EPOS4

Feature Chart

maxon motor control'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 1'050 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 the CANopen 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 optional communication interfaces, such as EtherCAT or other additional functionalities.

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

Legend: ✓ = included / nnnnnn = order number / ** = available shortly / (a) requires an optionally available extension card (see "Accessories" on page 7) / (b) optional for separate logic supply / (c) mandatory for supply of power stage / (d) with suitable motherboard

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	EPOS4 Module 24/1.5 (536630)	EPOS4 Compact 24/1.5 CAN (546714)	EPOS4 50/5 (546047)	EPOS4 Module 50/5 (534130)	EPOS4 Compact 50/5 CAN (541718)	EPOS4 Module 50/8 (504384)	EPOS4 Compact 50/8 CAN (520885)	EPOS4 Module 50/15 (504383)	EPOS4 Compact 50/15 CAN (520886)	EPOS4 70/15 (594385)
for comparison purposes: US Half Dollar coin (Ø30.6 mm)										
Communication Interfaces										
CANopen Slave	max. 1 Mbit/s									
CANopen Application Layer and Communication Profile	CiA 301									
CANopen Layer Setting Services and Protocol (LSS)	CiA 305**									
CANopen Device Profile Drives and Motion Control	CiA 402									
USB 2.0 / USB 3.0	Full speed									
Gateway function USB-to-CAN	✓									
RS232	max. 115'200 bit/s									
Gateway function RS232-to-CAN	✓									
EtherCAT Slave	✓ (a)	—	✓ (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)
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)
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
Process data	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	250 W / 750 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	1'050 W / 2'100 W
Brushless EC motors (BLDC) up to (continuous / max.)	36 W / 108 W	36 W / 108 W	250 W / 750 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	1'050 W / 2'100 W

maxon motor control
EPOS4 Positioning Controllers
EPOS4 Feature Chart

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	EPOS4 Module 24/1.5 (536630)	EPOS4 Compact 24/1.5 CAN (546714)	EPOS4 50/5 (546047)	EPOS4 Module 50/5 (534130)	EPOS4 Compact 50/5 CAN (541718)	EPOS4 Module 50/8 (504384)	EPOS4 Compact 50/8 CAN (520885)	EPOS4 Module 50/15 (504383)	EPOS4 Compact 50/15 CAN (520886)	EPOS4 70/15 (594385)
Sensors (Feedback)										
Digital Hall sensors (EC motors)					✔					
Digital incremental encoder (2-/3-channel, single-ended or differential)					✔					
Analog incremental encoder (3-channel, sin/cos, differential)					✔**					
SSI absolute encoder (configurable)					✔					
BiSS C absolute encoder (configurable)	✔ (a)**	—	✔ (a)**	✔ (a)**	—	✔ (a)**	—	✔ (a)**	—	✔ (a)**
EnDat 2.2 absolute encoder (configurable)	✔ (a)**	—	✔ (a)**	✔ (a)**	—	✔ (a)**	—	✔ (a)**	—	✔ (a)**
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…50 VDC	10…50 VDC	10…50 VDC	10…50 VDC	10…50 VDC	10…50 VDC	10…50 VDC	10…70 VDC
Nominal logic supply voltage ($+V_C$)	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…50 VDC	10…70 VDC
Absolute supply voltage limits ($+V_{min}$ / $+V_{max}$)	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	8 VDC / 56 VDC	8 VDC / 76 VDC
Output voltage (max.)					0.9 x $+V_{CC}$					
Output current (I_{cont} / I_{max})	1.5 A / 4.5 A (<30 s)	1.5 A / 4.5 A (<30 s)	5 A / 15 A (<15s)	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)	15 A / 30 A (<60 s)
Pulse width modulation frequency	100 kHz	100 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 PID speed controller					2.5 kHz (400 µs)					
Sampling rate PID positioning controller					2.5 kHz (400 µs)					
Max. efficiency	89%	89%	98%	97%	97%	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	—	3 x 94 µH; 1.5 A	3 x 15 µH; 5 A	—	3 x 9.4 µH; 5 A	—	3 x 2.2 µH; 15 A	—	3 x 2.2 µH; 15 A	3 x 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)					
Encoder signals					A, A\, B, B\, I, I\ (EIA RS422, 6.25 MHz) Clock, Clock\ Data, Data\					
Digital incremental, analog incremental**, absolute serial SSI, BiSS (a), EnDat (a)										
Digital inputs — all Modules					4 (+2.1…+36 VDC)					
Digital inputs — all Compacts and housing versions					4; level selectable by DIP switch: (Logic level: +2.0…+30 VDC) or (PLC level: +9.0…+30 VDC)					
Digital outputs					2 (open collector, max. 36 VDC / 500 mA, internal pull-up)					
High-speed digital inputs					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					2 (resolution 12-bit, −4…+4 V, 25 kHz)					
STO inputs					2 (+4.5…+30 VDC, optically isolated)					

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EPOS4 Feature Chart

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STO outputs	1 (max. 30 VDC / 15 mA, optically isolated with self-resetting short-circuit protection)									
Sensor supply voltage	+5 VDC (I_L ≤100 mA)									
Auxiliary output voltage	+5 VDC (I_L ≤150 mA)									
Status indicators (LEDs or bi-color LEDs)	Device status	Device status	Device status	Device status	Device status	Device status	Device status	Device status	Device status	Device status
	—	—	NET status	—	—	—	—	—	—	NET status
	—	—	NET port	—	—	—	—	—	—	NET port
Connections										
X1 — Power Supply		—	Molex Mini-Fit Jr. 2 poles		—		Molex Mega-Fit 2 poles		Molex Mega-Fit 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
X1/X2 — Power & Logic Supply		Harting har-flexicon 3 poles	—		Harting har-flexicon 3 poles		—		—	—
X3 — Motor		—	Molex Mini-Fit Jr. 4 poles		Molex Mini-Fit Jr. 4 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
X3b — Motor (I_{cont} ≤15 A)		—	—		—		—		Molex Mega-Fit 4 poles	Molex Mega-Fit 4 poles
X3c — Motor		Hirose DF3DZ 3 poles	—		—		—		—	—
X3a/X4a — Motor & Hall Sensor		Harting har-flexicon 8 poles	—		—		—		—	—
X3b/X4b — Motor & Hall Sensor		Lumberg Minimodul 8 poles	—		—		—		—	—
X4 — Hall Sensor		—	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 — Encoder		Pin header 2.54 mm 2x5 poles	Pin header 2.54 mm 2x5 poles		Pin header 2.54 mm 2x5 poles		Pin header 2.54 mm 2x5 poles		Pin header 2.54 mm 2x5 poles	Pin header 2.54 mm 2x5 poles
X6 — Sensor		Molex CLIK-Mate 2x5 poles	Molex CLIK-Mate 2x5 poles		Molex CLIK-Mate 2x5 poles		Molex CLIK-Mate 2x5 poles		Molex CLIK-Mate 2x5 poles	Molex CLIK-Mate 2x5 poles
X7 — Digital I/O		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	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
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
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
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
X13 — USB	USB Type micro B, female									
X14 — Extension IN (a)	—	—	RJ45 10/100-BASE-TX	—	—	—	—	—	—	RJ45 10/100-BASE-TX
X15 — Extension OUT (a)	—	—	RJ45 10/100-BASE-TX	—	—	—	—	—	—	RJ45 10/100-BASE-TX
X16 — Extension Signal (a)	—	—	Molex CLIK-Mate 2x5 poles	—	—	—	—	—	—	Molex CLIK-Mate 2x5 poles

Note on connector form factors (leftmost connector column spanning rows):
- EPOS4 Module 24/1.5 (536630): Box header (1.27 mm) 2x23 poles
- EPOS4 50/5 (546047): Box header (1.27 mm) 2x23 poles
- EPOS4 Module 50/5 (534130): Box header (1.27 mm) 2x23 poles
- EPOS4 Module 50/8 (504384): Pin header (2.54 mm) 2x16 poles
- EPOS4 Module 50/15 (504383): Pin header (2.54 mm) 2x16 poles
- (X6–X16 group) Box header (1.27 mm) 2x23 poles / Pin header (2.54 mm) 2x23 poles

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Mechanical Data										
Weight (approximate)	17 g	58 g	206 g	17 g	58 g	23 g	86 g	70 g	126 g	372 g
Dimensions (L x W x H)	53.8 x 38.8 x 11.1 mm	55.0 x 40.0 x 31.1 mm	105.0 x 83.0 x 38.7 mm	53.8 x 38.8 x 11.1 mm	55.0 x 40.0 x 31.1 mm	59.5 x 46.0 x 14.1 mm	59.5 x 58.5 x 33.0 mm	59.5 x 62.0 x 16.4 mm	59.5 x 65.5 x 35.1 mm	125.0 x 94.5 x 38.7 mm
Mounting	Pluggable (female headers 1.27 mm) or M2.5 screws	M2.5 screws	M4 screws	Pluggable (female headers 1.27 mm) or M2.5 screws	M2.5 screws	Pluggable (female headers 2.54 mm) or M2.5 screws	M2.5 screws	Pluggable (female headers 2.54 mm) or M3 screws	M3 screws	M4 screws
Environmental Conditions										
Temperature – Operation	−30…+60 °C	−30…+45 °C	−30…+50 °C	−30…+45 °C	−30…+25 °C	−30…+45 °C	−30…+45 °C	−30…+25 °C	−30…+25 °C	−30…+50 °C
Temperature – Extended range and derating	+60…+73 °C −0.115 A/°C	+45…+70 °C −0.060 A/°C	+50…+80 °C −0.167 A/°C	+45…+75 °C −0.167 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	+50…+85 °C −0.429 A/°C
Temperature – Storage	−40…+85 °C									
Altitude – Operation	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 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	E229342	E207844	E207844	E76251; E207844; E337862	E76251; E116354; E207844; E337862	E76251; E207844; E337862	E76251; E116354; E207844; E337862	E207844
Reliability (MIL-HDBK-217F; MTBF)	611'610 hours	326'977 hours	296'741 hours	314'822 hours	253'865 hours	245'451 hours	210'109 hours	240'400 hours, with heat sink <3.1 K/W	199'049 hours, with heat sink <3.1 K/W	254'446 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	✓									
IPM Interpolated Position Mode	✓**									
HMM Homing Mode	✓									
Master Encoder Functionality	✓**									
Step/Direction Functionality	✓**									
Analog Set Value Functionality	✓**									
Features										
Feed forward (acceleration/velocity for inertia and friction compensation)	✓									
Field-oriented Control (FOC)	✓									
Velocity observer	✓									
Standalone programmability	✓**									
Custom persistent memory	✓									
Advanced automatic control settings (Auto Tuning)	✓									
Safe Torque Off (based on IEC/EN 61800-5-2, certification pending)	✓									

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Digital I/O Functionality										
Inputs (configurable)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Touch Probe	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
Reference switches	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Limit switches	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Quickstop	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Drive Enable	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
General purpose	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Outputs (configurable)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Position Compare	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
Holding Brake	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Ready/Fault	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
General purpose	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Analog I/O Functionality										
Inputs (configurable)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Analog set value	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
General purpose	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Outputs (configurable)	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
Current monitor	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
Velocity monitor	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
Position monitor	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
Temperature monitor	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**	✔**
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 shows you tips and tricks on how to setup communication interfaces, motors and sensors, and so on. Explore on Vimeo: ➔ https://vimeo.com/album/4646388									
Startup	✓									
Regulation Tuning	✓									
Diagnostics	✓**									
Firmware Update	✓									
Motion Commander	✓									
I/O Monitor	✓									
Parameters	✓									
Data Recording	✓									
Command Analyzer	✓									
CANopen Wizard	✓									
Online Help	✓									
Language	English									
Operating System	Windows 10, 8, 7									
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 Shard Object Library	X86 32-bit/64-bit, ARMv7/v8 32-bit									
CAN interfaces	IXXAT | Kvaser									
Programming examples	C++									
IEC 61131-3 library for CAN master	Beckhoff**									
maxon library for NI SoftMotion	National Instruments Compact Rio**									

maxon motor control
EPOS4 Positioning Controllers
EPOS4 Feature Chart
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	EPOS4 Module 24/1.5 (536630)	EPOS4 Compact 24/1.5 CAN (546714)	EPOS4 50/5 (546047)	EPOS4 Module 50/5 (534130)	EPOS4 Compact 50/5 CAN (541718)	EPOS4 Module 50/8 (504384)	EPOS4 Compact 50/8 CAN (520885)	EPOS4 Module 50/15 (504383)	EPOS4 Compact 50/15 CAN (520886)	EPOS4 70/15 (594385)
Accessories (not included in delivery)										
520858 CAN-CAN Cable	—	✔	✔	—	✔	—	✔	—	✔	✔
520857 CAN-COM Cable	—	✔	✔	—	✔	—	✔	—	✔	✔
275934 Encoder Cable	—	✔	✔	—	✔	—	✔	—	✔	✔
422827 Ethernet Cable	—	—	✔	—	—	—	—	—	—	✔
275878 Hall Sensor Cable	—	—	✔	—	✔	—	✔	—	✔	✔
520854 Signal Cable 7core	—	✔	✔	—	✔	—	✔	—	✔	✔
520853 Signal Cable 8core	—	✔	✔	—	✔	—	✔	—	✔	✔
275851 Motor Cable	—	—	✔	—	✔	—	✔	—	✔	✔
520851 Motor Cable High Current	—	—	—	—	—	—	—	—	✔	✔
275829 Power Cable	—	—	✔	—	—	—	✔ (b)	—	✔ (b)	✔ (b)
520850 Power Cable High Current	—	—	—	—	—	—	✔ (c)	—	✔ (c)	✔ (c)
520856 RS232-COM Cable	—	✔	✔	—	✔	—	✔	—	✔	✔
520852 Sensor Cable 5x2core	—	✔	✔	—	✔	—	✔	—	✔	✔
520860 STO Idle Connector X9	—	✔ (included)	✔ (included)	—	✔ (included)	—	✔ (included)	—	✔ (included)	✔ (included)
403968 USB Type A - micro B Cable	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
536997 EPOS4 CB 24/1.5 CAN	✔	—	—	—	—	—	—	—	—	—
534133 EPOS4 CB 50/5 CAN	—	—	—	✔	—	—	—	—	—	—
520884 EPOS4 CB Power CAN	—	—	—	—	—	✔	—	✔	—	—
520859 EPOS4 Connector Set	—	✔	✔	—	✔	—	✔	—	✔	✔
581245 EPOS4 EtherCAT Card	✔ (d)	—	✔	✔ (d)	—	✔ (d)	—	✔ (d)	—	✔

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