlSuite version with which the ESI file was originally created. In addition, the object directory has been expanded to include the Torque slope communication object in accordance with CiA 402 and the ESI file has been updated accordingly (parameter: A561).

- **Velocity feedforward control**

For special applications, the upper limit value for the velocity feedforward control of the position controller has been increased to 250% (parameter: I25).

Optimizations

- **Fault memory**

For greater accuracy and better traceability, the time interval between the triggering of a fault and the recording of the displayed values for the fault memory has been minimized and behavior when faults occur almost simultaneously has been optimized (e.g. for 33: Overcurrent and 31: Short/ground).

- **Maximum quick stop duration**

The maximum quick stop duration is now only taken into account for Enable-off and not for SS1 or SS2 (parameter: A39).

- **Motion control panel**

The default values of Control panel motion have been adjusted to the default values of Jog control panel (parameters: K404, K405, K406, K407).

- **Parameter check, messages**

The entries in the Parameter check window now have their own Level column, similar to the entries in the Messages window. Entries in the Messages window can now be filtered by level using new context menus, similar to the entries in the Parameter check window.

- **PROFIdrive: Torque/force limit**

In type PROFIdrive applications with Siemens telegram 105 and Siemens additional telegram 750, limiting the set torque/set force was optimized: first in the context of torque reduction (MOMRED) and second when using the TorqueRange block in the TIA Portal with limit values > 200%.

- **CiA 402: Velocity mode (vl)**

In CiA 402 applications, the polarity of the axis model is now taken into account in Velocity mode (vl) and you can now limit the set velocity by the maximum permissible velocity (parameters: I03, I10).

- **CiA 402: Referencing**
In CiA 402 applications, optimizations were made for changing from Homing mode back to Cyclic synchronous position mode (csp) (referencing method: A586 = 35, 37).
- **Overview of inputs and outputs used**
Minor optimizations have been made for the overview of the drive controller connections used (wizard: Terminals > Inputs/outputs used).
- **Safety configuration: CRC**
You can now also view the checksum of the security configuration in the wizard, for example for device replacement (parameter: S09[2]; wizard: Monitoring: Safety function).
- **Security logger**
SC6, SI6: As it is not possible to trace who actually carried out the firmware update when updating the firmware using an SD card, neither the name of the user nor the PC is logged in this case.
- **Direct connection**
SC6, SI6: With an active firewall and fixed IP address for the network adapter, drive controllers now remain visible in the Add connection dialog box after a direct connection has been established if the IP address is assigned automatically (address assignment: A166 = 2: DHCP + DS6).
- **Scope: Long-term recordings**
The measured value display has been optimized for long-term recordings.
- **Motion block operating mode**
In Drive Based applications, motion block operating mode for evaluating Execute signals in case of a direct motion block start or motion block end control unit was optimized.
- **Wizards: Actions**
Wizards for actions such as optimizing the current controller, testing phases, testing windings, etc. no longer time out after successful execution if a large number of parameters have to be written for the motor.
- **Wizards: Sensitive block diagrams**
If you move the cursor over interactive elements such as links in block diagrams, the cursor now changes visually.
- **Virtual master: Quick stop**
To make it easier for you to parameterize the quick stop for the virtual master, additional parameters have been added to the wizard in type Drive Based Synchronous applications (parameters: G56, G57; wizard: Virtual master).
- **Actual current limit**
For special applications, the actual current can now be limited to avoid event 33: Overcurrent (parameters: B712, B713). The new parameters are not functionally implemented in the standard system; corresponding write access to the graphical programming is required.
- **Control unit temperature**
The display for the control unit temperature has been corrected (parameter: E25[1]).
- **Process data mapping**
SD6: When you reconfigure the device control and application from Drive Based to CiA 402 or vice versa after the fact, changes to the process data mapping are now reset and the standard mapping of the respective application is restored.
- **Graphical programming**
You can expect the following optimizations in the graphical programming.
 - **Read parameters**
For the smart block for reading parameters, the runtime sequence for using the Element as input option has been optimized (block: 300005).
 - **Data type converter**
The Datentypkonverter smart block has been optimized by new system block versions for the elegant, low-runtime conversion of data types, especially with regard to the conversion from DWORD to REAL32 (block: 300004).

- **Parameter blocks**
Minor optimizations have been made for the creation of user-defined parameters; for example, the next free coordinate is now suggested by default instead of P00.
- **Constant value**
The latest version of the block is now inserted via the **Enter constant** context menu at the block input (block: 8000008).
- **Analog input AI3**
The scaled value of analog input AI3 is now calculated in real time (block: 100017).
- **Standard libraries**
Some blocks have been moved from the Parameters standard library to the thematically more appropriate Applications standard library.
- **DS6 block help**
The DS6 block help can now also be opened using [F1] for blocks starting from number 800000.

DriveControlSuite V 6.5-K

This release opens up new opportunities for your **PROFIdrive**-type applications: New telegrams and technology objects provide you with functions such as measuring gauges, cams, Dynamic Servo Control and torque reduction. In **CiA 402**-type applications, you can now use the Velocity mode.

▪ PROFIdrive: telegrams, technology objects

SC6, SI6: For PROFIdrive-type applications, the measuring gauge technology object and a total of 5 new telegrams are now available to you. They enable the use of functions such as Dynamic Servo Control (DSC) and torque reduction (MOMRED). In conjunction with the new functions, the wizards and parameters have also been expanded. You will find more information on the new features in the PROFIdrive operating manual.

• Technology object: measuring gauge

With the help of the measuring gauge function, when the signal of a measuring input is changed by a limit switch, for example, the drive controller can detect the current actual position of the axis, store it temporarily, and transfer it to the controller via PROFINET (wizard: Measuring input).

• Technology object: cam, cam track

The cam and cam track technology objects are now available for telegrams 3, 5, 102 and 105, and are configured via the controller. You will find more information on this in the relevant Siemens function manual.

• Standard telegram 5: Dynamic Servo Control

Standard telegram 5 (set velocity 32 bit with 1 position encoder and Dynamic Servo Control) is available for application class 4.

• Siemens telegram 102: torque reduction

Siemens telegram 102 (set velocity 32 bit with 1 position encoder and torque reduction) is available for application classes 1 and 4.

• Siemens telegram 105: MOMRED, DSC

Siemens telegram 105 (set velocity 32 bit with 1 position encoder, torque reduction and Dynamic Servo Control) is available for application class 4.

• Siemens additional telegram 750

Siemens additional telegram 750 is available for all application classes. It offers additional process data for torque feedforward control via additive torque and for different torque limits in the positive and negative directions.

• STÖBER additional telegram 900

STÖBER Additional telegram 900 is available for all application classes and offers additional process data for free assignment.

▪ CiA 402: Velocity mode

In CiA 402-type applications, the Velocity mode operating mode – including a new wizard and updated ESI files – is now available. You will find more information on the operating mode in the CiA 402 operating manual.

More new features

▪ Security logger

SC6, SI6: The newly implemented security logger logs events such as firmware updates and configuration changes for the drive controller. The events are written to a security log, which you can read in to DriveControlSuite from the drive controller. Security logs that have already been read out can be viewed both online and offline in DriveControlSuite, either in the **Online functions** window via the new  button or in the project tree via the new **Security log** context menu.

▪ Send configuration: Save values

If you send the configuration from DriveControlSuite to the drive controller, the **Save values** window now opens automatically. You can use the new **Show window automatically (send configuration)** option in the **Save values** window to activate/deactivate the behavior as desired.

- **Direct connection (manual): additional IP addresses**
 You can add additional IP addresses to the search in the local network if DriveControlSuite does not automatically find the drive controllers due to the network topology. The drive controllers found are displayed under the **Direct connection** tab and are available for establishing the connection. You can reach the **Additional IP addresses** window via the context menu of the same name in the **Add connection** dialog box under the **Direct connection** tab.
- **Scope: parameter description**
 If you record the value of a parameter or use a parameter as a trigger source, you can display the associated parameter description as a tooltip in both the scope image settings and the trigger settings (button: )
- **Scope: trigger mask**
 In the trigger settings you can switch the display of the **Mask** option between hexadecimal and binary display if required. The mask is displayed with leading zeros according to the data type or data width of the selected parameter.
- **Predictive Maintenance: PE planetary gearbox**
 2nd generation PE planetary gearboxes are now available for Predictive Maintenance configuration.
- **Predictive Maintenance: load matrix file name**
 You can now view the file name of the load matrix for Predictive Maintenance in the wizard (parameter: R106; wizard: Predictive Maintenance).
- **EtherCAT: Station alias**
 EtherCAT MainDevice (TwinCAT3): Using the controller, you can optionally assign a station alias to each drive controller in the EtherCAT network which is stored in the non-volatile memory of the drive controller. As a result, the drive controller can be connected to any free port within the network and identified (parameter: A254). You will find more information on this in the EtherCAT operating manual.
- **Motion block end control unit: endless motion commands**
 The motion block end control unit has been extended such that switching to the subsequent motion block is now possible even for infinite motion commands. For both finite and infinite motion commands, the motion block end is reached when the motion core has successfully ended the motion command to be carried out (prerequisite: I92 = 1: Active).
- **Encoder simulation: 4096 lines/rev**
 Simulation at encoder connection X120 is now possible in even higher resolution (parameter: H130 = 7: 4096 i/r).
- **Brake management**
 SC6, SI6: In preparation for the introduction of the extended safety functions, the **Brake management** wizard and the parameters of functional brake management are omitted (parameters: B310, B311, E29, E177, Z772).
- **Brake connection as digital output**
 SC6, SI6: The new wizard makes it easier to parameterize brake connections X2A or X2B as a digital output if a brake is not connected (wizard: **Terminals > Brake connection as digital output**).

Optimizations

- **Quick stop for Enable-off**
 For Enable-off, a quick stop can now be executed for CiA 402-type applications and PROFIdrive (parameter: A44) as well.
- **CiA 402: Profile torque mode**
 For CiA 402-type applications with Profile torque mode there were optimizations for the calculation of the build-up or reduction of torque/force. The change of torque/force is now maximum by default and the internal calculation is now done using the load-side reference value for torque/force (parameters: A561, C09).
- **PROFINET: cycle times > 1 ms**
 Cycle times greater than 1 ms are now supported correctly for fieldbus communication via PROFINET.

- **Delete safety configuration**
SD6: When the safety configuration in the SE6 safety module is deleted, the checksum is now immediately set to 0 after a successful action. The drive controller no longer needs to be restarted (action: S33; checksum: S09).
- **DBCW: material velocity fieldbus scaling**
If you transmit the process data in a scaled form, you can now define the number of decimal places for the material velocity uniformly in Drive Based Center Winder-type applications (parameter: G66).
- **DBS: Set reference**
In Drive Based Synchronous applications, the handshake between the drive controller and controller if the reference is set via the control word of the application (parameter: I210, bit 11) has been optimized.
- **TwinCAT 3 function blocks**
EtherCAT MainDevice (TwinCAT 3): After referencing, the STÖBER_MC_Home function block now automatically switches back to the operating mode before referencing (modes of operation: A541). The STÖBER_Backup_Restore function block was minimally optimized with regard to the interface to CiA 402 and reading out the production number of the drive controller. You will find more information on the function blocks for TwinCAT 3 in the new TwinCAT 3 manual – Function blocks for 6th generation drive controllers.
- **SSI encoder: error tolerance**
For the evaluation of SSI encoders on X120, the transmission time calculation has been revised to enable higher sampling rates and thus optimize the error tolerance.
- **EtherCAT time**
SD6: The EtherCAT network system time is now no longer displayed as a hexadecimal value but instead, in the date and time format (parameter: A285; format: YYYY-MM-DD / HH:MM:SS).
- **Autostart: motor control**
If the autostart option for the Drive Based device state machine is active, the drive controller now remains in the state E48 = 0: Self test until the motor control is initialized (Autostart: A34).

DriveControlSuite V 6.5-K SP1

This release is a product update and includes general optimizations.

- **Update project configuration**
If you update the project configuration for existing projects to firmware V 6.5-K, the parameter values are now adopted correctly.
- **Event 47: Tolerance time**
The lower limit value for the protective function of event 47: Torque/force-max. limit has been reduced from 1 s to 0 s, meaning that you can now define very short tolerance times for scope recordings, for example (parameter: U21; prerequisite: U20 = 2: Warning).

DriveControlSuite V 6.5-J

As of this release, the **control mode for linear motors** is now also available for SC6 and SI6 drive controllers. In addition, **Predictive Maintenance** has been expanded to include new functions and the DS6 online help has a wealth of new content for you on the subject of **graphical programming**.

- **Control mode for linear motors**

SC6, SI6: Using the *Motor* wizard, you can now select the control mode for linear motors (control mode: B20 = 70: SLM - vector control). For more detailed information on commutation finding, refer to the associated manual of the respective drive controller.

- **Predictive Maintenance**

The following functions are available as of DriveControlSuite V 6.5-J for Predictive Maintenance.

- **Geared motor replacement: Reset data**

You can now reset the life performance indicator and the load matrix using the respective new wizards (parameters: R104, R105). For example, if a geared motor was serviced at STÖBER or does not have an electronic nameplate and is replaced by an identical geared motor, the geared motor replacement cannot be recognized by the serial number, so the data cannot be reset automatically.

- **Geared motor replacement: Display**

The recommendation for geared motor replacement is now displayed in addition to parameter R100 in the status byte of the device control and triggers event 91: PM geared motor replacement (status byte: E200[1], bit 5).

- **Load matrix: File name**

The file name of the load matrix is now displayed in the new parameter R106 (wizard: Predictive Maintenance).

- **DS6 online help**

The DS6 online help has been supplemented by numerous new help topics, mainly on the subject of graphical programming.

- **Graphical programming**

In the DS6 online help, you now learn how to enable graphical programming in DriveControlSuite. In the help, you can find descriptions of the program interface of graphical programming, instructions for helpful functions as well as background knowledge on topics such as block libraries, block types, program structure and run time.

- **Script mode: Exit statuses**

Calling a command script returns exit statuses, which can be output on a Windows PC using the command prompt, for example. See the DS6 online help for an overview of the exit statuses and an example of how to extend the batch file to output the exit statuses.

More new features

- **DriveControlSuite: Release for Windows 11**

DriveControlSuite is now also released for the Windows 11 operating system (32 bit, 64 bit).

- **Graphical programming: Block favorites**

Favorite frequently used blocks using the new *Favorite* column, which is now available in the *Library* and *Search* tabs. In the new *Block favorites* tab, you can quickly access your favorite blocks, manage them in folders or export them.

- **Graphical programming: Replace block**

You can now also drag and drop smart blocks to replace them, e.g. with a more current block version or by replacing a logical *And* with a logical *Or*.

- **Electronic nameplate: Scope**

As of firmware version V 6.5-J, parameter B28 has been eliminated so that, in addition to the production data, motor and brake data, the data for the motor adapter, gearbox and geared motor can also be read out without additional parameterization (prerequisite: B04 = 64: Active). Data related to the axis model is still read out from the electronic nameplate exclusively via parameter B30.

- **Configuration dialog: Axes**
The configuration dialog now distinguishes between physical and logical axes. The buttons for physical axes are labeled axis A and axis B (SC6, SI6) and the buttons for logical axes are labeled axis 1 – axis 4 (SD6).
- **DS6 block help**
You can now also access the DS6 block help via the menu bar (Help > Help for blocks). In the event that a STÖBER standard block is not described in the selected block version, the block help opens with an orientation guide.
- **EtherCAT: Time stamp frame Rx**
Using the new parameter A908, you can now view the time at which an EtherCAT frame is received by the drive controller.

Optimizations

- **Predictive Maintenance: Transmit load matrix**
General optimizations have been made for a smoother transmission of the load matrix directly from DriveControlSuite (wizard: Predictive Maintenance).
- **Project configuration: Change from CiA 402 to Drive Based**
The subsequent change from the CiA 402 device control and application to Drive Based has been optimized with regard to the available parameters and default values.
- **Jog mode: Interrupt motion block linking**
In Drive Based applications in motion block operating mode, motion block linking can now be interrupted by jog mode.
- **Jog mode: Change direction of motion**
Changing the direction of motion in jog mode via Jog+ and Jog- has been optimized for limited travel ranges and software limit switches.
- **Software limit switches: Position window**
The position window of the axis now also applies to software limit switches. This means, for example, that the axis can remain on the software limit switch for any length of time in jog mode (parameter: I22).
- **Software limit switches: Device start-up**
During device start-up, undesired behavior used to occur on axes with user-specific scaling and software limit switches. We have corrected this for you.
- **Drive Based: Velocity specification in real time**
In Drive Based applications with velocity, torque/force operating mode, the primary and secondary velocity specifications are now written in real time (parameter: D40, D41).
- **PROFINET: Process data mapping**
SD6: The source parameters for the 3rd part of the transmission channel for TxPZD in the PROFINET network can be edited with access level 2 once again (parameter: A96).
- **Local operation: Quick stop**
SD6: For the control of the device control, the following priorities now also apply to the quick stop: Highest priority is given to local operation (SD6 operating unit), second highest priority is given to the control panel, lowest priority is given to control via terminals or fieldbus (controller).
- **Motor temperature sensor**
If a One Cable Solution was incorrectly configured as the source for the motor temperature sensor, the setting is automatically corrected to terminal X2 (parameter: B35).
- **Overheat protection**
SI6: Thanks to optimized i^2t models, the drive controller is now protected even more reliably against thermal overload.

DriveControlSuite V 6.5-J SP1

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-J SP2

This release is a product update and includes general optimizations.

- **Asynchronous motor: Magnetization**

In the control modes for asynchronous motors, the axis does not follow the set value or motion command in case of Enable-on until the magnetization of the motor has been fully built up.

- **EnDat 3 encoder: motor temperature sensor**

If a One Cable Solution with tunneled motor temperature sensor serves as a source for the motor temperature, this is now evaluated correctly (parameter: B35).

DriveControlSuite V 6.5-J SP3

This release is a product update and includes general optimizations.

- **Control unit, power unit: hardware versions**

SC6, SI6: Due to new hardware versions for the control unit and power unit of the drive controllers in preparation for the extended safety functions, the firmware for the SC6 and SI6 series has been optimized (event 49: Brake). As of hardware version 50 of the drive controller, you require firmware V 6.5-J SP3 or newer (nameplate: HW \geq 050; parameter: E52[1] \geq 50).

DriveControlSuite V 6.5-H

As of this release, you can use the new **Drive Based Center Winder** application to implement winding applications for the center winder. Numerous other innovations and optimizations in all areas of DriveControlSuite also ensure greater convenience when creating and maintaining your projects.

- **Drive Based Center Winder application**

The Drive Based Center Winder application enables you to realize various winding applications for the center winder via tensile force control, e.g. winding, unwinding or rewinding materials such as plastic, wire, textiles or paper. The new Drive Based Center Winder manual supports you in commissioning the application.

- **Operating modes: Command and center winder**

The command operating mode provides you with a standard set of motion commands based on PLCopen, which is supplemented by your own motion commands, while the central winder operating mode is reduced to the 30: MC_Winder motion command, which is essential for winding.

- **New wizards and parameters**

Numerous new parameters are available for parameterizing the center winder. They are grouped thematically for you in the new wizards for target-oriented commissioning of the application (parameters: L00 – L656; wizards: Drive Based Center Winder application).

- **Winding diameter: Calculator or sensor**

The winding diameter is required for the calculation of the main set values to enable a uniform winding result. Either use a sensor to measure the winding diameter or have the drive controller calculate the winding diameter.

More new features

- **Restore project file**

When you save your project, a backup copy of the project file is now saved on your PC. If the project file is saved incorrectly, the backup copy can be used to restore the project to the time of the last successful save.

- **Project tree: Description as tooltip**

In the configuration dialog, you can store helpful information for the project, a module, a drive controller or a single axis in the *Description* field. A new icon in the project tree allows you to immediately see the element for which a description has been stored. You can display the description as a tooltip by hovering over the icon with the mouse pointer.

- **Project tree: Axis color code**

In the project tree, you can now assign a color code to individual axes in addition to individual drive controllers, allowing you to maintain a better overview even for double-axis controllers: The color code is displayed in the project tree and in wizards, the parameter list, the variable parameter list, graphical programming and scope (context menu: *Color code*).

- **Wizards: Parameter properties**

In the wizards, in addition to the description of a parameter, its properties are now also displayed in the lower margin area, as was previously the case exclusively in the parameter list.

- **Variable parameter list: Parameter description**

In the variable parameter list, there is a new button that allows you to show/hide the description and properties of a parameter in the lower margin area of the window.

- **Parameter list: Default values**

There are 2 new context menus in the parameter list for accepting or overwriting the default value: You can either overwrite the current value of a parameter with the default value or set it as the new default value. The context menus are available for all parameters that are stored on the Paramodul.

- **Manage motor libraries**

In the *Manage motor libraries* window for user-defined motor libraries, you can now delete libraries, groups and motors, and move or copy motors to other groups or libraries. If you have already created a user-defined motor library, the *Manage motor libraries* window can be reached in the menu bar via *File > Manage motor libraries* and now also using the wizards (wizard: *Motor*).

- **Graphical programming: Block descriptions**

You can now display the associated descriptions for the graphical programming blocks: Select the required block either in the library or in the editor and open the associated block description by pressing [F1] on your keyboard.

- **Graphical programming: Check (offline)**

You can now also check the graphical programming offline if, for example, a connection to the drive controller is not possible at the time for spatial reasons. If you have access level 3 for graphical programming, you can find the new button in the project menu next to the *Project configuration* button. The result of the check is displayed as an entry in the *Messages* window.

- **Graphical programming: Constant value**

Block 8000008 Constant value has many new and helpful functions ready for you as of version 1.

- **Constant value: Comments**

You can now add single-line comments to constants and display them as a tooltip to help you keep track.

- **Constant value: Percent scaling**

You can now specify integers and floating-point numbers as constants in percent (example: 10%, 2.5%).

- **Constant value: Integers**

In addition to decimal notation, you can now specify constants in hexadecimal or binary notation by using the hex or bin postfix (example: 27 = 11011 bin = 1B hex).

- **Constant value: Floating-point numbers**

If you create a floating-point number as a constant, the entered value is checked and, if necessary, rounded according to the resolution of the REAL32 data type (example: 12.3456789 → 12.34568).

- **Constant value: Selection**

Using the properties of the block, you can now select frequently used constants such as 1/60, π , $\sqrt{2}$ or e.

Optimizations

- **Scope: Recording time & recording details**

For scope and multi-axis scope, general optimizations have been made for the display of the remaining recording time as well as for the display of umlauts in the recording details.

- **Change fieldbus variant: Safety module**

SC6, SI6: When changing the fieldbus variant of the firmware, it is now checked which safety module has been configured for the drive controller. If the SU6 (STO and SS1 via PROFIsafe, requires PROFINET) or SY6 (STO and SS1 via FSoE, requires EtherCAT) safety module has been configured, the fieldbus variant cannot be changed.

- **Optimize DC-Sync: Cycle times**

SC6, SI6: You can now optimize the synchronization of the nodes in your EtherCAT network, even when the controller and drive controller have different cycle times (parameter: A287).

- **Referencing wizard: Referencing jerk**

Parameter I44 Referencing jerk is now also displayed in the wizard (wizard: *Referencing*).

- **Motor wizard: Wake & Shake**

Parameter B33 Wake & Shake dynamics for synchronous linear motors with relative motor encoder and commutation via Hall sensor is now also displayed in the wizard (wizard: *Motor*).

- **Lean motor: Weighting of the control coefficients**
To simulate the behavior of an asynchronous motor, you can parameterize a reset time T_i of 0 ms for the velocity controller for your Lean motor with sensorless vector control. For this case, optimizations were made to the operation of the velocity-dependent factors for weighting the control coefficients (control mode: B20; reset time: C32; factors: B146, B147).
- **Graphical programming: Read parameters & write parameters**
For the blocks for reading and writing parameters, the parameter to be read or written is now also displayed for the hits in the structure view in the Search tab. General optimizations were also made for the subsequent removal of parameter coordinates to be read or written.
- **Graphical programming: Block name**
The status bar of the graphical programming now shows you which block you are currently in for better orientation.
- **Graphical programming: Display block in library**
You can now also display user blocks in the respective library via the Display block in library context menu.
- **Graphical programming: Context menus**
General optimizations have been made to the context menus in the graphical programming with regard to the available functions.

DriveControlSuite V 6.5-H SP1

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-H SP2

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-H SP3

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-G

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-G SP1

This release is a product update and includes general optimizations.

DriveControlSuite V 6.5-G SP2

This release is a product update and includes general optimizations.

- **STÖBER Predictive Maintenance**

This service pack contains minor optimizations to STÖBER Predictive Maintenance which mainly affect the load matrix.

- **Load matrix: Precision**

By expanding from 2 to 4 decimal places, the load matrix now shows you the calculated life performance of the geared motor with higher precision.

- **Load matrix: Gear ratio**

The gear ratio is now taken into account when calculating the speeds for the load matrix.

- **Load matrix: File name**

For motors without an electronic nameplate, the file names for the load matrix on the SD card of the drive controller are now generated from the checksum of B00[0] and B00[1]. This automatically detects that the motor has been replaced and generates a new load matrix accordingly.

- **Load matrix: Backup file**

The storage behavior of the load matrix has been optimized so that the data is now also saved in a backup file and can be restored at any time.

- **Load matrix: Data structure**

Through optimizations to the data structure, the load matrix is now clearer and requires less memory.

DriveControlSuite V 6.5-F

As of this release, you can optimally plan the maintenance of your geared motors with **Predictive Maintenance**. The new **Backup & Restore** convenience function allows you to save the configurations of your drive controllers with the help of the EtherCAT MainDevice and restore them, such as in case of service. For **PROFIdrive** applications, **application class 4** is now also available and the new **DS6 online help** provides you with helpful information about DriveControlSuite.

▪ **Predictive Maintenance**

Plan the maintenance of your geared motors proactively and at the optimal time with Predictive Maintenance. The function is automatically active for STÖBER geared motors with an electronic nameplate as of production date April 27, 2022, and can be activated manually for older geared motors or geared motors without an electronic nameplate.

• **New wizard: Predictive Maintenance**

A model-based analysis procedure is used to determine a life performance indicator for your geared motor. You can use this to obtain a recommendation for replacing the geared motor and send it to your controller (parameter R100, R101).

• **Load matrix**

The load matrix visualizes real load situations of the geared motor in the wizard and can be used as a basis for optimizing the service life of the gearbox.

▪ **EtherCAT: Backup & Restore**

EtherCAT MainDevice (TwinCAT 3): During initial commissioning or if drive controllers are replaced in case of service, you can now automatically import previously saved configurations (backups) into the new STÖBER drive controllers. The new convenience function is available via the new `STÖBER_Backup_Restore` function block as well as via new commands in Script mode.

▪ **PROFIdrive: Application class 4**

SC6, SI6: From now on, PROFIdrive applications are also available in application class 4 for your projects, such as for robotics and machine tool applications (AC4: telegram 3). For detailed information, refer to the PROFIdrive operating manual.

▪ **DS6 online help**

The DS6 online help accessed via the menu bar (menu Help for DS6 > Help for DS6) or the shortcut [F1] provides you with information about DriveControlSuite.

• **DS6 program interface**

Descriptions of the individual areas of the program interface and instructions for helpful functions make it easier for you to operate DriveControlSuite.

• **More about DriveControlSuite**

Background knowledge of DriveControlSuite helps you understand basic concepts or processes such as the connection setup or configuration.

• **Tips and tricks for users**

Learn how you can use a few simple steps to optimize your workflows and save time when creating and maintaining your project.

More new features

▪ **EtherCAT: Diagnosis History**

EtherCAT MainDevice (TwinCAT 3): You can now have the controller read out diagnostic messages from the EtherCAT diagnostic memory of the drive controller when you add parameter A250 to the process data mapping.

- **SSI encoder: Free setting**

For SSI encoders at interface X4, the data length, an alarm bit, clock frequency and monoflop time can now be set variably (data length: 8 – 32 bits; clock frequency: 100 – 1000 kHz; monoflop time: 10 – 100 µs). For SD6 drive controllers, you can also use the new function at interface X120 (XI6 terminal module: as of hardware version 14; RI6 terminal module: as of hardware version 8). The new parameters are available in the wizards of the respective interface (H00 = 78: SSI free setting, H14 - H17).

- **Scope: Acquisition details & comment function**

In the *Scope* and *Multi-axis scope* windows, you can now view details about the scope image such as stored comments, recording time, sampling time and pre-trigger in the lower margin area of the *Scope* images and *Combinations* tabs. There are also 2 new icons here to show/hide the lower margin area and edit the comment of the selected scope image.

Optimizations

- **Compare drive controllers**

You can now also compare the process data mapping of different drive controllers. Accuracy has been increased for the comparison of double-axis controllers and option modules.

- **Import parameter values**

SC6, SI6: Parameter values can be imported even more reliably thanks to minor adjustments for Lean motors and double-axis controllers.

- **Change configuration**

As of the current firmware V 6.5-F, even minor changes to the project configuration and graphical programming result in a changed configuration, e.g. if you change the designation or description of the drive controller or edit comments in the graphical programming.

- **PROFIdrive: Read out encoder data**

SC6, SI6: When establishing the PROFINET connection, you can now automatically read out the encoder data of the axis if you select the *Automatically accept encoder values at run time (online)* option in the TIA Portal for the data exchange of the technology object (communication object: Sensor format; DS6: M537; TIA Portal: PNU 979).

- **Motor wizard: Control mode 48, control mode 70**

The *Motor* wizard has been revised for synchronous servo motors with a relative motor encoder and for synchronous linear motors with a motor encoder with regard to the available parameters (control mode: B20).

- **Test phase wizard**

The *Test phases* wizard now also enables commutation of linear motors with an absolute linear encoder via parameter B07, in addition to commutation of linear motors with a relative linear encoder via parameter B05.

- **Wizards: Feedforward control**

For mapping the feedforward control, the block diagrams and available parameters of the following wizards have been revised: *Motion core wizard*, *Position controller wizard* and *Velocity controller wizard*.

- **Wizards: Virtual master**

Using the *Virtual master* wizard, you can now set the preset position for the virtual master. The two control panels of the virtual master now show you the cause if the virtual master cancels or denies a motion command (parameters: G58, G163).

- **SS1: Brake ramp**

Stopping the axis by SS1 has been optimized for the case that a brake ramp was already active using motion command MC_Stop.

- **Graphical programming: Version management**

Version management is now also available for user blocks.

- **Graphical programming: Read parameters, write parameters**

There have been minor optimizations to the blocks for reading and writing parameters for use in double-axis controllers and library blocks.

- **Graphical programming: Process data mapping**
Optimizations have been made for user-defined parameters with regard to process data mapping, such as for transferring floating-point numbers with percentage scaling or for transferring accelerations, decelerations or jerks.
- **Graphical programming: Data types**
The unified designations for the data types make it easier for you to orient yourself in the graphical programming.
- **Graphical programming: Decimal separators**
Constants of the REAL data type (floating-point numbers) now support both periods and commas as decimal separators.

DriveControlSuite V 6.5-E

This release is a product update and includes general optimizations.

- **Lean motor: Double-axis controller**

SC6, SI6: Lean motors operated on axis B of a double-axis controller now run more stably and are less susceptible to faults, thanks to control mode optimizations.

- **PROFdrive: Wizards**

SC6, SI6: Minor optimizations to the wizards for applications with PROFdrive make it easier for you to commission your projects.

DriveControlSuite V 6.5-D

Starting from this release, you can use the STO and SS1 safety functions via **PROFIsafe** as well as **PROFIdrive** type applications in your drive projects for SC6 and SI6 drive controllers. In Drive Based Synchronous type applications, the **electronic cam disk** is also available for synchronous operation in addition to the **electronic gearbox**. Using the **drive controller comparison**, you get a quick overview of your projects and can optimize your control cascade with the new user interface for the **set value generator**.

- **PROFIsafe**

SC6, SI6: Use the STO and SS1 safety functions via the new SU6 safety module and PROFIsafe for your projects. The new Calculate F_iPar-CRC: PROFIsafe and Monitoring: PROFIsafe wizards simplify commissioning and diagnosis. More information on this can be found in the new SU6 safety module manual.

- **PROFIdrive**

SC6, SI6: From now on, PROFIdrive type applications are available in application classes 1 and 3 for your projects (AC1: telegrams 1, 2, 3; AC3: telegram 111). Benefit from a selection of technology objects, such as for synchronous operation or cam disk applications. The new wizards are grouped under the Application PROFIdrive wizard. More information on this can be found in the new PROFIdrive operating manual.

- **Electronic cam disk**

In Drive Based Synchronous type applications, new functions for the electronic cam disk are now available.

- **New movement commands**

In the Control panel motion as well as the wizards for the Command and Motion block operating modes, there are new motion commands for the electronic cam disk (MC_CamIn, MC_CamInAbsolute, MC_CamOut).

- **Cam editor**

In the cam editor, you find all functions that you need to create, edit, import and export cam profiles. You can open the cam editor using the new Electronic cam disk or Cam profile wizards.

- **New wizard: Cam profiles**

The new Cam profile wizard offers you an overview of the cam profiles that you can create with the cam editor.

- **New wizard: Electronic cam disk**

The new Electronic cam disk wizard enables the creation of electronic cam disks. Here, you can define how the cam disk is started and which curves follow the start curve in the positive or negative direction of motion.

- **Compare drive controllers**

Compare drive controllers with each other for differences in project configuration, parameterization and graphical programming.

- **Project tree**

Compare drive controllers within the same project or from different project with each other. To do so, select Project tree > Drive controller > Context menu: Compare drive controllers.

- **Online functions**

Compare a drive controller in the project and a real drive controller with each other, e.g. before transferring the configuration to the drive controller. To do this, use the new button in the Online functions window.

- **Scope: Set value generator**

In the scope Direct image tab, there are new operating elements with which you can use the set value generator in order to optimize the control cascade of your drive controllers.

More new features

- **Scope: Direct image**

If you do not want to discard a direct image immediately, you can convert this to a scope image as needed and store it in the project.

- **Online connection**

The Assignment and live firmware update window as well as the associated button in the project menu are now called Online connection.

- **Direct connection: Redundant IP address**

If drive controllers are in the same network with the same IP address, DriveControlSuite intercepts the addition of a direct connection and outputs information in the Add connection dialog box.

- **Accurate search**

The search function in wizards as well as the parameter list now also returns results if you search for elements from array or record parameters.

- **EtherCAT: Parameter addressing**

In the configuration dialog, you now have 2 options for projecting the receive process data (Rx) for EtherCAT. Furthermore, you can influence the addressing of array and record parameters: If you project EtherCAT Rx, the first element of the array or record parameters is addressed with subindex 0 hex. For EtherCAT Rx SDO Info, subindex 0 hex supplies the subindex number of the last element of the array or record parameter.

- **EtherCAT: SDO Info**

Using the SDO Info service, the EtherCAT controller can read out all objects defined in the object directory from the drive controller if you have configured EtherCAT Rx SDO Info for the receive process data (Rx). You can define which objects are transmitted using the service in DriveControlSuite (parameter A268).

- **EtherCAT: Diagnosis**

In the wizard for EtherCAT diagnosis, you can now read off the AL status code as additional information (parameter A257[3], EtherCAT wizard > Diagnostics).

- **Ethernet over EtherCAT: Connection setup via DHCP/DS6**

If you use Ethernet over EtherCAT, you can now assign the IP addresses of the drive controllers automatically via DHCP or DriveControlSuite when setting up the connection. You can read what you need to do for this in the EtherCAT operating manual.

Optimizations

- **Scope: Binary representation**

In the first activation of binary representation in the scope, there was an error in the display of the lines, which was corrected.

- **Synchronous operation: Consumer correction**

SD6: If you activate consumer correction for a slave axis (G183 = 1: Active) and then assign it to the master using the Master-slave window, parameter G115 is used instead of G120 for the IGB motion bus mapping.

- **Ramps for torque/force build-up (MC_TorqueControl)**

If you use the MC_TorqueControl motion command, you can make specifications for the build-up and reduction of torque/force using the wizards. In Drive Based type applications, you will find parameters G500 and G501 in the Set torque/force, velocity bracketing: Data source wizard. In CiA 402 type applications, you will find parameter A561 in the Operating mode wizard.

- **Save reverse documentation**

The creation of reverse documentation is now considered a change to the project, which now also allows you to save reverse documentation if there otherwise have not been any changes to the project since last saving.

- **Scaling calculator: Translational axis model**

In the scaling calculator, the conversion of the acceleration was optimized for translational axis models (Axis: Scaling wizard).

- **Asynchronous motor: Position encoder as motor encoder**

In asynchronous motors with vector control, you can now parameterize an external position encoder as a motor encoder.

- **Graphical programming: Read & write parameters in real time**

Using the new *Real time* option in the properties of the *Read parameter* and *Write parameter* blocks, you can ensure that the block can be accessed in real time. If real time access is not possible, there is an error in the structure check.

- **Graphical programming: Mark all blocks**

You can now mark all blocks with [Ctrl] + [A], even if editing mode is not active, e.g. in order to copy all blocks to a different project.

DriveControlSuite V 6.5-C

This release is a product update and includes general optimizations.

- **Evaluation of HIPERFACE DSL encoder**

SI6, SC6: We have optimized the evaluation of HIPERFACE DSL encoders: Evaluation now runs more stably and is less prone to faults.

DriveControlSuite V 6.5-B

This release lets you get to your destination faster and more securely: **New context menus** allow you to change between different areas within DriveControlSuite quickly and **direct images** save you the trouble of clearing excess scope images. The new parameters for **building and reducing torque/force** ensure more even movements and, in the IGB motion bus network, you can now monitor your axes for **synchronism**.

▪ **Get there faster**

New context menus allow you to change between the different areas within DS6 quickly: Jump from the messages or parameter check right to the respective parameter or block, or quickly switch from the wizard to the parameter list and vice versa.

- Jump from the parameter check right to the parameter in the parameter list or wizard (context menu: Show parameter in parameter list or Search for parameter in wizard).
- Switch from the wizard to the parameter list and vice versa (context menu: Show parameter in parameter list or Search for parameter in wizard).
- Switch from the parameter list right to the graphical programming for the block where the parameter was defined (context menu: Show parameter block in graphic editor).
- Jump from the messages right to a block in the graphic editor (context menu: Show block in graphic editor).
- In the graphical programming, jump from the structure check right to a block in the graphic editor (context menu: Show block in graphic editor).

▪ **Scope: Direct image**

In scope, you can use the new **Direct image** tab now to create temporary scope images: The current scope image is not saved permanently and the previous direct image is overwritten. As a result, you no longer have to clear excess scope images when you only want to record something briefly.

▪ **Building torque/force**

In Drive Based type applications, you can create more even axis movements now by setting specifications for building and reducing set torque/force for the MC_TorqueControl motion command (parameter G500, G501).

▪ **Monitor synchronous operation**

SD6: In Drive Based Synchronous type applications, you can now monitor the synchronism of your axes in the IGB motion bus network independently of a controller: If a monitored axis is no longer synchronous with the master, the master and all slave axes are stopped using a quick stop. In the **Master/Slave** window, you can activate monitoring and select which axes are to be monitored.

More new features

▪ **Orientation by color code**

In the project tree, you can now assign a color code to your drive controllers to maintain a better overview: The color code is displayed in the project tree and in wizards, the parameter list, graphical programming and scope (context menu: Color code).

▪ **Add connection: Type**

In the **Add connection** dialog box, you now see the type of drive controllers in the network so that you can create more purposeful connections.

- **Additional functions wizard**

The **Additional functions wizard** is now also available in CiA 402 type applications; it simplifies access to the additional Establish torque/force with enable and action activation functions. Action activation is now available in Drive Based type applications using the wizard, as is position conversion. In Drive Based Synchronous type applications, you can use the wizard to activate other additional functions, such as the cam control unit and print mark evaluation for the master.

- **New wizard: Master: Cam control unit**

In Drive Based Synchronous type applications, the new **Master: Cam control unit wizard** helps you when parameterizing an additional function.

- **New parameter: Master position resolution**

Similar to parameter I160 (position encoder), there is a new parameter G103 (master encoder): The parameter shows the number of position values per encoder increment. With a value < 1, the resolution of the encoder is lower than that of the axis model. Rough quantization can cause problems in the position control, as not every displayable position can be approached.

- **New parameter: SS1 deceleration**

SD6 with SE6: The new parameter S36 Current deceleration shows you right in the drive controller which deceleration is set for the emergency stop SS1 in the safety module.

- **Script mode: takeSnapShot**

The new command for Script mode creates reverse documentation for all drive controllers in the network defined in the command script and reads it into a new module. If no drive controllers are defined, the scripts tries to connect to all drive controller in the network and create reverse documentation for them.

- **Graphical programming: New block**

The new block 536 Round R32 with saturation rounds 32-bit floating-point numbers up or down to the nearest integers (data type: REAL32 → INT32).

Optimizations

- **EnDat 3 encoder: Motor temperature sensor source**

The source for the motor temperature sensor is always set for you by default, but now it can also be switched to an alternative source as an option (parameter B35).

- **Accurate search**

With minor adjustments, we improved the hit accuracy for desired search results in wizards and the parameter list.

- **Window and wizard title as tool tip**

If your screen becomes cramped, you can now have the titles of windows and wizards displayed as a tool tip to maintain an overview better.

- **Problem-free connection setup**

SI6, SC6: Thanks to changes in IP address assignment, setting up a connection between DriveControlSuite and drive controllers now also works smoothly in case of strict firewalls.

- **Increased user-friendliness**

Functions such as saving and closing projects or libraries are now grayed out if you cannot use the function at the moment (such as because no libraries are open).

- **Holding torque of the brake**

The holding torque for the next brake release process is now limited to 70% of the maximum output current of the power unit (parameter F103).

- **Live firmware update: Add new firmware version**

Instead of many individual firmware files, there is now just a single file for each firmware version that contains the firmware for all series and fieldbus variants.

DriveControlSuite V 6.5-A

This release focuses on **performance**: Numerous adjustments increase the performance ability of DriveControlSuite significantly and shorten click paths to support more convenient and efficient operation. Starting from V 6.5-A, the DS6 also supports **One Cable Solutions with an EnDat 3 encoder** for SI6 and SC6 drive controllers.

- **One Cable Solution with EnDat 3 encoder**

SI6, SC6: Now, you can also project and commission your projects with a One Cable Solution with EnDat 3 encoder.

- **Improved performance**

The improved performance is most noticeable in the following functions:

- Projects are saved and loaded much faster.
- Modules are copied in the project tree faster.
- Parameter values from external projects are imported faster.

- **Visualized performance**

The new progress display in the status bar visualizes the improved performance, such as when loading projects or updating project configurations.

- **Shortened click paths**

You now need fewer clicks to reach your goal with these functions:

- **Update project configurations**

Update project configurations for your drive controller without detours in the project tree using the new function, located in the context menu on the drive controller, module or project level.

- **Clean up project**

Clean unnecessary scope images, reverse documentation or variable parameter lists out of your project right in the project tree. The function is available in the context menu on the drive controller, module and project levels.

- **Manage scope images**

In the scope image overview, you can delete all scope images using two new buttons or close all open images with just one click.

More new features

- **Convenience functions for Script mode**

Adjust default settings for Script mode for how read or write access to the drive controller is to be enabled for your project. The *Preset connections* dialog box for settings can be opened using the context menu in the project tree on the project level.

- Carry out firmware updates with the help of the default settings.
- Update the system parameters, device control and applications using the default settings.

- **New wizard: Optimize DC-Sync**

SI6, SC6: Check and optimize the synchronization of nodes in your EtherCAT network using the new wizard.

- **Assignment by PLC device name**

In your EtherCAT network, you can now assign the projected drive controllers using the device names given to the actual drive controllers by the controller.

- **Confirm reference**

After an encoder fault, you no longer have to reference referenced axes again. Instead, you can simply confirm the actual position as referenced and continue operation.

- **Extended cam control unit**

SI6, SC6: The additional Extended cams function is now also available for SI6 and SC6 drive controllers.

- **Synchronous servo motor control mode for incremental encoders**
Synchronous servo motors can now be projected with relative encoders (incremental encoders), even for endless travel ranges.
- **Synchronous operation: Producer source**
In the Drive Based Synchronous application, the unreferenced actual and set positions are now available for synchronous operation.
- **Torque/force build-up with enable**
The default for G90 Establish torque/force with enable has changed: With the power unit enabled, control is no longer inactive by default. Instead, position control (standstill) is active to prevent any gravity-loaded axes from lowering. A new velocity control selection (standstill) has been added.
- **New wizard: Option code**
Here, all parameters for CiA 402 applications can be found in the context of the Option code.
- **Graphical programming: Write parameter**
Using the 300006 Parameter Write block, you can now write individual array elements and axis-specific parameters in global program areas.

Optimizations

- **Electronic gearbox nameplate**
The evaluation of the electronic gearbox nameplate and the mapping of data on the axis model parameters have been optimized (parameters B28, B30).
- **Process data mapping for EtherCAT and PROFINET**
The following points were optimized for EtherCAT and PROFINET:
 - In case of firmware changes, your changes to the process data mapping remain in place.
 - For double-axis controllers, the process data mapping is now displayed more clearly, with each axis next to each other.
- **Positioning up to the stop with excess**
Movements when positioning up to the stop with excess are now even more consistent.
- **Lean-Motor: Switching position modes**
SC6: Position modes can now be switched reliably even in highly dynamic acceleration processes at the torque/force limit.

DriveControlSuite V 6.4-F

This release is a product update and includes general optimizations.

- **Ethernet over PROFINET**
SI6, SC6: You can now use Ethernet over PROFINET at the service interface.

DriveControlSuite V 6.4-E

This release includes a few new functions for **scope** and two new **additional functions**. From now on, you can use the new wizard for **master/slave scaling** when configuring synchronous operation.

▪ Scope

These new features make the diagnostic tool even more helpful for you:

- **Apply channel scaling**

You can now transmit the channel scaling of an existing scope image to other images. To do so, use the new button in the scaling area.

- **Automatic serial recording**

After completing one scope image, automatically start the next recording. To do so, set parameter T26 to value 3.

- **Comment function**

The new symbol lets you immediately see in the overview which scope images have comments stored. You can display the comment as a tool tip.

▪ New additional functions

You can expect these additional functions starting from V 6.4-E:

- **Extended cam control unit**

Even more functions for cams are now available in Drive Based applications, such as: multiple cams, time cams, multi-cycle cams and cams with a time stamp for digital outputs. Activate the extended cam control unit using the **Additional functions wizard**.

- **Action activation**

The new additional function lets you start even more actions over fieldbus or digital inputs, such as: testing phases, calibrating the motor, optimizing the current controller and testing the winding. Activate the new **Action activation: Control/status word wizard** and the associated parameters using A76.

▪ New wizard: Master/slave scaling

SD6: In Drive Based Synchronous applications, the new wizard creates the IGB motion bus mapping for you and helps ensure that the master and slave axes are compatible with regard to the following settings: travel range, revolution length, unit of measure, decimal places. You can reach the wizard using the new button in the IGB assignment dialog.

More new features

▪ New shortcuts

These new shortcuts make it easier to work with DS6:

- [ALT] + [P]: Open/close project tree and project menu
- [ALT] + [M]: Open/close messages
- [ALT] + [E]: Open/close parameter check
- [ALT] + [V]: Open/close variable parameter lists

▪ User-defined settings

Configure settings for the display of scope images and select standard directories to load, open, save, export and import files. To do so, select the menu bar > Settings > Settings.

▪ Wizards: Display and hide sidebars

Easily hide or display the list of wizard pages and parameter descriptions as needed using the new buttons in the wizard menu bar.

- **New import functions**

These new import functions make work with DS6 even more efficient:

- **Import drive controllers**

Import entire drive controllers from other projects. To do so, select > Module > Context menu: Import drive controllers in the project tree.

- **Import parameter values by axis**

Apply parameter values for your axis either from a drive controller in the current project, from a drive controller from a different project or from a text file that contains the desired parameter values. To do so, select > Drive controller > Context menu: Import parameter values in the project tree. When importing from projects, the parameters are applied regardless of the access level or visibility; when importing from a text file, the access level is taken into account.

- **Display project overview**

The new project overview gives you the most important information about the projected drive controllers at a glance: device type, option modules, firmware, transmit and receive process data, device control, application and user-specific programs. Select Project> Context menu: Display project overview in the project tree and export the overview as HTML if needed.

- **Display change overview**

If you have made changes in the configuration dialog, a change overview is displayed after clicking on OK. You can export the change overview as HTML using the respective button or save the column of previous values as a text file and reimport them if you are not satisfied with the changes.

- **Delete reverse documentation**

You can now discard all reverse documentation within a module. Select > Module > Context menu: Delete reverse documentation in the project tree.

- **CiA 402 application**

There are the following new features for CiA 402 applications:

- **Direction-dependent torque/force limiting** (A315, A316).
- **Velocity override**
For drive-based Profile position and Profile velocity operating modes (A340).
- **Automatic run to the reference position**
Moves to Home offset at the end of referencing (I43).
- **Direction of motion for absolute positioning with endless travel range**
For the drive-based Profile position operating mode (A621, bit 6 – 7)

- **Support for 8-pole resolvers**

In addition to 2-, 4- and 6-pole resolvers, you can now also use 8-pole resolvers.

- **Digital and analog inputs and outputs**

You will now find the digital and analog inputs and outputs under new designations: BE, BA become DI, DO; AE, AA become AI, AO.

- **Event 50: Safety module: New cause**

SI6, SC6: For event 50: Safety module, there is a new cause (cause 16): The drive controller is interrupted if an STO is requested with the power unit active.

- **Switching the fieldbus variant: EtherCAT <> PROFINET**

SI6, SC6: You can switch the fieldbus variant in the assignment dialog. To do so, select Change fieldbus under the drive controller. Always inform STÖBER Service via email in case of a switch. This ensures that a replacement will be delivered with the right fieldbus variant in later Service cases. For a change from EtherCAT to PROFINET, the booter version must be at least V 6.4-B (see parameter E52[5]).

- **EtherCAT: Cycle times 250 µs and 500 µs**

EtherCAT can now be used with a cycle time of 250 µs or 500 µs.

Optimizations

- **Offline display of static information**

Starting from firmware V 6.4-E, you can also have values of the following parameters displayed offline without reverse documentation: B01, B03, E52, E54, E56, E58, E61, E122, E123, H09, H129, H149, R00 – R129.

- **Graphical programming: User adjustments**

You can now save your adjustments for the graphical programming in a memory area specially designed for this purpose. Adjustments in this memory area are independent of changes in the configuration dialog, such as an update to a newer version of the firmware. We recommend moving your adjustments from the memory area for the application to the new memory area for user-specific adjustments ([CTRL] + [X], [CTRL] + [V]).

DriveControlSuite V 6.4-D

In this release, the new **variable parameter list** function and the new wizard for **nameplate data** conveniently gives you the information at a glance. The new features of the **Online connection** window are especially useful in larger projects with many drive controllers.

- **New function: Variable parameter list**

The new function allows you to compile the parameters currently required for a quick overview in individual parameter lists (Menu bar > View > Variable parameter list).

- **New wizard: Nameplate data**

In the new Nameplate data wizard, you can now view the data of the electronic nameplate at a glance.

- **Online functions**

These new features can be found in the **Online functions** window:

- **Restart/save all drive controllers**

You can now restart all drive controllers at the same time and save values for all drive controllers at the same time. The **Save values (A00)** and **Restart (A09)** actions can be found in the **Actions for drive controllers** in online operation area in the **Online functions** window.

- **Hardware check**

During assignment, this checks whether the projected hardware matches the actual drive controller. Unsuitable configurations are not transmitted; instead, DS6 issues a warning about the discrepancy.

More new features

- **Network adapter with IPv6**

You can now also use network adapters with IPv6 support; communication still takes place using IPv4.

- **Fault 52: Communication: New cause**

SI6, SC6: The new cause 15 indicates that the EtherCAT fieldbus variant was projected but the firmware for PROFINET is installed in the drive controller, or vice versa.

- **Phasing to absolute set position**

The additional Phasing function in the Drive Based Synchronous application has been supplemented with the **MC_MoveAbsolute** motion command.

Optimizations

- **Jog step as single step**

A jog step request is only applied when the axis is at a standstill. Adding multiple successive jog steps is no longer supported.

- **Fault 56: Overspeed: Source**

Fault 56: Overspeed is triggered by changed sources less frequently. The fault is now triggered based on the filtered velocities E15 and I88.

- **Quick stop in case of communication failure**

SI6, SC6 with SY6: In case of an EtherCAT communication failure with FSoE, the axis will now come to a stop even more quickly (event 52: Communication, cause 6: EtherCAT PDO timeout). A formula for calculating the quick stop duration can be found in the SY6 safety technology manual.

- **Continue after SS1/SS2**

SD6 with SE6: Using the Continue function, you can now also continue motion commands that were interrupted by SS1 or SS2 safety functions.

- **Lean motor: Improved performance**

The control mode for Lean motors now enables a higher maximum controller gain and improved radial runout or constant speed at low speeds. Furthermore, the recovery time for load jumps has been shortened and positioning accuracy as well as repeat accuracy of the position has been increased.

- **Continue function: Torque/force build-up with enable**

In Drive Based applications, the Continue function and the Torque/force build-up with enable function (G90) are now independent of each other: A canceled motion command can now also be continued when using G90.

DriveControlSuite V 6.4-C

This release is a product update and includes general optimizations.

- **Overheat protection**

SI6, SC6: Thanks to even more accurate i^2t models, the drive controller is now protected even more reliably against thermal overload.

DriveControlSuite V 6.4-B

This release is a product update and includes general optimizations.

- **Booting of SD card**
SI6, SC6: When booting using the SD card, the drive controllers are now ready to operate even more quickly.
- **Evaluation of resolvers**
SI6, SC6: Undervoltages occur less frequently when evaluating resolvers.

DriveControlSuite V 6.4-A

This release also makes **multi-axis scope** available for SD6 drive controllers. Starting from V 6.4-A, **buffered subsequent motion blocks** enable smoother movements without stopping.

- **Multi-axis scope**

SD6: The multi-axis scope is now also available for the SD6 drive controller.

- **Buffered subsequent motion blocks**

In Drive Based applications, you can now smoothly transition to the subsequent motion block in motion block operating mode during positioning commands without stopping. Define the final velocity at which the set position is to be reached in motion block A using parameter J18 and specify the subsequent motion block B in J286 so that it is preloaded (buffered) for a smooth transition. In motion block B, you use J21 to specify that it is to be executed as a subsequent motion block at the end of motion block A, without any trigger.

Optimizations

- **Extended reference retaining**

If the encoder cables are swapped, the reference is now automatically restored once the cables have been correctly assigned again and the control unit has been restarted. If, for example, the encoder cables of a double-axis controller were swapped during the removal and reconstruction of a system, the reference will now be retained.

- **Control panel in case of fault**

If a drive controller is interrupted, an active control panel now also indicates this.

DriveControlSuite V 6.3-F

In this release, there are a plethora of **new wizards** that make commissioning your drive projects easier. The **assignment dialog** has also been revamped, with new functions for you in the context of **firmware**.

■ New wizards

These new wizards are available in DriveControlSuite:

• Test and bed in brakes

The new **Test brake** and **Bend in brake** wizards have control panel functionality and are adapted for operating the SD6 drive controller with the SE6 safety module.

• Position measurement

The additional position measurement function now has a wizard of the same name. As a counterpart to the Touch probe function in CiA 402 applications, the additional Position measurement function is available starting from V 6.3-C for Drive Based applications (parameters: J110 – J115).

• Virtual master

There are two new wizards for the virtual master: **Command operating mode: Virtual master** and **Virtual master velocity override: Data source**.

• Phasing

For the additional Phasing function, there is a new wizard in **command operating mode: Command operating mode: Phasing**.

■ Assignment dialog

You can expect these new features in the assignment dialog with V 6.3-F:

• Buttons instead of context menus

The context menu functions are now available as buttons.

• Queue for connection setup

When setting up a connection, a new symbol on the drive controller indicates whether it is waiting in the queue for transmission. You can also use the symbol to remove the respective drive controller from the queue.

• Firmware check during connection setup

When setting up a connection, the projected firmware version and the firmware version in the drive controller are compared with each other. If the firmware version in the drive controller is not sufficient for the project, the connection is not set up.

• Firmware update for multiple drive controllers

The new convenience function makes it possible to perform a firmware update for multiple drive controllers simultaneously. The function is located in the **assignment dialog** in the new **Firmware update** tab.

More new features

■ Nameplate information

In addition to B and F parameters, the information on the electronic nameplate is now mapped on the new R parameters R40 – R54. As a result, you can trace deviations between the original nameplate data that may arise through optimization.

■ Graphical programming: New blocks

For graphical programming, four new standard blocks are available with a variable input number and variable data type: blocks 300009 Collector and 300010 Splitter (type converter) and blocks 300007 Min and 300008 Max (selections).

Optimizations

- **Higher accuracy within the position window**

If the axis is moved manually with the power unit switched off, the set position I96 is updated to the actual position I80 – now also within the position window I22. As a result, there are no following errors nor any unintended compensation movements when switching on the power unit: the axis moves with increased accuracy.

DriveControlSuite V 6.3-E

This release gives you new functions and content for **asynchronous** and **Lean motors**.

- **Emergency braking for Lean motors**

SI6, SC6: Like emergency braking in synchronous servo motors, emergency braking is now also available for Lean motors in case of corresponding events.

- **IE3 asynchronous motors**

In the configuration dialog, the motor data is now available for all STÖBER asynchronous motors with energy efficiency class 3.

Optimizations

- **Overheat protection**

SI6, SC6: At a standstill and at low speeds, the drive controller is now protected even more reliably from thermal overload.

DriveControlSuite V 6.3-D

This release is a product update and includes general optimizations.

- **Evaluation of HIPERFACE DSL encoder**

SI6, SC6: We have optimized the evaluation of HIPERFACE DSL encoders: Evaluation now runs more stably and is less prone to faults.

DriveControlSuite V 6.3-C

This release help you find what you are looking for: The new **search** and many more new features get you to your goal faster.

- **New search function**
The new search function helps you in the parameter list, in wizards and in the current graphical programming level. Simply enter the parameter coordinates or names into the search field.
- **Move drive controller between modules**
Using the new context menu in the project tree, you can now move drive controllers between modules.
- **Jog control panel: Set reference**
You can now also set the reference easily using Jog control panel.

More new features

- **Direction of motion for each motion block**
During absolute positioning with infinite axes, you now have the option to specify the direction of motion for each motion block (parameters: C243, J33).
- **Cam control unit for the master position**
In the Drive Based Synchronous application, the additional cam control unit function is now also available for the master: The new **Master: Cam control unit wizard** and new parameters G510 – G514 are displayed when the additional function is active.
- **Graphical programming: Data types for Read parameters block**
Parameter values are output from the 300005 Parameter Read block now according to their data type; for binary output, this is automatically as BOOL. Output as INT32 or REAL32 is optional.
- **Graphical programming: Block input with constant**
You can now connect a block input with a block for reading or writing constants directly via the context menu.
- **Graphical programming: Parameter values in real time**
The abbreviation RT (Real Time) in the block name tells you whether the block supplies the parameter value in real time.

Optimizations

- **Overheat protection**
SI6: During operation at maximum output current, the drive controller is now protected even more reliably from thermal overload.

DriveControlSuite V 6.3-B

This release is a product update and includes general optimizations.

DriveControlSuite V 6.3-A

Starting from this release, the new **SC6 drive controller** is available together with the **Lean motor** in DriveControlSuite. The SD6 drive controller also benefits here. Using the new **SE6 safety module** along with **PASmotion Safety Configurator** configuration software, you can commission your axes reliably.

- **SC6 drive controller**
The new SC6 drive controller can be selected in the configuration dialog.
- **Lean motor**
SI6, SC6: The new Lean motor control mode can be selected in the configuration dialog.
- **SE6 safety module with PASmotion Safety Configurator**
SD6: The new SE6 safety module can be selected in the configuration dialog. To project the safety module, simply start PASmotion Safety Configurator via the project menu.

More new features

- **New applications: CiA 402 and CiA 402 HiRes Motion**
The new applications replace the previous CiA 402 Controller Based, CiA 402 Controller Based HiRes Motion and CiA 402 Drive Based applications. The new applications contain both the controller-based and drive-based operating modes, which you can switch between at a standstill. The old applications are still supported by DS6, but are no longer available for new project configurations.
- **Frequency analysis for scope images**
You can now apply a frequency analysis to scope images. The function can be found in scope in the new *Frequency analysis tab*.
- **Disconnect all connections**
The new convenience function allows you to disconnect the connection of DS6 to all drive controllers in the module with a single click. The function can be found in the context menu of the *Online connection window*.
- **Reliable referencing to zero pulse**
I37 shows you how much distance was traveled after a referencing event during the search for the zero pulse. If the distance moved is very small and the zero pulse is very close to a reference switch, you can increase the reliability of the reference position by shifting the start of the search with I53.
- **Reset limit switch memory automatically**
If the power unit has not yet been enabled since the power unit was switched on, the limit switch memory is reset again as soon as the signals are correctly transmitted to the limit switch. This means that a fault is triggered if the drive controller is ready to operate faster than the limit switch or controller, even though the limit switch memory is automatically reset.
- **Arrange windows**
Using the new function in the *Window menu*, you can arrange the windows for wizards, the parameter list and scope, for example, stacked or next to each other in the workspace.

Optimizations

- **Activation/deactivation delay X1**
SD6: A43 is now also used for the deactivation and activation delay.
- **Velocity override for jog via fieldbus**
In Drive Based and Drive Based Synchronous applications, the velocity override G466 now also works for jog via control word. Jog via operating unit and control panels remains unaffected by G466.
- **Expansion of the fault memory**
SI6: The fault memory was expanded from 20 to 50 entries.

- **Clean EtherCAT mapping**

The new function in the EtherCAT wizard lets you delete modules you no longer use from an ESI file.

- **Graphical programming: Read/write parameters**

The new versions of the 300005 Parameter Read and 300006 Parameter Write blocks can now also read and write in the data type of the parameter. Conversion to INT32 or REAL32 is still optional.



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