

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	$0.98 \times V_{CC}$	$0.98 \times V_{CC}$
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 μ H; 2 A	3 x 30 μ H; 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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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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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	✓	

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	✓	✓