Release Notes
MISxx/SMC66/SMC85 Firmware v7.01.00

Released 2026-03-02

New feature

- IO-link.

Changes

- Fixed issue where safety PLC could trigger STO during health checks.
- Fixed DSP 301 PDO map.
- Fixed wrong acceleration being used following a STO stop.
- Fixed followerror test for H3.
- Fixed issue where p_new could be overwritten.
- Fixed holding torque issue when homing vertically if load.
- Fixed "slave follow master" issues.
- Added extended hardware version register.

Compatibility

This firmware is compatible with all hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v7.00.02

Released 2025-07-22

Changes
- Optimize timing in FPGA control circuit

Compatibility

This firmware is compatible with all hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v7.00.01

Released 2025-05-01

Changes

- Fix issue during encoder calibration where position did not reset.

Compatibility

This firmware is compatible with all hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v7.00.00

Released 2025-03-27

New features
- New hardware position limits.
- Online register list.
- Encoder recovery. We detect and correct wrong counts.
- New production register for enhanced testing.
- CSP mode when using CANopen

Changes
- Optimized main cycle time from 200 µs to 77 µs (when using default setup).
- Time constant of encoder velocity filter set as $T \propto 2^N$ (choose N).
- Removed auto encoder synchronize.
- Supply error counters can now be disabled using R123 B21.
- Fixed follow error test.

Compatibility

This firmware is compatible with all hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.09.03

Released 2024-11-05

New features

- Analog output option.

Changes

- Position reconstruction from singleturn encoder on startup.
- Added max limit to deceleration (same as for acceleration).
- Quickstop issue in DSP402.
- Auto encoder synchronize is off by default (R124 B5)
- Disable CANopen as default
- Use less frequent update for encoder amplitude warning (R36 B12).
- Encoder amplitude warning (R36 B12) only enabled on H2.

Compatibility

This firmware is compatible with all hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.09.02

Released 2024-06-13

Fixes

- Changes to "In Position"-flag caused issues in ePLC, this is now fixed.

Compatibility

Firmware version 6.09.02 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.09.01

Released 2024-05-16

Improvements
- Better support for external SSI encoder.
- Warning on MHM encoder amplitude change.

Changes
- "In Position"-flag is now updated solely from encoder position, when using closed-loop.

Fixes
- Fixed issue with "In target Position"-flag when driving in negative direction.
- Fixed issue where motor would have low acceleration, after startup in CSP mode.

Compatibility

Firmware version 6.09.01 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.09.00

Released 2023-09-14

New features

- Use encoder values. It is now possible to update actual velocity and actual position directly from encoder (Activated with R254 Bit 16).
- Overspeed Error. Motor will give an error if running too fast (Error bit 24).
- Error counters. Communication and supply errors will be counted.
- Command 4191 - Show error counters in P1-P8.
- New unlock system. Internal JVL functionality.

Improvements

- Hard velocity cap. The motor is not allowed to run higher than 3000 for H3/H4 and 4500 RPM for H2.
- Improve AME Encoder calibration. Linearization table is generated better and faster.

Changes

- The filter constant in R254 now only occupies bit 15-0 and is applied to R253 (internal encoder velocity) not R16 (actual velocity).

Fixes

- Overspeed had issues when using a high overspeed percentage this is now fixed.

Compatibility

Firmware version 6.09.00 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Using older versions of MacTalk may cause issues. We advise you to update MacTalk before using this firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.08.04

Released 2023-05-30

New features

- Turntable: Use actual position mode (Activated with Register 127 Bit 8)
- Low-pass Velocity Filter (Set the filter constant using Register 254)

Bugfixes

- Autocorrection bits. It is no longer possible that the "auto correction active"- and "in position"-bit are set at the same time.
- Follow error due to linearization when running "invert direction"-mode
- Removed reliability check on H4 encoder.

Compatibility

Firmware version 6.08.04 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.08.03

Released 2023-01-06

New features
- reliability check for H4 encoder.
- New Error bit added for failed reliability check of the H4 encoder.

Improvements
- Added new Motor types for the High Torque MIS Motors.
- Added new Motor types for MIL341 series.
- Improved k-phases for new MIS23xT (High Torque MIS's).
- Improved k-phases for the MIL341 series.
- CANopen. Support for advance register write via PDO mapped registers. E.g. used by P_SOLL to control turntable.

Fixes:
- (EtherCAT) Problem with CSV mode, where the motor couldn't accelerate fast enough to match velocity need by the CSV mode.
- Problem with Modbus not sending exception when wrong address length was requested.
- Problem with Modbus not enabling correct after register 121 Modbus-enabled bit was sat.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.08.02

Published 2022-05-31

Improvements

- Improved default motor parameters for MIS231

- Default offset compensation parameters can be set by production system.

Compatibility

Firmware version 6.08.02 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.08.01

Published 2022-05-12

What's New

- Register Scaling. Enables scaling of registers when reading and writing motor registers. This enables a plc to use units that represent the mechanical application to control the motor, e.g., mm or degrees.

- Closed loop support for SSI encoders

Improvements

- Improved motor current control algorithm in closed loop. Larger motor types will especially benefit from this at higher RPMs.

- Turntable feature allows for abort profile with P_IST = 0 in CW and CCW mode (Enabled with Register 123 bit 19)

Bugfixes

- (Ethercat) Allow profile acceleration in profile position mode

- CSP open loop Autocorrection is supported again

Compatibility

Firmware version 6.08.01 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.06.00

Published 2022-02-16

Bugfixes

- Problems with enabling the motor when using EtherCAT and Codesys PLCs.

Compatibility

Firmware version 6.6.0 is compatible with newer hardware versions of MISxx/SMC66 /SMC85 with MAX10 FPGAs and Lattice ECP5 FPGAs.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.04.00

Published 2022-02-16

Bugfixes

- Register 46 (absolute encoder position) was not updated correctly for motors with H2 encoders and was incompatible with version 4.14 and prior.

- Value of actual position after powerup was set incorrectly when "Absolute Singleturn Encoder" option was selected (Only for motors with H2 encoders).

Compatibility

Firmware version 6.4.0 is compatible with any hardware version of MISxx/SMC66 /SMC85.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.02.00

Published 2021-12-22

Improvements

- The new way STO errors are set, introduced in v6.0.0 is rolled back. If the motor is configured to set an error when STO is off, an error will be generated when in active mode. In passive mode no error will be generated unless the user tries to change to an active mode.

Bugfixes

- It was not possible to save software position limits in flash

- STO A and B signals were labelled incorrectly for motors with SMC66 hardware version 1.5.

Compatibility

Firmware version 6.2.0 is compatible with any hardware version of MISxx/SMC66 /SMC85.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v6.00.00

Published 2021-12-02

What's New

- Support for new hardware with Lattice FPGA. This is the first official release that supports newer hardware (SMC66 controllers version 1.5 and SMC85 controllers with hardware version 2.0). Older hardware can use this version as well.

- New extended version register implemented (register 250).

Improvements

- Requested position requests are ignored when motor is in gear-mode.

- If the motor is configured to set an error when STO is off, it is no longer possible to clear the STO error before reasserting the STO signal. Previously the STO error could be cleared in passive mode.

Bugfixes

- It was possible to set the standby current to 6A even if the max rated motor current is 4A. Now the limit is the minimum of 6A and the max rated current.

- Fixed bug related to homing in CSP mode. When homing, the ethernet module did not release control of the positioning to the motor, causing wrong velocity under certain conditions.

Compatibility

Firmware version 6.0.0 is compatible with any hardware version of MISxx/SMC66 /SMC85. It is the only firmware, so far, that is compatible with MIS17x/MIS23x/SMC66 hardware version 1.5 and MIS34x/MIS43x/SMC85 hardware version 2.0.

The firmware is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v5.04

Published 2020-06-30

What's New

- Support for CanOpen DSP402
- CAN J1939 Memory request and Memory write support
- DMX512 support on RS485 and RS422 channels.
- Modbus support on RS485 and RS422 channels.
- Modbus PDO registers
- Stall detection for external encoder for non-closed loop applications
- Gearing of external encoder input.
- Support for IO-Link (with external hardware using the Modbus channel).

Improvements

- Programmable behavior on modbus timeout
- Programmable frame delay for modbus slave
- Sync and positioning with external encoders on closed loop applications
- Bus voltage error limit has been lowered to 98 V.
- Handling of bus voltage errors has been changed to minimize risk of destroying the motor in case of overvoltage. The motor goes to passive mode when limit is reached.

Bugfixes

- Setup of RS422-transceiver was accidentally made incompatible older firmware versions in version 5.02. In the new version, setup is again compatible with older firmware.
- Turntable setup is now only activated when saving to flash. When using Sercos it is required to preconfigure the turntable size and save to flash.
- Timing issues in FPGA causing wrong acceleration FPGA is now compiled using Quartus 20.1
- Implemented write-protection for registers that are meant to be read-only.
- Fixed issue with singleturn encoder and multiturn encoder losing sync when using position mode and max-velocity zero.
- Disabled CSP autocorrection
- Prevent mode-switch in case of STO triggered or an error is set.
- Brake is kept active in case of an STO error.

Compatibility

Firmware version 5.04 is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware.

Release Notes
MISxx/SMC66/SMC85 Firmware v5.02

Published 2020-08-12

What's New

- Support for the PA0260 SSI-encoder board. The new version allows you to connect our PA2060 SSI-encoder board to a MIS-motor or an SMC66/SMC85 to use for positioning

- Support for the extended SSI protocol used by IC-Haus encoder chips

- Support for auto-correction for SSI-encoders using the extended SSI protocol. When enabled, the motor will auto-correct its position upon reaching the target position in position mode. The motor uses the latest SSI-reading to do this.

- New special command 499: Disable closed-loop current control, but do not disable closed-loop positioning.

Improvements

- Improved linearization of H2 encoder (New calibration is not necessarily required when upgrading from firmware version 4.14).

- Improved procedure for calculating start-up position when using H4 encoders. The startup position is now a combination of the absolute multi-turn position (with lower resolution) and the higher resolution single-turn encoder position.

- Improved SSI clock stability.

Bugfixes

- Incorrect start-up position for H2/H4. The position was shifting when power-cycling.

- Bug in closed-loop block and H2 linearization handling, resulting in poorer performance.

- Risk of single-turn encoder error during startup. Register 178 was added to give a better picture of the reason for the ST encoder error, if it occurs.

- Wrong handling of position setpoint when using turntable-mode in combination with ethernet-ip.

- Motor was sometimes stuck in an invalid state after a reset / load default operation. A power-cycle was required.

- Temperature sensor was giving wrong readings for negative temperatures.

- Incorrect hardware revision detection under very specific circumstances.

Compatibility

Firmware version 5.02 is compatible with the latest version of Ethernet module protocols, and the latest version of the absolute multi-turn encoder firmware. If SSI encoder setup / PA0260 setup is required, it is necessary to update to the latest version of MacTalk.

Release Notes
MISxx/SMC66/SMC85 Firmware v4.14

Changes

- Position is now recovered from FRAM when using turntable mode. There was a risk of offset error after a power-cycle if the encoder had wrapped.

- Commands wasn't executed when writing a command using CAN in PDO mode.

- Command 394 / 395 (Emergency stop) wasn't doing what the manual said it was supposed to do. This has been an issue since version 4.04, at least. Emergency stop with deceleration has been given command number 398, and emergency stop with max deceleration has command number 399.

- Possibility of incorrect STO-error during boot if the motor was saved with an active mode as start-up mode.

- General overhaul of hardware and software position limits.

- has-been warning is automatically cleared when using "Position limits without memory".

- Motor was going the wrong way, when starting a homing on a position limit.

- Homing offset was set incorrectly when using negative homing direction.

- Encoder position wasn't set correctly after a homing when using H3 encoders.

- Brake was released momentarily when resetting motor or starting a firmware update.

- Default brake-timings of 40 ms on/off time are loaded if they were set to zero.