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EPOS4

Firmware Version «Readme»

Edition 2020-04

It is essential that you read / understand / follow the below information!

VERSION DETAILS

Positioning Controllers	Order Number	Firmware Version		Hardware Version	Application	
		Latest Edition	*First Edition*		Number	Version
EPOS4 Micro 24/5 CAN	**638328**	**0x0161**	*0x160*	**0x6850**	**0x0000**	**0x0000**
EPOS4 Micro 24/5 EtherCAT **EPOS4 Compact 24/5 EtherCAT 3-axes**	**654731** **684519**	**0x0161** **0x0161**	*0x0161* *0x0161*	**0x6950**	**0x0000**	**0x0000**
EPOS4 Module 24/1.5 **EPOS4 Compact 24/1.5 CAN** **EPOS4 Compact 24/1.5 EtherCAT** [1]	**536630** **546714** **628092**	**0x0161** **0x0161** **0x0161**	*0x0110* *0x0110* *0x0150*	**0x6050**	**0x0000**	**0x0000**
EPOS4 Module 50/5 **EPOS4 Compact 50/5 CAN** **EPOS4 Compact 50/5 EtherCAT** [1]	**534130** **541718** **628094**	**0x0161** **0x0161** **0x0161**	*0x0110* *0x0110* *0x0150*	**0x6150**	**0x0000**	**0x0000**
EPOS4 Module 50/8 **EPOS4 Compact 50/8 CAN** **EPOS4 Compact 50/8 EtherCAT** [1]	**504384** **520885** **605298**	**0x0161** **0x0161** **0x0161**	*0x0100* *0x0100* *0x0140*	**0x6551**	**0x0000**	**0x0000**
EPOS4 Module 50/15 **EPOS4 Compact 50/15 CAN** **EPOS4 Compact 50/15 EtherCAT** [1]	**504383** **520886** **605299**	**0x0161** **0x0161** **0x0161**	*0x0100* *0x0100* *0x0140*	**0x6552**	**0x0000**	**0x0000**
EPOS4 50/5	**546047**	**0x0161**	*0x0120*	**0x6350**	**0x0000**	**0x0000**
EPOS4 70/15	**594385**	**0x0161**	*0x0140*	**0x6450**	**0x0000**	**0x0000**

Extensions [2]	Order Number	Firmware Version		Hardware Version	Application	
		Latest Edition	*First Edition*		Number	Version
EPOS4 EtherCAT Card	**581245**	**0x0130**	*0x0100*	**0x5100**	**0x0000**	**0x0000**
EPOS4 CB Power EtherCAT	**604594**	**0x0130**	*0x0110*	**0x5100**	**0x0000**	**0x0000**
EPOS4 CB 24/1.5 EtherCAT	**620048**	**0x0130**	*0x0120*	**0x5100**	**0x0000**	**0x0000**
EPOS4 CB 50/5 EtherCAT	**620044**	**0x0130**	*0x0120*	**0x5100**	**0x0000**	**0x0000**

(1) *The «Compact EtherCAT» positioning controllers combine a «Module» and the matching EtherCAT connector board («CB EtherCAT»). They include the actual EtherCAT firmware version of the respective «CB EtherCAT» (see above table "Extensions").*

(2) *The firmware of an extension is part of the listed main firmware (see above table "Positioning Controllers") and cannot be downloaded as a stand-alone item. Download and installation take place via the respective positioning controller.*

IMPORTANT INFORMATION

The functionality of an EPOS4 device is determined by its internal operating system (the so-called firmware). The firmware itself is subject to continuous development as part of an ongoing improvement process and is therefore being updated on a regular basis.

- EPOS4 devices are shipped with the latest firmware version available.

- New versions may feature additional or enhanced functionality as well as improved safety-relevant functions, which might not be fully compatible with former versions!

- You can update your device with the latest available versions of firmware and «EPOS Studio» (maxon's graphical user interface for EPOS positioning controllers). You may access the downloads at http://epos.maxongroup.com.

Before downloading a new version, you must check for its compatibility with the hardware version you are currently using! Consult maxon if you are in doubt.

- Earlier versions are available on request.

- The currently used versions of both firmware and hardware can be read out from the controller using the «EPOS Studio».

- To install a new firmware version, use the "Firmware Download Wizard" in «EPOS Studio».

- Be aware that you alone are responsible for using the appropriate firmware version in your present device. Consult maxon if you are in doubt.

maxon or its representatives do not take responsibility nor obligation for any defect (such as, but not concluding; malfunction of the device and/or attached equipment, loss of production, etc.) caused by incompatibility of firmware versions and/ or by mismatch of a particular firmware version with a given hardware version!

VERSION HISTORY

EPOS4_0161h_xxxxh_0000h_0000h (Release 2020-04)		
Binary Files	EPOS4 Micro 24/5 CAN	EPOS4_0161h_6850h_0000h_0000h.bin
	EPOS4 Micro 24/5 EtherCAT EPOS4 Compact 24/5 EtherCAT 3-axes	EPOS4_0161h_6950h_0000h_0000h.bin
	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN EPOS4 Compact 24/1.5 EtherCAT	EPOS4_0161h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN EPOS4 Compact 50/5 EtherCAT	EPOS4_0161h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN EPOS4 Compact 50/8 EtherCAT	EPOS4_0161h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN EPOS4 Compact 50/15 EtherCAT	EPOS4_0161h_6552h_0000h_0000h.bin
	EPOS4 50/5	EPOS4_0161h_6350h_0000h_0000h.bin
	EPOS4 70/15	EPOS4_0161h_6450h_0000h_0000h.bin
Features	Introduction	EPOS4 Micro 24/5 EtherCAT and EPOS4 Compact 24/5 EtherCAT 3-axes
Changes	Bugfix	Transfer of occasionally incorrect actual position values via EtherCAT resolved

EPOS4_0160h_xxxxh_0000h_0000h (Release 2019-11)		
Binary Files	EPOS4 Micro 24/5 CAN	EPOS4_0160h_6850h_0000h_0000h.bin
	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN EPOS4 Compact 24/1.5 EtherCAT	EPOS4_0160h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN EPOS4 Compact 50/5 EtherCAT	EPOS4_0160h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN EPOS4 Compact 50/8 EtherCAT	EPOS4_0160h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN EPOS4 Compact 50/15 EtherCAT	EPOS4_0160h_6552h_0000h_0000h.bin
	EPOS4 50/5	EPOS4_0160h_6350h_0000h_0000h.bin
	EPOS4 70/15	EPOS4_0160h_6450h_0000h_0000h.bin
Features	Introduction	EPOS4 Micro 24/5 CAN
	Analog I/O	Analog set value functionality for CST and CSV added
	Communication	CANopen LSS to configure Node-ID and bit rate and for optical node identification added
	Digital I/O	Digital input functionality «Touch probe» added
	SSI encoder	Extended SSI interface for single-turn and multi-turn encoders and up to 62 data bits with configurable mapping to 32 bit position value
Changes	STO	Display of STO state added
	Bugfix	Watchdog error for cyclic NMT command "reset communication" resolved
	Bugfix	Dual loop inconsistent velocity display during tuning resolved
	Bugfix	Max motor speed limitation not applied during tuning resolved
	Bugfix	Inconsistent communication during bootup over USB and RS232 resolved
	Bugfix	Blocking velocity ramps on activating CSV resolved
	Bugfix	General minor bug fixing and improvements

EPOS4_0150h_xxxxh_0000h_0000h (Release 2018-12)		
Binary Files	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN EPOS4 Compact 24/1.5 EtherCAT	EPOS4_0150h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN EPOS4 Compact 50/5 EtherCAT	EPOS4_0150h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN EPOS4 Compact 50/8 EtherCAT	EPOS4_0150h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN EPOS4 Compact 50/15 EtherCAT	EPOS4_0150h_6552h_0000h_0000h.bin
	EPOS4 50/5	EPOS4_0150h_6350h_0000h_0000h.bin
	EPOS4 70/15	EPOS4_0150h_6450h_0000h_0000h.bin
Features	Introduction	EPOS4 Compact 24/1.5 EtherCAT EPOS4 Compact 50/5 EtherCAT
	Regulation	Dual loop control added
	Regulation tuning	Regulation tuning for dual loop control added
	EtherCAT interface	Firmware update via EtherCAT interface (FoE) added
	USB-to-CAN gateway	Firmware update via USB-to-CAN gateway added
	Communication	NMT commands for USB-to-CAN and RS232-to-CAN gateway added
	Analog outputs	General purpose functionality for analog outputs added
	Analog inputs	Adjustment objects for gain and offset added
	Incremental encoder	Encoder index signal supervision added
Changes	Incremental encoder	Measuring of encoder speed enhanced by detection of time between consecutive sensor edges.
	Hall sensors	Measuring of sensor speed enhanced by detection of time between consecutive sensor edges.
	SI units	SI unit velocity extended by units 10^{-4} [rpm], 10^{-5} [rpm] and [μrpm]
	Regulation tuning	Current control loop tuning improved
	USB interface	USB communication stability during firmware update improved
	CAN PDO	CAN PDO communication performance improved
	Bugfix	Sporadic "CAN overrun error" caused by excessive NMT command traffic solved
	Bugfix	RS232 blocking at high communication rate solved
	Bugfix	PVM statusword: Target reached signalization corrected
	Bugfix	EtherCAT status LED signalization according to ETG specification corrected
	Bugfix	General minor bug fixing and improvements

EPOS4_0140h_xxxxh_0000h_0000h (Release 2018-05)		
Binary Files	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN	EPOS4_0140h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN	EPOS4_0140h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN EPOS4 Compact 50/8 EtherCAT	EPOS4_0140h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN EPOS4 Compact 50/15 EtherCAT	EPOS4_0140h_6552h_0000h_0000h.bin
	EPOS4 50/5	EPOS4_0140h_6350h_0000h_0000h.bin
	EPOS4 70/15	EPOS4_0140h_6450h_0000h_0000h.bin
Features	Introduction	EPOS4 Compact 50/8 EtherCAT EPOS4 Compact 50/15 EtherCAT EPOS4 70/15
	Communication	Firmware update via CAN interface added
	Incremental encoder 2	Support of second incremental encoder added
	Analog incremental encoder	Support of analog incremental encoders added
	Modes of operation	Cyclic Synchronous Velocity (CSV) added
	Gear	Support of systems with attached gear added
Changes	Power supply	Powering of device via USB only suppressed
	Homing	Homing mode extended by methods featuring "current threshold"
	Incremental encoder	Measuring of sensor speed enhanced by detection of encoder pulse time
	Sensor supervision	Sensor supervision extended for the case of different main and commutation sensors
	SI units	SI unit velocity extended by units drpm, crpm and mrpm
	Regulation tuning	Data type of object "Electrical resistance" adapted
	Motor protection	Objects "I2t level motor" and "I2t level controller" changed to PDO mappable
	Device description	Full device name added to EtherCAT slave information file (ESI)
	Software position limits	Software position limits are also activated in unreferenced state
	Trajectory generator	Stability of trajectory generator improved
	Hall sensors	Spike filtering improved
	Profile Position Mode	PPM controlword: Handling of new setpoint and halt flag deactivation improved
	Bugfix	PPM: Sporadic spikes on demand value when immediately commanding target values solved
	Bugfix	PPM statusword: Spikes on set point acknowledge bit signalization during state change to quick stop or halt command corrected

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EPOS4_0140h_xxxxh_0000h_0000h (Release 2018-05)		
Changes	Bugfix	PVM statusword: Spikes on speed bit signalization during state change to quick stop corrected
	Bugfix	CSP: Target position value interpolation improved
	Bugfix	Deadlock caused by domain object access via EtherCAT with wrong data size solved
	Bugfix	Sporadic "CAN Rx queue overflow error" with inactive CAN interface solved
	Bugfix	Wrong CAN COB-IDs display during CAN bus initialization fixed
	Bugfix	General minor bug fixing and improvements

EPOS4_0130h_xxxxh_0000h_0000h (Release 2017-12)		
Binary Files	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN	EPOS4_0130h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN	EPOS4_0130h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN	EPOS4_0130h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN	EPOS4_0130h_6552h_0000h_0000h.bin
	EPOS4 50/5	EPOS4_0130h_6350h_0000h_0000h.bin
Features	Introduction	EPOS4 EtherCAT extension
	Communication	EtherCAT communication (CoE) for EPOS4 accessories with EtherCAT extension added
	Modes of operation	Cyclic Synchronous Position (CSP) added
	Custom persistent memory	Object to store custom values added
Changes	Bugfix	Position controller: anti-windup behavior improved
	Bugfix	Analog inputs: Display of negative values corrected
	Bugfix	SSI encoder: Reading special bits fixed
	Bugfix	CAN gateway: Sporadic watchdog error fixed
	Bugfix	CAN: Automatic bit rate detection fixed
	Bugfix	Statusword: Internal limit signalization corrected
	Bugfix	CST statusword: Drive follows command signalization corrected
	Bugfix	General minor bug fixing and improvements

EPOS4_0120h_xxxxh_0000h_0000h (Release 2017-06)		
Binary Files	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN	EPOS4_0120h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN	EPOS4_0120h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN	EPOS4_0120h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN	EPOS4_0120h_6552h_0000h_0000h.bin
	EPOS4 50/5	EPOS4_0120h_6350h_0000h_0000h.bin
Features	Introduction	EPOS4 50/5
	SSI encoder	EC (BLDC) motor commutation by SSI absolute encoder only (without Hall sensors) added
	Digital I/Os	Digital input functionality «Drive enable» and «Quick stop» added
	Watchdog	Watchdog handling (including error signalization) added
Changes	CAN PDO	CAN PDO communication performance improved
	System monitoring	System performance monitoring (including error signalization) improved
	Bugfix	PVM statusword: Target reached signalization at velocity limitation corrected
	Bugfix	Mechanical tuning: Error handling at wrong torque constant detection improved

EPOS4_0110h_xxxxh_0000h_0000h (Release 2016-11)		
Binary Files	EPOS4 Module 24/1.5 EPOS4 Compact 24/1.5 CAN	EPOS4_0110h_6050h_0000h_0000h.bin
	EPOS4 Module 50/5 EPOS4 Compact 50/5 CAN	EPOS4_0110h_6150h_0000h_0000h.bin
	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN	EPOS4_0110h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN	EPOS4_0110h_6552h_0000h_0000h.bin
Features	Introduction	EPOS4 Module 24/1.5 and EPOS4 Compact 24/1.5 CAN EPOS4 Module 50/5 and EPOS4 Compact 50/55 CAN
	RS232 interface	RS232 communication interface added
	USB to CAN gateway	Basic USB-to-CAN gateway functionality (SDO communication only)
	RS232 to CAN gateway	Basic RS232-to-CAN gateway functionality (SDO communication only)
	SSI encoder	Support of SSI absolute encoders added
	Holding brake	Autonomous control of a holding brake based on the device state added
	Software position limits	Software position limits functionality added

EPOS4_0110h_xxxxh_0000h_0000h (Release 2016-11)

Changes	Digital I/Os	Default values of object "Digital input configuration" (0x3142) adapted
	CAN heartbeat	Stability of heartbeat consumer improved
	Regulation Tuning	Object "Electrical system parameters" (0x3002) added
	Device state machine	Behavior at enabling while actual velocity is not zero improved
		Standstill window functionality added to detect standstill condition of the axis
	USB interface	Sensor handling at USB bus powering improved
	Bugfix	Wrong resetting of communication parameters to default value after firmware update fixed
	Bugfix	Sporadic Hall angle detection errors during alignment solved
	Bugfix	CAN PDO configuration handling corrected
	Bugfix	Data recorder: sporadic wrong recording data due to time stamp overflow solved
	Bugfix	Current offset calibration improved to prevent sporadic wrong current offset values
	Bugfix	Sporadic communication blockage during boot up eliminated

EPOS4_0100h_xxxxh_0000h_0000h (Release 2016-06)

Binary Files	EPOS4 Module 50/8 EPOS4 Compact 50/8 CAN	EPOS4_0100h_6551h_0000h_0000h.bin
	EPOS4 Module 50/15 EPOS4 Compact 50/15 CAN	EPOS4_0100h_6552h_0000h_0000h.bin
Features	Full range	Initial release