maxon motor

ESCON   *Feature Comparison Chart*

The ESCON servo controllers are small-sized, powerful 4-quadrant PWM servo controller for the highly efficient control of permanent magnet-activated DC motors.

The featured operating modes – speed control (closed loop), speed control (open loop), and current control – meet the highest requirements. The ESCON servo controllers are designed being commanded by an analog set value and features extensive analog and digital I/O functionality and are being configured via USB interface using the graphical user interface «ESCON Studio» for Windows PCs.

Legend: (✔)* = only in use with DC Tacho or Encoder / nnnnnn = order number / O = optional

Feature	ESCON 36/2 DC (403112)	ESCON 50/5 (409510)
Product image		
Motors		
DC motors up to	72 W	250 W
EC motors up to	—	250 W
Sensors		
Digital Incremental Encoder (2 channel with or without Line Driver)	✔	✔
DC Tacho	✔	✔
Without sensor (DC motors)	✔	✔
Digital Hall Sensors (EC motors)	—	✔
Electrical Data		
Nominal operating voltage V_{cc}	10…36 VDC	10…50 VDC
Max. output voltage	0.98 x V_{cc}	0.98 x V_{cc}
Max. output current	4 A (<60 s)	15 A (<20 s)
Continuous output current	2 A	5 A
Pulse Width Modulation frequency	53.6 kHz	
Sampling rate PI current controller	53.6 kHz	
Sampling rate PI speed controller	5.36 kHz	
Max. efficiency	95%	95%
Max. speed (DC)	limited by max. permissible speed (motor) and max. output voltage (controller)	
Max. speed (EC; 1 pole pair)	—	150'000 rpm
Built-in motor choke	300 μH; 2 A	3 x 30 μH; 5 A
Inputs / Outputs		
Hall sensor signals	—	H1, H2, H3
Encoder signals	A,A\,B,B\	
Max. encoder input frequency differential (single-ended)	1 MHz (100 kHz)	
Potentiometers	1	2

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Feature		ESCON 36/2 DC (403112)	ESCON 50/5 (409510)
Digital inputs		2	
Digital inputs/outputs		2	
Analog inputs		2	
	Resolution	12-bit	
	Range	−10…+10 V	
	Circuit	differential	
Analog outputs		2	
	Resolution	12-bit	
	Range	−4…+4 V	
Auxiliary voltage output		+5 VDC (IL ≤10 mA)	
Hall sensor supply voltage		—	+5 VDC (IL ≤30 mA)
Encoder supply voltage		+5 VDC (IL ≤70 mA)	
Status Indicators		Operation: green LED / Error: red LED	
Connections			
J1	Power	Pin header (2 mm), 2 poles	Pluggable screw-type terminal block (3.5 mm), 2 poles
J2	Motor	Pin header (2 mm), 3 poles	Pluggable screw-type terminal block (3.5 mm), 4 poles
J2A	Motor	Spring-loaded contacts, 2 poles	—
J3	Hall sensors	—	Pluggable screw-type terminal block (3.5 mm), 5 poles
J4	Encoder	Pin header (2.54 mm), 5 x 2 poles	
J4A	Encoder	Pin header (1.27 mm), 5 x 2 poles	—
J5	Digital I/O	Pin header (2 mm), 6 poles	Pluggable screw-type terminal block (3.5 mm), 6 poles
J6	Analog I/O	Pin header (2 mm), 7 poles	Pluggable screw-type terminal block (3.5 mm), 7 poles
J7	USB	USB Type micro B female	
Mechanical Data			
Weight (approximate)		30 g	204 g
Dimensions (L x W x H)		55 x 40 x 16.1 mm	115 x 75.5 x 24 mm
Mounting holes		for screws M2.5	for screws M4
Environmental Conditions			
Temperature – Operation		−30…+45°C	
Temperature – Extended range		+45…+81°C; Derating: −0.056 A/°C	+45…+85°C; Derating: −0.113 A/°C
Temperature – Storage		−40…+85°C	
Humidity (condensation not permitted)		20…80%	
Functionality			
Operating Mode			
Current controller (torque control)		✔	
Speed controller (closed loop)		✔	
	with encoder feedback	✔	
	with DC Tacho feedback	✔	
	with Hall sensor feedback	—	✔

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Feature	ESCON 36/2 DC (403112)	ESCON 50/5 (409510)
Speed controller (open loop)	✔	
with static IxR Compensation	✔	
with adaptive IxR Compensation	(✔)*	✔
Set Value		
Analog set value	✔	
PWM set value	✔	
Fixed set value	✔	
2 fixed set values	✔	
Digital I/O Functionality		
Enable	✔	
Enable CW	✔	
Enable CCW	✔	
Enable CW + CCW	✔	
Enable + Direction	✔	
Stop	✔	
Ready	✔	
Speed Comparator	✔	
Commutation frequency	—	✔
Monitoring Outputs		
Monitor Current	✔	
Monitor Speed	✔	
Analog Settings		
Set value	✔	
Current limit	✔	
Offset adjust set value	✔	
Speed ramp (using potentiometer)	✔	
Current gain (using potentiometer)	✔	
Speed gain (using potentiometer)	✔	
IxR Factor (using potentiometer)	✔	
Protection		
Overcurrent	✔	
Current limiter (adjustable)	✔	
Thermal overload	✔	
Undervoltage	✔	
Overvoltage	✔	
Voltage transients	✔	
Short-circuit of motor winding	✔	

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ESCON Servo Controllers
Feature Comparison Chart

Document ID: rel2547
Edition: March 2012

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Feature	ESCON 36/2 DC (403112)	ESCON 50/5 (409510)
Software		
Installation Program	ESCON Setup	
Graphical User Interface	ESCON Studio	
Startup Wizard	✔	
Regulation Tuning	✔	
Diagnostic	✔	
Firmware Update	✔	
Controller Monitor	✔	
Parameters	✔	
Data Recording	✔	
Online Help	✔	
Language	German, English, French, Italian, Spanish	
Operating System	Windows 7, Windows XP SP3	
Communication interface	USB 2.0 (full speed)	
Accessories (not included in delivery)		
404404 ESCON 36/2 DC Connector Set	✔	—
403964 ESCON Analog I/O Cable	✔	—
403962 ESCON DC Motor Cable	✔	—
403965 ESCON Digital I/O Cable	✔	—
275934 ESCON Encoder Cable	O	O
403957 ESCON Power Cable	✔	—
403968 USB 2.0 Type A micro-B Cable	✔	✔
409286 ESCON USB Stick	✔	✔