

EPOS4 Feature Chart

maxon's EPOS4 products are small-sized, full digital, smart positioning control units. Their high power density allows flexible use for brushed DC and brushless EC (BLDC) motors up to approximately 1'200 Watts with various feedback options, such as Hall sensors, incremental encoders as well as absolute sensors in a multitude of drive applications.

EPOS4 controllers are specially designed to be commanded and controlled as a slave node in a CANopen or EtherCAT network. In addition, the units can be operated via any USB or

RS232 communication port of a Windows or Linux workstation. Moreover, the integrated extension interface allows pooling with optionally available communication interfaces or other additional functionalities.

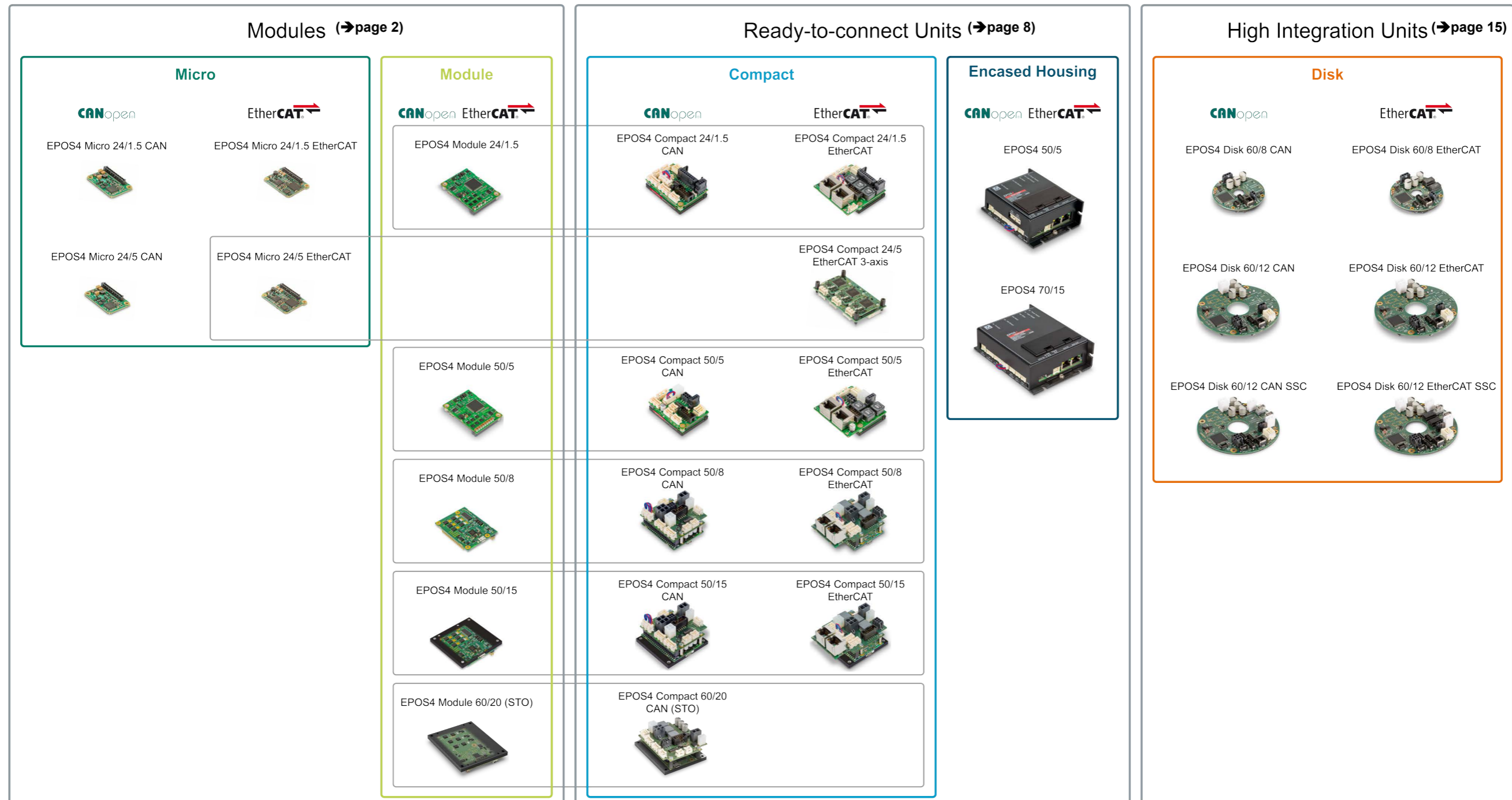
Latest technology, such as field-oriented control (FOC), acceleration/velocity feed forward and dual loop control in combination with highest control cycle rates allow sophisticated, ease-of-use motion control.












Legend:

✓ = included / nnnnnn = order number / [a] requires an optionally available extension card (see "Accessories" on page 7 and page 14) / [b] optional for separate logic supply / [c] mandatory for supply of power stage / [d] with suitable motherboard / [e] per axis

Product Overview




Modules	EPOS4 Micro 24/1.5 CAN (951711)	EPOS4 Micro 24/1.5 EtherCAT (962131)	EPOS4 Micro 24/5 CAN (638328)	EPOS4 Micro 24/5 EtherCAT (654731)	EPOS4 Module 24/1.5 (536630)	EPOS4 Module 50/5 (534130)	EPOS4 Module 50/8 (504384)	EPOS4 Module 50/15 (504383)	EPOS4 Module 60/20 (833716) (STO 894249)
									
Communication Interfaces									
CANopen Slave	max. 1 Mbit/s	—	max. 1 Mbit/s	—	max. 1 Mbit/s	max. 1 Mbit/s	max. 1 Mbit/s	max. 1 Mbit/s	max. 1 Mbit/s
CANopen Application Layer and Communication Profile	CiA 301	—	CiA 301	—	CiA 301	CiA 301	CiA 301	CiA 301	CiA 301
CANopen Layer Setting Services and Protocol (LSS)	CiA 305	—	CiA 305	—	CiA 305	CiA 305	CiA 305	CiA 305	CiA 305
CANopen Device Profile Drives and Motion Control	CiA 402	—	CiA 402	—	CiA 402	CiA 402	CiA 402	CiA 402	CiA 402
USB 2.0 / USB 3.0	Full speed								
Gateway function USB-to-CAN	✓	—	✓	—	✓	✓	✓	✓	✓
RS232	max. 115'200 bit/s	—	max. 115'200 bit/s	—	max. 115'200 bit/s	max. 115'200 bit/s	max. 115'200 bit/s	max. 115'200 bit/s	max. 115'200 bit/s
Gateway function RS232-to-CAN	✓	—	✓	—	✓	✓	✓	✓	✓
EtherCAT Slave	—	✓	—	✓	[a]	[a]	[a]	[a]	[a]
IEC 61158 Digital data communication for measurement and control Fieldbus for use in industrial control systems	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)
IEC 61800-7 Generic interface and use of profiles for power drive systems	—	Profile type 1 (CiA 402)	—	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)
CAN application layer over EtherCAT (CoE)	—	✓	—	✓	✓	✓	✓	✓	✓
File transfer over EtherCAT (FoE)	—	✓	—	✓	✓	✓	✓	✓	✓
Distributed clocks support	—	✓	—	✓	✓	✓	✓	✓	✓
Cyclic modes support cycle times down to...	—	1 ms	—	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms
Process data	—	PDO mapping (Variable)	—	PDO mapping (Variable)	PDO mapping (Variable)	PDO mapping (Variable)	PDO mapping (Variable)	PDO mapping (Variable)	PDO mapping (Variable)
Motors									
Brushed DC motors up to (continuous / max.)	36 W / 108 W	36 W / 108 W	120 W / 360 W	120 W / 360 W	36 W / 108 W	250 W / 750 W	400 W / 1'500 W	750 W / 1'500 W	1'200 W / 2'400 W
Brushless EC motors (BLDC) up to (continuous / max.)	36 W / 108 W	36 W / 108 W	120 W / 360 W	120 W / 360 W	36 W / 108 W	250 W / 750 W	400 W / 1'500 W	750 W / 1'500 W	1'200 W / 2'400 W
Sensors (Feedback)									
Digital Hall sensors (EC motors)	✓								
Digital incremental encoder (2-/3-channel, single-ended or differential)	✓								
Analog incremental encoder (3-channel, SinCos, differential)	—	—	—	—	✓	✓	✓	✓	✓
SSI absolute encoder (configurable)	✓								
Commutation									
Digital Hall sensors	✓								
Digital Hall sensors + digital incremental encoder	✓								
Digital Hall sensors + analog incremental encoder	—	—	—	—	✓	✓	✓	✓	✓
Digital Hall sensors + absolute encoder	✓								
Absolute encoder	✓								

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Electrical Data									
Nominal power supply voltage (+V _{CC})	10...24 VDC	10...24 VDC	10...24 VDC	10...24 VDC	10...24 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...60 VDC
Nominal logic supply voltage (+V _C)	10...24 VDC	10...24 VDC	10...24 VDC	10...24 VDC	10...24 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...60 VDC
Absolute supply voltage limits (+V _{min} / +V _{max})	8 VDC / 28 VDC	8 VDC / 28 VDC	8 VDC / 28 VDC	8 VDC / 28 VDC	8 VDC / 28 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	9 VDC / 72 VDC
Output voltage (max.)	0.9 × +V _{CC}								
Output current (I _{cont} / I _{max})	1.5 A / 4.5 A (<10 s)	1.5 A / 4.5 A (<10 s)	5 A / 15 A (<10 s)	5 A / 15 A (<10 s)	1.5 A / 4.5 A (<30 s)	5 A / 15 A (<3 s)	8 A / 30 A (<5 s)	15 A / 30 A (<60 s)	20 A / 40 A (<15 s)
Pulse width modulation frequency	50 kHz	50 kHz	50 kHz	50 kHz	100 kHz	50 kHz	50 kHz	50 kHz	50 kHz
Sampling rate PI current controller	25 kHz (40 μs)								
Sampling rate PI speed controller	2.5 kHz (400 μs)								
Sampling rate PID positioning controller	2.5 kHz (400 μs)								
Sampling rate analog input	2.5 kHz (400 μs)								
Max. efficiency	95.8%	93.2%	98%	97%	89%	97%	98%	98%	98%
Max. speed DC motor	limited by max. permissible speed (motor)								
Max. speed EC motor, block commutation	100'000 rpm (1 pole pair)								
Max. speed EC motor, sinusoidal commutation	50'000 rpm (1 pole pair)								
Built-in motor choke	—								
Inputs / Outputs									
Digital Hall sensor signals	H1, H2, H3 (+2...+24 VDC, internal pull-up)								
Digital incremental encoder signals	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)								
Sensor signals	✓								
Digital incremental	—	—	—	—	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)
Analog incremental	—	—	—	—	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)
Absolute serial SSI	Clock, Data (2.0...3.3 VDC, 0.4...2 MHz)	Clock, Data (2.0...3.3 VDC, 0.4...2 MHz)	Clock, Data (2.0...3.3 VDC, 0.4...2 MHz)	Clock, Data (2.0...3.3 VDC, 0.4...2 MHz)	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)
Digital inputs	4 (+2.1...+36 VDC)								
Digital outputs	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)								2 (open drain, max. 60 VDC / 1'000 mA, internal pull-up)
High-speed digital inputs	1 (2.0...3.3 V, 6.25 MHz)	1 (2.0...3.3 V, 6.25 MHz)	1 (2.0...3.3 V, 6.25 MHz)	1 (2.0...3.3 V, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)
High-speed digital outputs	1 (3.3 VDC/2 mA; 6.25 MHz)	1 (3.3 VDC/2 mA; 6.25 MHz)	1 (3.3 VDC/2 mA; 6.25 MHz)	1 (3.3 VDC/2 mA; 6.25 MHz)	1 (EIA RS422, 6.25 MHz)	1 (EIA RS422, 6.25 MHz)	1 (EIA RS422, 6.25 MHz)	1 (EIA RS422, 6.25 MHz)	1 (EIA RS422, 6.25 MHz)
Analog inputs (resolution 12-bit, -10...+10 V, 10 kHz, differential)	2								
Analog outputs (resolution 12-bit, -4...+4 V, 25 kHz)	1	1	1	1	2	2	2	2	2
STO inputs (isolated)	—	—	—	—	2 (+4.5...+30 VDC)	2 (+4.5...+30 VDC)	2 (+4.5...+30 VDC)	2 (+4.5...+30 VDC)	[a]
STO outputs (isolated with self-resetting short-circuit protection)	—	—	—	—	1 (max. 30 VDC / 15 mA)	1 (max. 30 VDC / 15 mA)	1 (max. 30 VDC / 15 mA)	1 (max. 30 VDC / 15 mA)	—
Sensor supply voltage	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)
Auxiliary output voltage	—	—	—	—	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)
Status indicators (LEDs or bi-color LEDs)	Device status								

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Connections										
A1...A80	Power supply Logic supply Motor Hall sensor Encoder Sensor Digital I/O Analog I/O RS232 CAN USB	Terminal/socket header (0.5 mm) 2×40 poles	—	Terminal/socket header (0.5 mm) 2×40 poles	—	—	—	—	—	—
	Power supply Logic supply Motor Hall sensor Encoder Sensor Digital I/O Analog I/O TX/RX Data USB	—	Terminal/socket header (0.5 mm) 2×40 poles	—	Terminal/socket header (0.5 mm) 2×40 poles	—	—	—	—	—
A1...A52	Power supply Logic supply Motor Hall sensor Encoder	—	—	—	—	Box header (1.27 mm) 2×23 poles	Box header (1.27 mm) 2×23 poles	Pin header (2.54 mm) 2×16 poles	Pin header (2.54 mm) 2×16 poles	Pin header (2.54 mm) 2×26 poles
B1...B46	Sensor Digital I/O Analog I/O STO (not valid for EPOS4 Module 60/20) RS232 CAN	—	—	—	—	Box header (1.27 mm) 2×23 poles	Box header (1.27 mm) 2×23 poles	Pin header (2.54 mm) 2×23 poles	Pin header (2.54 mm) 2×23 poles	Pin header (2.54 mm) 2×20 poles
X13	USB	—	—	—	—	USB Type micro B, female	USB Type micro B, female	USB Type micro B, female	USB Type micro B, female	USB Type micro B, female
Mechanical Data										
Weight (approximate)	6 g	7 g	6 g	7 g	17 g	17 g	23 g	70 g	96 g	
Dimensions (L × W × H)	32.0 × 22.0 × 7.0 mm	36.5 × 27.0 × 7.0 mm	32.0 × 22.0 × 7.0 mm	36.5 × 27.0 × 7.0 mm	53.8 × 38.8 × 11.1 mm	53.8 × 38.8 × 11.1 mm	59.5 × 46.0 × 14.1 mm	59.5 × 62.0 × 16.4 mm	80.0 × 64.0 × 17.9 mm	
Mounting	Pluggable (female header 0.5 mm) or M2 screws	Pluggable (female header 0.5 mm) or M2 screws	Pluggable (female header 0.5 mm) or M2 screws	Pluggable (female header 0.5 mm) or M2 screws	Pluggable (female headers 1.27 mm) or M2.5 screws	Pluggable (female headers 1.27 mm) or M2.5 screws	Pluggable (female headers 2.54 mm) or M2.5 screws	Pluggable (female headers 2.54 mm) or M3 screws	Pluggable (female headers 2.54 mm) or M3 screws	

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Environmental Conditions									
Temperature – Operation	-30...+62 °C	-30...+54 °C	-30...+45 °C	-30...+40 °C	-30...+60 °C	-30...+45 °C	-30...+45 °C	-30...+25 °C	-30...+30 °C
Temperature – Extended range and derating	+62...68.8 °C / -0.210 A/°C	+54...60 °C / -0.250 A/°C	+45...68.8 °C / -0.210 A/°C	+40...60 °C / -0.250 A/°C	+60...+73 °C / -0.115 A/°C	+45...+75 °C / -0.167 A/°C	+45...+77 °C / -0.250 A/°C	+25...+77 °C / -0.288 A/°C	+30...+72 °C / -0.488 A/°C
Temperature – Storage	-40...+85 °C								
Altitude – Operation	0...6'000 m MSL								0...500 MSL
Altitude – Extended range	6'000...10'000 m MSL (for derating see «Hardware Reference»)								500...10'000 m MSL (for derating see «Hardware Reference») restricted for Safety Card STO, see Safety Card STO User Manual
Humidity (condensation not permitted)	5...90%								
Directives & Standards									
Generic	IEC/EN 61000-6-2; IEC/EN 61000-6-3								
Applied	IEC/EN 55032 (CISPR32); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55032 (CISPR32); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55032 (CISPR32); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55032 (CISPR32); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6; IEC/EN 61800-5-1
Environment	IEC/EN 60068-2-6; MIL-STD-810F								
Safety (UL File Number; unassembled PCB)	E207844	E207844	E207844	E207844	E207844	E207844	E76251; E133472; E207844; E337862	E76251; E133472; E207844; E337862	E207844
Reliability (MIL-HDBK-217F; MTBF)	945'031 hours	638'102 hours	945'031 hours	638'102 hours	611'610 hours	314'822 hours	245'451 hours	240'400 hours, with heat sink <3.1 K/W	151'757 hours
Functionality									
Operating Modes									
CST	Cyclic Synchronous Torque Mode	✓							
CSV	Cyclic Synchronous Velocity Mode	✓							
CSP	Cyclic Synchronous Position Mode	✓							
PVM	Profile Velocity Mode	✓							
PPM	Profile Position Mode	✓							
HMM	Homing Mode	✓							
Analog Set Value Functionality	CST / CSV								
Features									
Feed forward (acceleration/velocity for inertia and friction compensation)	✓								
Field-oriented Control (FOC)	✓								
Velocity observer	✓								
Dual loop control	✓								
Custom persistent memory	✓								
Advanced automatic control settings (Auto Tuning)	✓								
Safe Torque Off (based on IEC/EN 61800-5-2)	—	—	—	—	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	[a] (certified)

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Digital I/O Functionality									
Inputs (configurable)					✓				
Touch Probe					✓				
Reference switches					✓				
Limit switches					✓				
Quickstop					✓				
Drive Enable					✓				
General purpose					✓				
Outputs (configurable)					✓				
Holding Brake					✓				✓ (configurable voltage)
Ready/Fault					✓				
General purpose					✓				
Analog I/O Functionality									
Inputs (configurable)					✓				
Analog set value					✓				
General purpose					✓				
Outputs (configurable)					✓				
General purpose					✓				
Built-in Protection									
Current limiter (adjustable)					✓				
Overcurrent					✓				
Thermal motor protection					✓				
Thermal controller protection					✓				
Overvoltage					✓				
Undervoltage					✓				
Voltage transients					✓				
Short-circuit of motor winding					✓				
Loss of feedback signal					✓				
Following error					✓				
Status reporting					✓				
Firmware error handling					✓				

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Software									
Installation Program	EPOS Setup								
Graphical User Interface	EPOS Studio The EPOS video library features video tutorials that provide easy to follow instructions on how to get started with «EPOS Studio» and how to setup communication interfaces, motors and sensors, and so on. Explore on Vimeo: → https://vimeo.com/album/4646388 								
Startup	✓								
Regulation Tuning	✓								
Firmware Update	✓								
Motion Commander	✓								
I/O Monitor	✓								
Parameters	✓								
Data Recording	✓								
Command Analyzer	✓								
CANopen Wizard	✓								
Online Help	✓								
Language	English								
Operating System	Windows 11, 10								
Windows DLL for PC	32-bit / 64-bit								
CAN interfaces	IXXAT National Instruments Kvaser Vector								
Programming examples	Microsoft Visual Basic, Visual Basic.NET, Visual C#, Visual C++ Borland C++, Delphi National Instruments LabView, LabWindows/CVI								
Linux Shared Object Library	X86 32-bit/64-bit, ARMv6/v7/v8 32-bit, ARMv8 64-bit								
CAN interfaces	IXXAT Kvaser								
Programming examples	C++								
Accessories (not included in delivery)									
536997 EPOS4 CB 24/1.5 CAN (connector board)	—	—	—	—	✓	—	—	—	—
620048 EPOS4 CB 24/1.5 EtherCAT (connector board)	—	—	—	—	✓	—	—	—	—
534133 EPOS4 CB 50/5 CAN (connector board)	—	—	—	—	—	✓	—	—	—
620044 EPOS4 CB 50/5 EtherCAT (connector board)	—	—	—	—	—	✓	—	—	—
520884 EPOS4 CB Power CAN (connector board)	—	—	—	—	—	—	✓	✓	—
604594 EPOS4 CB Power EtherCAT (connector board)	—	—	—	—	—	—	✓	✓	—
833713 EPOS4 CB 60/20 CAN (connector board)	—	—	—	—	—	—	—	—	✓
638677 EPOS4 EB Micro (evaluation board)	✓	✓	✓	✓	—	—	—	—	—
659508 EPOS4 MB Micro EtherCAT 3-axes (mother-board)	—	✓	—	✓	—	—	—	—	—
581245 EPOS4 EtherCAT Card	—	—	—	—	✓ [d]	✓ [d]	✓ [d]	✓ [d]	✓ [d]
403968 USB Type A - micro B Cable	—	—	—	—	✓	✓	✓	✓	✓
833720 Safety Card STO	—	—	—	—	—	—	—	—	✓


Ready-to-connect Units	EPOS4 Compact 24/5	EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15
	EtherCAT 3-axes (684519)	CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)
Communication Interfaces												
CANopen Slave	—	max. 1 Mbit/s	—	max. 1 Mbit/s	—	max. 1 Mbit/s	—	max. 1 Mbit/s	—	max. 1 Mbit/s	max. 1 Mbit/s	max. 1 Mbit/s
CANopen Application Layer and Communication Profile	—	CiA 301	—	CiA 301	—	CiA 301	—	CiA 301	—	CiA 301	CiA 301	CiA 301
CANopen Layer Setting Services and Protocol (LSS)	—	CiA 305	—	CiA 305	—	CiA 305	—	CiA 305	—	CiA 305	CiA 305	CiA 305
CANopen Device Profile Drives and Motion Control	—	CiA 402	—	CiA 402	—	CiA 402	—	CiA 402	—	CiA 402	CiA 402	CiA 402
USB 2.0 / USB 3.0	Full speed											
Gateway function USB-to-CAN	—	✓	—	✓	—	✓	—	✓	—	✓	✓	✓
RS232	—	max. 115'200 bit/s	—	max. 115'200 bit/s	—	max. 115'200 bit/s	—	max. 115'200 bit/s	—	max. 115'200 bit/s	max. 115'200 bit/s	max. 115'200 bit/s
Gateway function RS232-to-CAN	—	✓	—	✓	—	✓	—	✓	—	✓	✓	✓
EtherCAT Slave	✓	—	✓	—	✓	—	✓	—	✓	—	✓ [a]	✓ [a]
IEC 61158 Digital data communication for measurement and control Fieldbus for use in industrial control systems	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)
IEC 61800-7 Generic interface and use of profiles for power drive systems	Profile type 1 (CiA 402)	—	Profile type 1 (CiA 402)	—	Profile type 1 (CiA 402)	—	Profile type 1 (CiA 402)	—	Profile type 1 (CiA 402)	—	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)
CAN application layer over EtherCAT (CoE)	✓	—	✓	—	✓	—	✓	—	✓	—	✓	✓
File transfer over EtherCAT (FoE)	✓	—	✓	—	✓	—	✓	—	✓	—	✓	✓
Distributed clocks support	✓	—	✓	—	✓	—	✓	—	✓	—	✓	✓
Cyclic modes support cycle times down to...	1 ms	—	1 ms	—	1 ms	—	1 ms	—	1 ms	—	1 ms	1 ms
Process data	PDO mapping (Variable)	—	PDO mapping (Variable)	—	PDO mapping (Variable)	—	PDO mapping (Variable)	—	PDO mapping (Variable)	—	PDO mapping (Variable)	PDO mapping (Variable)
Motors												
Brushed DC motors up to (continuous / max.)	120 W / 360 W [e]	36 W / 108 W	36 W / 108 W	250 W / 750 W	250 W / 750 W	400 W / 1'500 W	400 W / 1'500 W	750 W / 1'500 W	750 W / 1'500 W	1'200 W / 2'400 W	250 W / 750 W	1'050 W / 2'100 W
Brushless EC motors (BLDC) up to (continuous / max.)	120 W / 360 W [e]	36 W / 108 W	36 W / 108 W	250 W / 750 W	250 W / 750 W	400 W / 1'500 W	400 W / 1'500 W	750 W / 1'500 W	750 W / 1'500 W	1'200 W / 2'400 W	250 W / 750 W	1'050 W / 2'100 W
Sensors (Feedback)												
Digital Hall sensors (EC motors)	✓											
Digital incremental encoder (2-/3-channel, single-ended or differential)	✓											
Analog incremental encoder (3-channel, SinCos, differential)	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SSI absolute encoder (configurable)	✓											

Ready-to-connect Units	EPOS4 Compact 24/5	EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15
	EtherCAT 3-axes (684519)	CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)
Commutation												
Digital Hall sensors	✓											
Digital Hall sensors + digital incremental encoder	✓											
Digital Hall sensors + analog incremental encoder	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Digital Hall sensors + absolute encoder	✓											
Absolute encoder	✓											
Electrical Data												
Nominal power supply voltage (+V _{CC})	10...24 VDC	10...24 VDC	10...24 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...60 VDC	10...50 VDC	10...70 VDC
Nominal logic supply voltage (+V _C)	10...24 VDC	10...24 VDC	10...24 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...50 VDC	10...60 VDC	10...50 VDC	10...70 VDC
Absolute supply voltage limits (+V _{min} / +V _{max})	8 VDC / 28 VDC	8 VDC / 28 VDC	8 VDC / 28 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	8 VDC / 56 VDC	9 VDC / 72 VDC	8 VDC / 56 VDC	8 VDC / 75 VDC
Output voltage (max.)	0.9 × +V _{CC}											
Output current (I _{cont} / I _{max})	5 A / 15 A (<10 s) [e]	1.5 A / 4.5 A (<30 s)	1.5 A / 4.5 A (<30 s)	5 A / 15 A (<3 s)	5 A / 15 A (<3 s)	8 A / 30 A (<5 s)	8 A / 30 A (<5 s)	15 A / 30 A (<60 s)	15 A / 30 A (<60 s)	20 A / 40 A (<15 s)	5 A / 15 A (<15s)	15 A / 30 A (<60 s)
Pulse width modulation frequency	50 kHz	100 kHz	100 kHz	50 kHz	50 kHz	50 kHz	50 kHz	50 kHz	50 kHz	50 kHz	50 kHz	50 kHz
Sampling rate PI current controller	25 kHz (40 μs)											
Sampling rate PI speed controller	2.5 kHz (400 μs)											
Sampling rate PID positioning controller	2.5 kHz (400 μs)											
Sampling rate analog input	2.5 kHz (400 μs)											
Max. efficiency	97%	89%	88%	97%	97%	98%	98%	98%	98%	98%	98%	98%
Max. speed DC motor	limited by max. permissible speed (motor)											
Max. speed EC motor, block commutation	100'000 rpm (1 pole pair)											
Max. speed EC motor, sinusoidal commutation	50'000 rpm (1 pole pair)											
Built-in motor choke	9×1 μH; 5 A	3×94 μH; 1.5 A	3×100 μH; 1.5 A	3×9.4 μH; 5 A	3×10 μH; 5 A	3×2.2 μH; 15 A	3×2.2 μH; 15 A	3×2.2 μH; 15 A	3×2.2 μH; 15 A	3×1 μH; 20 A	3×15 μH; 5 A	3×15 μH; 15 A
Inputs / Outputs												
Digital Hall sensor signals	H1, H2, H3 (+2...+24 VDC, internal pull-up)											
Digital incremental encoder signals	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)											
Sensor signals	✓											
Digital incremental	—	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)
Analog incremental	—	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)	A, A\, B, B\, I, I\ (±1.8 V differential, 10 kHz)
Absolute serial SSI	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)											
Digital inputs	4; level selectable by DIP switch: (Logic level: +2.0...+30 VDC) or (PLC level: +9.0...+30 VDC)											
Digital outputs	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 60 VDC / 1'000 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)
High-speed digital inputs	1 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)	4 (EIA RS422, 6.25 MHz)
High-speed digital outputs	1 (EIA RS422, 6.25 MHz)											
Analog inputs	2 (resolution 12-bit, -10...+10 V, 10 kHz, differential)											
Analog outputs	1 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)	2 (resolution 12-bit, -4...+4 V, 25 kHz)





Ready-to-connect Units		EPOS4 Compact 24/5	EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15
		EtherCAT 3-axes (684519)	CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)
STO inputs		—	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)	[a]	2 (+4.5...+30 VDC, optically isolated)	2 (+4.5...+30 VDC, optically isolated)
STO outputs		—	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	—	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)
Sensor supply voltage		+5 VDC (I _L ≤120 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)	+5 VDC (I _L ≤100 mA)
Auxiliary output voltage		—	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)	+5 VDC (I _L ≤145 mA)
Device status													
Status indicators (LEDs or bi-color LEDs)		NET status	—	NET status	—	NET status	—	NET status	—	NET status	—	NET status	NET status
		NET port	—	NET port	—	NET port	—	NET port	—	NET port	—	NET port	NET port
Connections													
X1/X2	Power & logic Supply	—	HARTING har-flexicon 3 poles	HARTING har-flexicon 3 poles	HARTING har-flexicon 3 poles	HARTING har-flexicon 3 poles	—	—	—	—	—	—	—
X1	Power supply	Molex Mega-Fit 2 poles	—	—	—	—	Molex Mega-Fit 2 poles	Molex Mega-Fit 2 poles	Molex Mega-Fit 2 poles	Molex Mega-Fit 2 poles	Molex Mega-Fit 2 poles	Molex Mini-Fit Jr. 2 poles	Molex Mega-Fit 2 poles
X2	Logic supply	Molex Mini-Fit Jr. 2 poles	—	—	—	—	Molex Mini-Fit Jr. 2 poles	Molex Mini-Fit Jr. 2 poles	Molex Mini-Fit Jr. 2 poles	Molex Mini-Fit Jr. 2 poles	Molex Mini-Fit Jr. 2 poles	Molex Mini-Fit Jr. 2 poles	Molex Mini-Fit Jr. 2 poles
X3	Motor	Molex Mini-Fit Jr. 4 poles [e]	—	—	Molex Mini-Fit Jr. 4 poles	Molex Mini-Fit Jr. 4 poles	—	—	—	—	—	Molex Mini-Fit Jr. 4 poles	—
X3a/X4a	Motor & Hall sensor	—	HARTING har-flexicon 8 poles	HARTING har-flexicon 8 poles	—	—	—	—	—	—	—	—	—
X3a	Motor (I _{cont} ≤11 A)	—	—	—	—	—	Molex Mini-Fit Jr. 4 poles	Molex Mini-Fit Jr. 4 poles	Molex Mini-Fit Jr. 4 poles	Molex Mini-Fit Jr. 4 poles	Molex Mini-Fit Jr. 4 poles	—	Molex Mini-Fit Jr. 4 poles
X3b/X4b	Motor & Hall sensor	—	Lumberg Minimodul 8 poles	Lumberg Minimodul 8 poles	—	—	—	—	—	—	—	—	—
X3b	Motor (I _{cont} ≤20 A)	—	—	—	—	—	—	—	Molex Mega-Fit 4 poles	Molex Mega-Fit 4 poles	Molex Mega-Fit 4 poles	—	Molex Mega-Fit 4 poles
X3c	Motor	—	Hirose DF3DZ 3 poles	Hirose DF3DZ 3 poles	—	—	—	—	—	—	—	—	—
X4	Hall sensor	Molex Micro-Fit 3.0 6 poles [e]	—	—	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles	Molex Micro-Fit 3.0 6 poles
X5/X6	Encoder/Sensor	Molex CLIK-Mate 2×5 poles [e]	—	—	—	—	—	—	—	—	—	—	—
X5	Encoder	—	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles	Pin header 2.54 mm 2×5 poles
X6	Sensor	—	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles
X7	Digital I/O	Molex CLIK-Mate 8 poles [e]	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles
X8	Analog I/O	Molex CLIK-Mate 7 poles [e]	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles	Molex CLIK-Mate 7 poles
X9	STO	—	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles	—	Molex CLIK-Mate 8 poles	Molex CLIK-Mate 8 poles

Ready-to-connect Units		EPOS4 Compact 24/5	EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15
		EtherCAT 3-axes (684519)	CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)
X10	RS232	—	Molex CLIK-Mate 5 poles	—	Molex CLIK-Mate 5 poles	—	Molex CLIK-Mate 5 poles	—	Molex CLIK-Mate 5 poles	—	Molex CLIK-Mate 5 poles	Molex CLIK-Mate 5 poles	Molex CLIK-Mate 5 poles
X11	CAN 1	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	Molex CLIK-Mate 4 poles	Molex CLIK-Mate 4 poles
X12	CAN 2	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	—	Molex CLIK-Mate 4 poles	Molex CLIK-Mate 4 poles	Molex CLIK-Mate 4 poles
X13	USB	USB Type micro B, female											
X14	Extension IN	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX [a]	RJ45 10/100-BASE-TX [a]
X15	Extension OUT	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX	—	RJ45 10/100-BASE-TX [a]	RJ45 10/100-BASE-TX [a]
X16	Extension signal [a]	—	—	—	—	—	—	—	—	—	—	Molex CLIK-Mate 2x5 poles	Molex CLIK-Mate, 2x5 poles
Mechanical Data													
Weight (approximate)	85 g	58 g	78 g	58 g	76 g	86 g	100 g	126 g	140 g	171 g	206 g	372 g	
Dimensions (L × W × H) [mm]	90.0×56.0×29.1	55.0×40.0×31.1	56.5×55.0×31.7	55.0×40.0×31.1	56.5×55.0×31.7	59.5×58.5×33.0	59.5×79.5×35.7	59.5×65.5×35.1	59.5×79.5×37.0	80×69×35	105.0×83.0×38.7	125.0×94.5×38.7	
Mounting	M3 screws	M2.5 screws	M2.5 screws	M2.5 screws	M2.5 screws	M2.5 screws	M2.5 screws	M3 screws	M3 screws	M3 screws	M4 screws	M4 screws	
Environmental Conditions													
Temperature – Operation	-30...+25 °C	-30...+45 °C	-30...+45 °C	-30...+25 °C	-30...+25 °C	-30...+45 °C	-30...+45 °C	-30...+25 °C	-30...+25 °C	-30...+30 °C	-30...+50 °C	-30...+50 °C	
Temperature – Extended range and derating	+25...+50 °C -0.2 A/°C [e]	+45...+70 °C -0.060 A/°C	+45...+70 °C -0.060 A/°C	+25...+70 °C -0.111 A/°C	+25...+70 °C -0.111 A/°C	+45...+77 °C -0.250 A/°C	+45...+77 °C -0.250 A/°C	+25...+77 °C -0.288 A/°C	+25...+77 °C -0.288 A/°C	+30...+72 °C / -0.488 A/°C	+50...+80 °C -0.167 A/°C	+50...+85 °C -0.429 A/°C	
Temperature – Storage	-40...+85 °C												
Altitude – Operation	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...6'000 m MSL	0...500 m MSL	0...6'000 m MSL	0...6'000 m MSL
Altitude – Extended range	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)	500...10'000 m MSL (for derating see «Hardware Reference») restricted for Safety Card STO, see Safety Card STO User Manual	6'000...10'000 m MSL (for derating see «Hardware Reference»)	6'000...10'000 m MSL (for derating see «Hardware Reference»)
Humidity (condensation not permitted)	5...90%												
Directives & Standards													
Generic	IEC/EN 61000-6-2; IEC/EN 61000-6-3												
Applied	IEC/EN 55032 (CISPR32); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6	IEC/EN 55022 (CISPR22); IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6
Environment	IEC/EN 60068-2-6; MIL-STD-810F												
Safety (UL File Number; unassembled PCB)	E207844	E207844	E207844	E207844	E207844	E76251; E116354; E133472; E207844; E337862	E76251; E133472; E207844; E337862	E76251; E116354; E133472; E207844; E337862	E76251; E133472; E207844; E337862	E207844	E229342	E207844	
Reliability (MIL-HDBK-217F; MTBF)	146'032 hours	326'977 hours	279'388 hours	253'865 hours	238'623 hours	210'109 hours	197'129 hours	199'049 hours, with heat sink <3.1 K/W	179'777 hours, with heat sink <3.1 K/W	123'439 hours	296'741 hours	254'446 hours	

Ready-to-connect Units		EPOS4 Compact 24/5	EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15	
		EtherCAT 3-axes (684519)	CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)	
Functionality														
<i>Operating Modes</i>														
CST	Cyclic Synchronous Torque Mode													✓
CSV	Cyclic Synchronous Velocity Mode													✓
CSP	Cyclic Synchronous Position Mode													✓
PVM	Profile Velocity Mode													✓
PPM	Profile Position Mode													✓
HMM	Homing Mode													✓
Analog Set Value Functionality														CST / CSV
Features														
Feed forward (acceleration/velocity for inertia and friction compensation)														✓
Field-oriented Control (FOC)														✓
Velocity observer														✓
Dual loop control														✓
Custom persistent memory														✓
Advanced automatic control settings (Auto Tuning)														✓
Safe Torque Off (based on IEC/EN 61800-5-2)		—	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	✓ (not certified)	[a] (certified)	✓ (not certified)	✓ (not certified)
Digital I/O Functionality														
Inputs (configurable)														✓
	Touch Probe													✓
	Reference switches													✓
	Limit switches													✓
	Quickstop													✓
	Drive Enable													✓
	General purpose													✓
Outputs (configurable)														✓
	Holding Brake	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓ (configurable voltage)	✓
	Ready/Fault													✓
	General purpose													✓
Analog I/O Functionality														
Inputs (configurable)														✓
	Analog set value													✓
	General purpose													✓
Outputs (configurable)														✓
	General purpose													✓

Ready-to-connect Units	EPOS4 Compact 24/5		EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15
	EtherCAT 3-axes (684519)		CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)
Built-in Protection													
Current limiter (adjustable)	✓												
Overcurrent	✓												
Thermal motor protection	✓												
Thermal controller protection	✓												
Overvoltage	✓												
Undervoltage	✓												
Voltage transients	✓												
Short-circuit of motor winding	✓												
Loss of feedback signal	✓												
Following error	✓												
Status reporting	✓												
Firmware error handling	✓												
Electrical Data													
Installation Program	EPOS Setup												
Graphical User Interface	EPOS Studio												
	<p>The EPOS video library features video tutorials that provide easy to follow instructions on how to get started with «EPOS Studio» and how to setup communication interfaces, motors and sensors, and so on. Explore on Vimeo: → https://vimeo.com/album/4646388</p> 												
Startup	✓												
Regulation Tuning	✓												
Firmware Update	✓												
Motion Commander	✓												
I/O Monitor	✓												
Parameters	✓												
Data Recording	✓												
Command Analyzer	✓												
CANopen Wizard	✓												
Online Help	✓												
Language	English												
Operating System	Windows 11, 10												
Windows DLL for PC	32-bit / 64-bit												
CAN interfaces	IXXAT National Instruments Kvaser Vector												
Programming examples	Microsoft Visual Basic, Visual Basic.NET, Visual C#, Visual C++ Borland C++, Delphi National Instruments LabView, LabWindows/CVI												
Linux Shared Object Library	X86 32-bit/64-bit, ARMv6/v7/v8 32-bit, ARMv8 64-bit												
CAN interfaces	IXXAT Kvaser												
Programming examples	C++												

Ready-to-connect Units		EPOS4 Compact 24/5	EPOS4 Compact 24/1.5		EPOS4 Compact 50/5		EPOS4 Compact 50/8		EPOS4 Compact 50/15		EPOS4 Compact 60/20	EPOS4 50/5	EPOS4 70/15
		EtherCAT 3-axes (684519)	CAN (546714)	EtherCAT (628092)	CAN (541718)	EtherCAT (628094)	CAN (520885)	EtherCAT (605298)	CAN (520886)	EtherCAT (605299)	CAN (894250) (STO 833726)	(546047)	(594385)
Accessories (not included in delivery)													
520858	CAN-CAN Cable	—	✓	—	✓	—	✓	—	✓	—	✓	✓	✓
520857	CAN-COM Cable	—	✓	—	✓	—	✓	—	✓	—	✓	✓	✓
275934	Encoder Cable	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
693573	Adapter Cable Encoder CLICK-Mate to DIN41651	✓	—	—	—	—	—	—	—	—	—	—	—
422827	Ethernet Cable	✓	—	✓	—	✓	—	✓	—	✓	—	✓	✓
275878	Hall Sensor Cable	✓	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
275851	Motor Cable	✓	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
520851	Motor Cable High Current	—	—	—	—	—	—	—	—	✓	✓	—	✓
275829	Power Cable	✓ [b]	—	—	—	—	—	✓ [b]	✓ [b]	✓ [b]	✓ [b]	✓ [b]	✓ [b]
520850	Power Cable High Current	✓ [c]	—	—	—	—	—	✓ [c]	✓ [c]	✓ [c]	✓ [c]	—	✓ [c]
520856	RS232-COM Cable	—	✓	—	✓	—	✓	—	✓	—	✓	✓	✓
520852	Sensor Cable 5x2core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
520854	Signal Cable 7core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
520853	Signal Cable 8core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
403968	USB Type A - micro B Cable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
520860	STO Idle Connector	—	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)	✓ (included)
520859	EPOS4 Connector Set	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
691408	EPOS4 MB Micro EtherCAT 3-axes Connector Set	✓	—	—	—	—	—	—	—	—	—	—	—
581245	EPOS4 EtherCAT Card	—	—	—	—	—	—	—	—	—	—	✓	✓
833720	Safety Card STO	—	—	—	—	—	—	—	—	—	✓	—	—
833718	Bypass Card STO	—	—	—	—	—	—	—	—	—	✓ (included)	—	—


High Integration Units	EPOS4 Disk 60/8		EPOS4 Disk 60/12			
	CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
						
Communication Interfaces						
CANopen Slave	max. 1 Mbit/s	—	max. 1 Mbit/s	max. 1 Mbit/s	—	—
CANopen Application Layer and Communication Profile	CiA 301	—	CiA 301	CiA 301	—	—
CANopen Layer Setting Services and Protocol (LSS)	CiA 305	—	CiA 305	CiA 305	—	—
CANopen Device Profile Drives and Motion Control	CiA 402	—	CiA 402	CiA 402	—	—
USB 2.0 / USB 3.0	Full speed					
Gateway function USB-to-CAN	✓	—	✓	✓	—	—
EtherCAT Slave	—	✓	—	—	✓	✓
IEC 61158 Digital data communication for measurement and control Fieldbus for use in industrial control systems	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	—	—	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)	Type 12 (EtherCAT) max. 100 Mbit/s (100 Base Tx)
IEC 61800-7 Generic interface and use of profiles for power drive systems	—	Profile type 1 (CiA 402)	—	—	Profile type 1 (CiA 402)	Profile type 1 (CiA 402)
CAN application layer over EtherCAT (CoE)	—	✓	—	—	✓	✓
File transfer over EtherCAT (FoE)	—	✓	—	—	✓	✓
Distributed clocks support	—	✓	—	—	✓	✓
Cyclic modes support cycle times down to...	—	1 ms	—	—	1 ms	1 ms
Process data	—	PDO mapping (Variable)	—	—	PDO mapping (Variable)	PDO mapping (Variable)
Motors						
Brushed DC motors up to (continuous / max.)	480 W / 1'440 W	480 W / 1'440 W	720 W / 2'160 W	720 W / 2'160 W	720 W / 2'160 W	720 W / 2'160 W
Brushless EC motors (BLDC) up to (continuous / max.)	480 W / 1'440 W	480 W / 1'440 W	720 W / 2'160 W	720 W / 2'160 W	720 W / 2'160 W	720 W / 2'160 W
Sensors (Feedback)						
Digital Hall sensors (EC motors)	✓					
Digital incremental encoder (2-/3-channel, single-ended or differential)	✓					
Analog incremental encoder (3-channel, SinCos, differential)	—					
SSI absolute encoder (configurable)	✓					

High Integration Units	EPOS4 Disk 60/8		EPOS4 Disk 60/12			
	CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
Communication						
Digital Hall sensors				✓		
Digital Hall sensors + digital incremental encoder				✓		
Digital Hall sensors + analog incremental encoder				—		
Digital Hall sensors + absolute encoder				✓		
Absolute encoder				✓		
Electrical Data						
Nominal power supply voltage (+V _{CC})	12...60 VDC					
Nominal logic supply voltage (+V _C)	12...60 VDC					
Absolute supply voltage limits (+V _{min} / +V _{max})	10 VDC / 61 VDC					
Output voltage (max.)	0.9 × +V _{CC}					
Output current (I _{cont} / I _{max})	8 A / 24 A (<10 s)	8 A / 24 A (<10 s)	12 A / 36 A (<5 s)	12 A / 36 A (<5 s)	12 A / 36 A (<5 s)	12 A / 36 A (<5 s)
Pulse width modulation frequency	50 kHz					
Sampling rate PI current controller	25 kHz (40 μs)					
Sampling rate PI speed controller	2.5 kHz (400 μs)					
Sampling rate PID positioning controller	2.5 kHz (400 μs)					
Sampling rate analog input	2.5 kHz (400 μs)					
Max. efficiency	98%					
Max. speed DC motor	limited by max. permissible speed (motor)					
Max. speed EC motor, block commutation	100'000 rpm (1 pole pair)					
Max. speed EC motor, sinusoidal commutation	50'000 rpm (1 pole pair)					
Built-in motor choke	—					
Inputs / Outputs						
Digital Hall sensor signals	H1, H2, H3 (+2...+24 VDC, internal pull-up)					
Digital incremental encoder signals	A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz)					
Sensor signals	✓					
Absolute serial SSI	Clock, Clock\, Data, Data\ (EIA RS422, 0.4...2 MHz)					
Digital inputs	4 (+2.1...+36 VDC)					
Digital outputs	2 (open drain, max. 36 VDC / 500 mA, internal pull-up)					
High-speed digital inputs	1 (EIA RS422, 6.25 MHz)					
High-speed digital outputs	1 (EIA RS422, 6.25 MHz) 1 (Holding Brake only, configurable voltage, PWM frequency 25 kHz)					
Analog inputs	2 (resolution 12-bit, -10...+10 V, 10 kHz, differential)					
Analog outputs	1 (resolution 12-bit, -4... +4 V, 25 kHz)					
Sensor supply voltage	+5 VDC (I _L ≤100 mA)					
Auxiliary output voltage	+5 VDC (I _L ≤145 mA)					
Device status						
Status indicators (LEDs or bi-color LEDs)	—	NET status	—	—	NET status	NET status
	—	NET port	—	—	NET port	NET port

High Integration Units		EPOS4 Disk 60/8		EPOS4 Disk 60/12			
		CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
Connections							
X1/X2	Power & logic Supply	Molex Micro-Fit 3 poles	Molex Micro-Fit 3 poles	—	—	—	—
X1	Power supply	—	—	Molex Micro-Fit Plus 2 poles	—	Molex Micro-Fit Plus 2 poles	—
X1a	Power supply	—	—	—	Molex Micro-Fit Plus 2 poles	—	Molex Micro-Fit Plus 2 poles
X2	Logic supply	—	—	Molex Micro-Fit Plus 2 poles	—	Molex Micro-Fit Plus 2 poles	—
X2a	Logic supply	—	—	—	Molex Micro-Fit Plus 2 poles	—	Molex Micro-Fit Plus 2 poles
X3	Motor	Molex Micro-Fit 3 poles	Molex Micro-Fit 3 poles	Molex Mini-Fit Plus 4 poles	Molex Mini-Fit Plus 4 poles	Molex Mini-Fit Plus 4 poles	Molex Mini-Fit Plus 4 poles
X4	Hall sensor	Molex Micro-Lock 5 poles	Molex Micro-Lock 5 poles	Molex Micro-Fit 6 poles	Molex Micro-Fit 6 poles	Molex Micro-Fit 6 poles	Molex Micro-Fit 6 poles
X4a	Hall sensor	—	—	Molex Micro-Lock 5 poles	Molex Micro-Lock 5 poles	Molex Micro-Lock 5 poles	Molex Micro-Lock 5 poles
X5/X6	Encoder/Sensor	—	—	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles	Molex CLIK-Mate 2×5 poles
X5	Encoder	Molex Micro-Lock 2×4 poles	Molex Micro-Lock 2×4 poles	Molex Micro-Lock 2×4 poles	Molex Micro-Lock 2×4 poles	Molex Micro-Lock 2×4 poles	Molex Micro-Lock 2×4 poles
X6	SSI	Molex Micro-Lock 6 poles	Molex Micro-Lock 6 poles	Molex Micro-Lock 6 poles	Molex Micro-Lock 6 poles	Molex Micro-Lock 6 poles	Molex Micro-Lock 6 poles
X7	Digital I/O	Molex Micro-Lock 8 poles	Molex Micro-Lock 8 poles	Molex Micro-Lock 8 poles	—	Molex Micro-Lock 8 poles	—
X7a	Digital I/O	—	—	—	Molex Micro-Lock 8 poles	—	Molex Micro-Lock 8 poles
X8	Analog I/O	Molex Micro-Lock 7 poles	Molex Micro-Lock 7 poles	Molex Micro-Lock 7 poles	—	Molex Micro-Lock 7 poles	—
X8a	Analog I/O	—	—	—	Molex Micro-Lock 7 poles	—	Molex Micro-Lock 7 poles
X13	USB	Molex Micro-Lock 4 poles	Molex Micro-Lock 4 poles	Molex Micro-Lock 4 poles	—	Molex Micro-Lock 4 poles	—
X13a	USB	—	—	—	Molex Micro-Lock 4 poles	—	Molex Micro-Lock 4 poles
X14	CAN IN	HARTING ix Industrial, Type B	—	HARTING ix Industrial, Type B	—	—	—
	EtherCAT IN	—	HARTING ix Industrial, Type A	—	—	HARTING ix Industrial, Type A	—
X14a	CAN IN	—	—	—	HARTING ix Industrial, Type B	—	—
	EtherCAT IN	—	—	—	—	—	HARTING ix Industrial, Type A
X15	CAN OUT	HARTING ix Industrial, Type B	—	HARTING ix Industrial, Type B	—	—	—
	EtherCAT OUT	—	HARTING ix Industrial, Type A	—	—	HARTING ix Industrial, Type A	—
X15a	CAN OUT	—	—	—	HARTING ix Industrial, Type B	—	—
	EtherCAT OUT	—	—	—	—	—	HARTING ix Industrial, Type A
X16	Brake	Molex Micro-Fit 2 poles	Molex Micro-Fit 2 poles	Molex Micro-Fit 2 poles	Molex Micro-Fit 2 poles	Molex Micro-Fit 2 poles	Molex Micro-Fit 2 poles

High Integration Units	EPOS4 Disk 60/8		EPOS4 Disk 60/12			
	CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
Mechanical Data						
Weight (approximate)	24 g	26 g	43 g	43 g	45 g	45 g
Dimensions (D outside/center hole × H)	Ø60/14 × 22 mm	Ø60/14 × 22 mm	Ø90/24 × 27.6 mm	Ø90/24 × 17.6 mm	Ø90/24 × 27.6 mm	Ø90/24 × 17.6 mm
Mounting	M2 screws	M2 screws	M3 screws	M3 screws	M3 screws	M3 screws
Environmental Conditions						
Temperature – Operation	-30...+45 °C	-30...+35 °C	-30...+50 °C	-30...+50 °C	-30...+45 °C	-30...+45 °C
Temperature – Extended range and derating	+45...+75 °C -0.267 A/°C	+35...+65 °C -0.267 A/°C	+50...+75 °C -0.480 A/°C	+50...+75 °C -0.480 A/°C	+45...+70 °C -0.480 A/°C	+45...+70 °C -0.480 A/°C
Temperature – Storage	-40...+85 °C					
Altitude – Operation	0...6'000 m MSL	0...6'000 m MSL	0...10'000 m MSL	0...10'000 m MSL	0...6'000 m MSL	0...6'000 m MSL
Altitude – Extended range	6'000...10'000 m MSL (for derating see «Hardware Reference»)					
Humidity (condensation not permitted)	5...90%					
Directives & Standards						
Generic	IEC/EN 61000-6-2; IEC/EN 61000-6-3					
Applied	IEC/EN 55032 (CISPR32); IEC/EN 61000-4-2; IEC/EN 61000-4-3; IEC/EN 61000-4-4; IEC/EN 61000-4-6; IEC/EN 61000-4-8					
Environment	IEC/EN 60068-2-6; MIL-STD-810F					
Safety (UL File Number; unassembled PCB)	E229342	E229342	E207844	E207844	E207844	E207844
Reliability (MIL-HDBK-217F; MTBF)	395'482 hours	277'794 hours	459'979 hours	459'979 hours	288'239 hours	288'239 hours
Functionality						
Operating Modes						
CST	Cyclic Synchronous Torque Mode	✓				
CSV	Cyclic Synchronous Velocity Mode	✓				
CSP	Cyclic Synchronous Position Mode	✓				
PVM	Profile Velocity Mode	✓				
PPM	Profile Position Mode	✓				
HMM	Homing Mode	✓				
Analog Set Value Functionality	CST / CSV					
Features						
Feed forward (acceleration/velocity for inertia and friction compensation)	✓					
Field-oriented Control (FOC)	✓					
Velocity observer	✓					
Dual loop control	✓					
Custom persistent memory	✓					
Advanced automatic control settings (Auto Tuning)	✓					

High Integration Units	EPOS4 Disk 60/8		EPOS4 Disk 60/12			
	CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
Digital I/O Functionality						
Inputs (configurable)			✓			
Touch Probe			✓			
Reference switches			✓			
Limit switches			✓			
Quickstop			✓			
Drive Enable			✓			
General purpose			✓			
Outputs (configurable)			✓			
Holding Brake			✓ (configurable voltage)			
Ready/Fault			✓			
General purpose			✓			
Analog I/O Functionality						
Inputs (configurable)			✓			
Analog set value			✓			
General purpose			✓			
Outputs (configurable)			✓			
General purpose			✓			
Built-in Protection						
Current limiter (adjustable)			✓			
Overcurrent			✓			
Thermal motor protection			✓			
Thermal controller protection			✓			
Overvoltage			✓			
Undervoltage			✓			
Voltage transients			✓			
Short-circuit of motor winding			✓			
Loss of feedback signal			✓			
Following error			✓			
Status reporting			✓			
Firmware error handling			✓			

High Integration Units	EPOS4 Disk 60/8		EPOS4 Disk 60/12			
	CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
Software						
Installation Program	EPOS Setup					
Graphical User Interface	EPOS Studio					
	<p>The EPOS video library features video tutorials that provide easy to follow instructions on how to get started with «EPOS Studio» and how to setup communication interfaces, motors and sensors, and so on. Explore on Vimeo: → https://vimeo.com/album/4646388</p> 					
Startup	✓					
Regulation Tuning	✓					
Firmware Update	✓					
Motion Commander	✓					
I/O Monitor	✓					
Parameters	✓					
Data Recording	✓					
Command Analyzer	✓					
CANopen Wizard	✓					
Online Help	✓					
Language	English					
Operating System	Windows 11, 10					
Windows DLL for PC	32-bit / 64-bit					
CAN interfaces	IXXAT National Instruments Kvaser Vector					
Programming examples	Microsoft Visual Basic, Visual Basic.NET, Visual C#, Visual C++ Borland C++, Delphi National Instruments LabView, LabWindows/CVI					
Linux Shared Object Library	X86 32-bit/64-bit, ARMv6/v7/v8 32-bit, ARMv8 64-bit					
CAN interfaces	IXXAT Kvaser					
Programming examples	C++					

High Integration Units	EPOS4 Disk 60/8		EPOS4 Disk 60/12			
	CAN (688770)	EtherCAT (688772)	CAN (688775)	CAN SSC (709859)	EtherCAT (688777)	EtherCAT SSC (709862)
Accessories (not included in delivery)						
710928 Brake Cable	✓	✓	✓	✓	✓	✓
710931 CAN-CAN Cable	✓	—	✓	✓	—	—
710932 CAN-COM Cable	✓	—	✓	✓	—	—
751388 CAN ix Industrial Type B plug	✓	—	✓	✓	—	—
696285 Encoder Cable	✓	✓	✓	✓	✓	✓
710934 EtherCAT-COM Cable	—	✓	—	—	✓	✓
710933 EtherCAT-EtherCAT Cable	—	✓	—	—	✓	✓
748166 EtherCAT ix Industrial Type A plug	—	✓	—	—	✓	✓
275878 Hall Sensor Cable	—	—	✓	✓	✓	✓
696284 Hall Sensor Cable	✓	✓	✓	✓	✓	✓
710930 Motor Cable High Current	—	—	✓	✓	✓	✓
696283 Power & Motor Cable	✓	✓	—	—	—	—
275829 Power Cable	—	—	✓ [b]	✓ [b]	✓	✓ [b]
710929 Power Cable High Current	—	—	✓ [c]	✓ [c]	✓ [c]	✓ [c]
696286 Sensor Cable 3×2core	✓	✓	✓	✓	✓	✓
520852 Sensor Cable 5×2core	—	—	✓	✓	✓	✓
696288 Sensor Cable 7core	✓	✓	✓	✓	✓	✓
696287 Sensor Cable 8core	✓	✓	✓	✓	✓	✓
696289 USB Type A-Micro-Lock Cable	✓	✓	✓	✓	✓	✓
710926 EPOS4 Disk Connector Set	✓	✓	✓	✓	✓	✓

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