EPOS2 P programmable positioning controller

**Summary**

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**Standalone**

EPOS2 P is a freely programmable positioning controller with an integrated power stage, based on the EPOS2 slave version. It is suitable for brushless and brush DC motors with incremental encoder and up to 120 watt output.

**Standalone drive systems**

With self-compiled programs, the standalone version of EPOS2 can autonomously control single and multiple axis systems dispensing with the need for a superior intelligent control unit.

**Typical applications:**
- Work equipment manufacturing
- Tool building
- System automation tasks

**Part Number**

EPOS2 P 24/5 378308

**Details page 334**

Standalone operation, programmable from PC via RS232 or USB 2.0 with standard IEC 61131-3. Program languages (ST, IL, FBD, LD, SFC). CANopen master function for controlling other axes. Standard motion control library. Supervisory Control and Data Acquisition for monitoring and controlling a process via RS232; USB 2.0 or CANopen.

Via the CAN Bus all axes can be coordinated simultaneously. The combination with maxon motors produces drive systems for highly dynamic movements.
Technology
The programming of applications complies with IEC 61131-3 standard. A non-volatile flash memory is used for saving. The three-stage code optimization produces IEC 61131-3 programs adjusted for the application’s needs; optimized by memory, performance or a combination of both.

EPOS Studio – programming according to IEC 61131-3
Editors (ST, IL, FBD, LD, SFC) of the powerful “EPOS Studio” tool are available for programming according to IEC 61131-3. The integrated project browser shows all network resources. Complex programs with a large number of decentralized controls can be optimally managed with it. Drive systems are configured and networked quickly using intelligent step-by-step wizards.

Motion control library
The complexity and development costs of drive systems are substantially reduced. The Motion Firmware Library was implemented according to the widely-used Motion Control Standard. Standardized function blocks make implementation easy.

maxon utility library
Thanks to the additional maxon user library, the programming of recurring motion control tasks is simplified. By means of the “Best Practice” programs and the numerous applications examples, purposeful IEC 61131-3 application programs can be compiled.

Technical data page 334

Performance features
- 32 bit host processor, 60 MHz
- 1 MB memory, with 768 KB free user program memory
- typically 2.5 ms / 5000 lines IL
- 4 KB non-volatile memory
- Digital motion control signal processor

Software features
- Windows-based development environment
- IEC 61131-3 programming languages (ST, IL, FBD, LD, SFC)
- IEC 61131-3 standard libraries
- Motion control function blocks
- maxon utility function block library
- CANopen function block library
- User libraries
- Network variables and data exchange
- Online debugger with break points and watch variables
- Axis configuration and parameterization
- Online help

Motion firmware library
- Drive control
- Referencing (Homing)
- Speed control
- Positioning absolute and relative
- Error Management
- Parameter Handling

Motion utility library
- Inputs and Outputs
- Error Handling
- Object Dictionary Access
- Homing Parameter
- Data Handling
EPOS2 P programmable positioning controller  Data

EPOS2 P 24/5
Matched with DC brush motors with encoder or brushless EC motors with Hall sensors and encoder, from 5 to 120 watts.

Controller versions

Master-Version (programmable)

Operating voltage $V_{CC}$ 11 - 24 VDC
Logic supply voltage $V_c$ (optional) 11 - 24 VDC
Max. output voltage 0.9 x $V_{CC}$
Max. output current $I_{max}$ (<1 s) 10 A
Continuous output current $I_{cont}$ 5 A
Switching frequency of power stage 50 kHz
Sample rate of PI - current controller 10 kHz
Sample rate of PI - speed controller 1 kHz
Sample rate of PID - positioning control 1 kHz
Max. speed (1 pole pair) 25 000 rpm (sinusoidal); 100 000 rpm (block)
Built-in motor choke per phase 15 $\mu$H / 5 A

Input

Hall sensor signals H1, H2, H3
Encoder signals A, A\, B, B\, I, I\ (max. 5 MHz)
Digital inputs 6 (TTL and PLC level)
Analog inputs 2 12-bit resolution, 0…+5 V
CAN-ID (CAN node identification) Configurable with DIP switch 1…7

Output

Digital outputs 4
Encoder voltage output +5 VDC, max. 100 mA
Hall sensor voltage output +5 VDC, max. 30 mA
Auxiliary voltage output $V_{CC}$, max. 1300 mA

Interface

RS232 RxD; TxD (max. 115 200 bit/s)
CAN high; low (max. 1 Mbit/s)
USB 2.0 Data+; Data- (max. 12 Mbit/s)

Indicator

Operating/Error/Program green LED, red LED, blue LED

Ambient temperature and humidity range

Operation -10...+45°C
Storage -40...+85°C
No condensation 20...80%

Mechanical Data

Weight Approx. 180 g
Dimensions (L x W x H) 105 x 83 x 24 mm
Mounting threads Flange for M3-screws

Part Numbers

378308  EPOS2 P 24/5

Accessories

309687  DSR 50/5 Shunt regulator
Order accessories separately, see page 339

Operating modes

CANopen Profile Position, Profile Velocity- and Homing Mode
Position, Velocity and Current Mode
Path generating with trapezoidal or sinusoidal profiles
Feed forward for velocity and acceleration
Interpolated Position Mode (PVT)
Sinusoidal or block commutation for EC motors

Communication

Programming interface (Windows) via USB 2.0 or RS232
Communication via CANopen, RS232 or USB 2.0 maxon protocol

Inputs / Outputs

Free configurable digital inputs e.g. for limit switches and reference switches
Free configurable digital outputs e.g. for holding brakes
Free analog inputs

Available software

EPOS Studio programming according to IEC 61131-3
IEC 61131-3 standard libraries
motion control library
maxon utility function block library
CANopen function block library
maxon utility library
Application Examples
Best Practice Examples
Firmware

Available documentation

Getting Started
Cable Starting Set
Hardware Reference
Firmware Specification
Programming Reference
Application Notes

Cable

A comprehensive range of cables is available as an option. Details can be found on page 339.