

EPOS2 P Programmable Positioning Controller Summary

motor control

Standalone operation



EPOS2 P 24/5 (programmable)

- IEC 61131-3 programmable
- CANopen Master function
- Multiple axis systems via CAN Bus CANopen
- Point to point control unit (1 axis)
- Interpolated Position Mode (PVT)
- DC and EC motors up to 120 W
- 6 digital inputs (TTL and PLC level)
- 4 digital outputs
- 2 analog inputs (12-bit ADC)
- Compact design

Details page 520

Standalone operation, programmable from PC via RS232 or USB 2.0/3.0 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 2.0/3.0 or CANopen.

Typical applications:

- Work equipment manufacturing
- Tool building
- System automation tasks

Part Number
EPOS2 P 24/5 **378308**

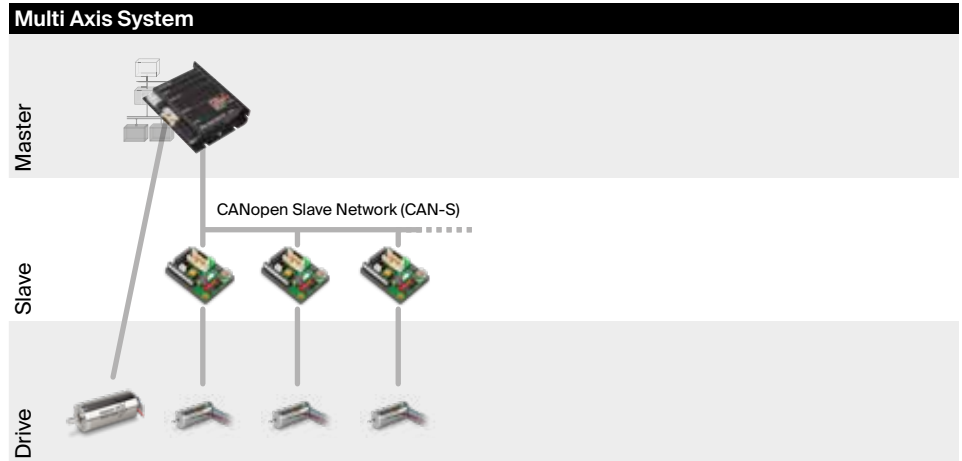
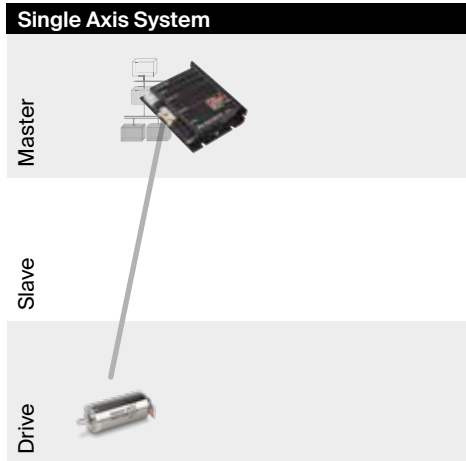
EPOS2 P is a freely programmable positioning controller with an integrated power stage, based on the EPOS2 slave version. It is suitable for DC and EC motors with incremental encoder and a continuous output power up to 120 W.

Standalone drive systems

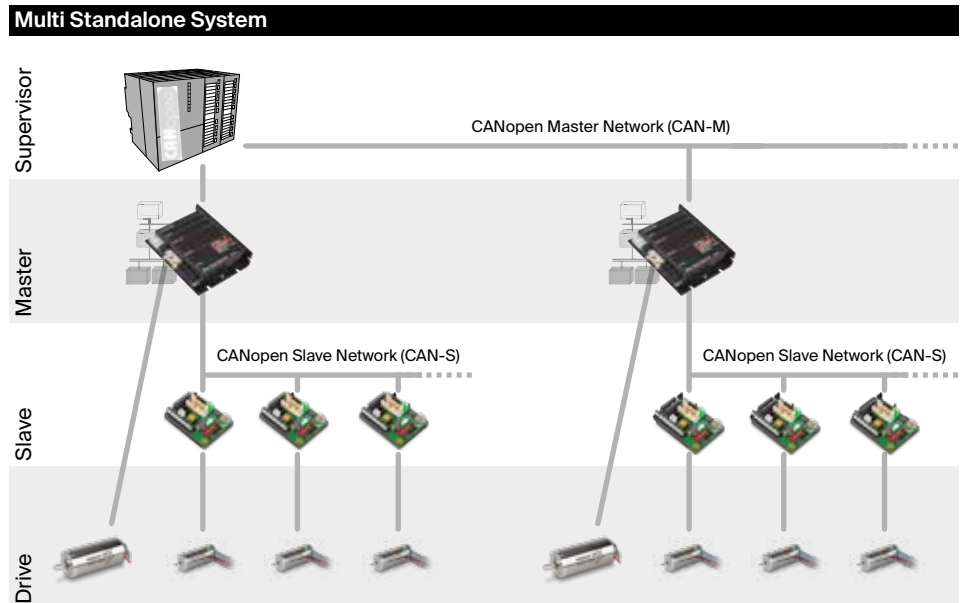
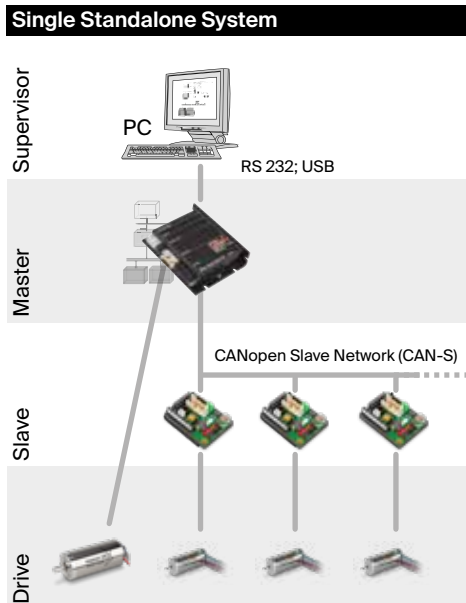
With self-compiled programs, the standalone version of EPOS2 can autonomously control single and multiple axis systems dispensing with the need for a superior intelligent control unit.

Via the CAN Bus all axes can be coordinated simultaneously. The combination with maxon motors produces drive systems for highly dynamic movements.

Standalone



Supervisory Control



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 520

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

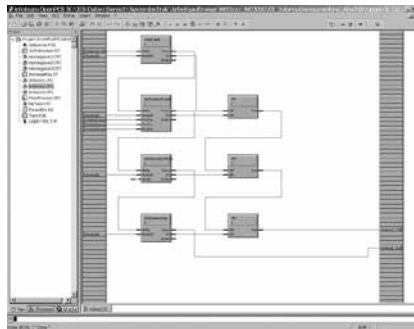
- Windows-based development environment
- IEC 61131-3 programming languages (ST, IL, FBD, LD, SFC)
- IEC 61131-3 standard libraries
- Motion control function blocks
- maxon utility function block library
- CANopen function block library
- User libraries
- Network variables and data exchange
- Online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

Motion firmware library

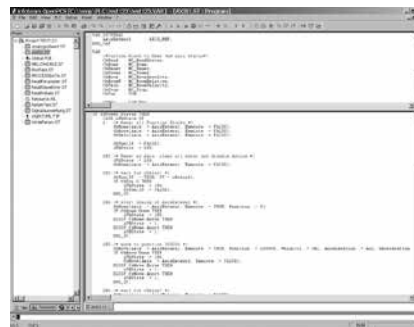
- Drive control
- Referencing (Homing)
- Speed control
- Positioning absolute and relative
- Error Management
- Parameter Handling

Motion utility library

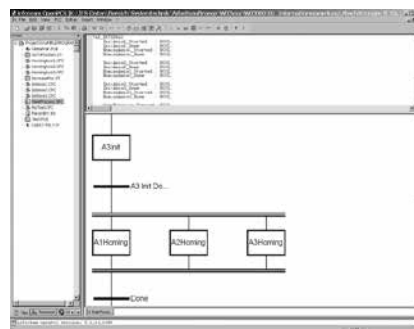
- Inputs and Outputs
- Error Handling
- Object Dictionary Access
- Homing Parameter
- Data Handling



FBD Editor



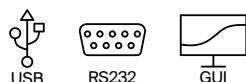
ST Editor



SFC Editor

EPOS2 P Programmable Positioning Controller Data

CANopen



EPOS2 P 24/5

Matched with DC brush motors with encoder or brushless EC motors with Hall sensors and encoder to 120/240 watts.

Controller versions	
	CANopen Master (programmable)
Electrical data	
Operating voltage V_{CC}	11 - 24 VDC
Logic supply voltage V_C (optional)	11 - 24 VDC
Max. output voltage	$0.9 \times V_{CC}$
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 μ 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 2.0/3.0	Data+; Data- (full speed)
Indicator	
Operating/Error/Program	green LED, red LED, blue LED
Environmental conditions	
Temperature - Operation	-10...+55°C
Temperature - Extended range	+55...+83°C; Derating: -0.179 A/°C
Temperature - Storage	-40...+85°C
Humidity (condensation not permitted)	5...90%
Mechanical data	
Weight	Approx. 180 g
Dimensions (L x W x H)	105 x 83 x 24 mm
Mounting	Flange for M3-screws
Part numbers	
	378308 EPOS2 P 24/5
Accessories	
	309687 DSR 50/5 Shunt regulator
	Order accessories separately, see page 529

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 2.0/3.0 or RS232
	Communication via CANopen, RS232 or USB 2.0/3.0 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 529.