




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 36/3 EC (414533)	ESCON 50/5 (409510)
Product image			
Motors			
DC motors up to	72 W	—	250 W
EC motors up to	—	97 W	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...36 VDC	10...50 VDC
Max. output voltage	$0.98 \times V_{cc}$	$0.98 \times V_{cc}$	$0.98 \times V_{cc}$
Max. output current	4 A (<60 s)	9 A (<4 s)	15 A (<20 s)
Continuous output current	2 A	2.7 A	5 A
Pulse Width Modulation frequency	53.6 kHz		

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Sampling rate PI current controller	53.6 kHz		
Sampling rate PI speed controller	5.36 kHz		
Max. efficiency	95%	95%	95%
Max. speed (DC)	limited by max. permissible speed (motor) and max. output voltage (controller)	—	limited by max. permissible speed (motor) and max. output voltage (controller)
Max. speed (EC; 1 pole pair)	—	150'000 rpm	150'000 rpm
Built-in motor choke	300 µH; 2 A	3 x 47 µH; 2.7 A	3 x 30 µH; 5 A
Inputs / Outputs			
Hall sensor signals	—	H1, H2, H3	H1, H2, H3
Encoder signals	A,A\,B,B\	—	A,A\,B,B\
Max. encoder input frequency differential (single-ended)	1 MHz (100 kHz)	—	1 MHz (100 kHz)
Potentiometers	1	1	2
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)	+5 VDC (IL ≤30 mA)
Encoder supply voltage	+5 VDC (IL ≤70 mA)	—	+5 VDC (IL ≤70 mA)
Status Indicators	Operation: green LED / Error: red LED		
Connections			
J1 Power	Pin header (2 mm), 2 poles	Pin header (2 mm), 2 poles	Pluggable screw-type terminal block (3.5 mm), 2 poles
J2 Motor Motor / Hall sensors	Pin header (2 mm), 3 poles	Mini module pin header, 8 poles	Pluggable screw-type terminal block (3.5 mm), 4 poles
J2A Motor Motor / Hall sensors	Spring-loaded contacts, 2 poles	Spring-loaded contacts, 8 poles	—

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J3 Hall sensors	—	—	Pluggable screw-type terminal block (3.5 mm), 5 poles
J4 Encoder	Pin header (2.54 mm), 5 x 2 poles	—	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	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	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	36 g	204 g
Dimensions (L x W x H)	55 x 40 x 16.1 mm	55 x 40 x 19.8 mm	115 x 75.5 x 24 mm
Mounting holes	for screws M2.5	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...+78°C; Derating: –0.082 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	—	✓	✓
Speed controller (open loop)	✓	✓	✓
with static IxR Compensation	✓	✓	✓
with adaptive IxR Compensation	(✓)*	✓	✓

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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)		✓	

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Protection			
Overcurrent		✓	
Current limiter (adjustable)		✓	
Thermal overload		✓	
Undervoltage		✓	
Overvoltage		✓	
Voltage transients		✓	
Short-circuit of motor winding		✓	
Software			
Installation Program		ESCON Setup	
Graphical User Interface		ESCON Studio	
Startup Wizard		✓	
Regulation Tuning		✓	
Dagnostic		✓	
Firmware Update		✓	
Controller Monitor		✓	
Parameters		✓	
Data Recording		✓	
Online Help		✓	
Language		German, English, French, Italian, Spanish, Japanese, Chinese	
Operating System		Windows 7, Windows XP SP3	
Communication interface		USB 2.0 (full speed)	

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Accessories (not included in delivery)			
404404 ESCON 36/2 DC Connector Set	✓	—	—
425255 ESCON 36/3 EC 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	✓	✓	✓
418719 Adapter BLACK (for flexprint cable (FPC), 11 poles)	—	✓	—
418723 Adapter BLUE (for flexprint cable (FPC), 8 poles)	—	✓	—
418721 Adapter GREEN (for flexprint cable (FPC), 8 poles)	—	✓	—
409286 ESCON USB Stick	✓	✓	✓