

ESCON2 Feature Chart

Modules

Nano

ESCON2 Nano 24/2
809635



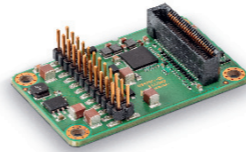
Micro

ESCON2 Micro 60/5
809631

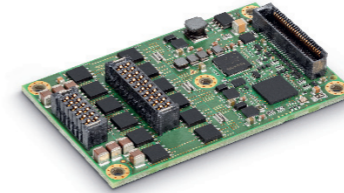


Modules

ESCON2 Module 60/12
854796



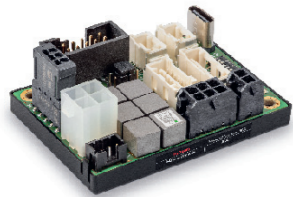
ESCON2 Module 60/30
783722



Ready-to-connect units

Compacts

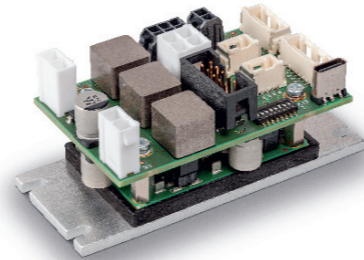
ESCON2 Compact 60/2
903540



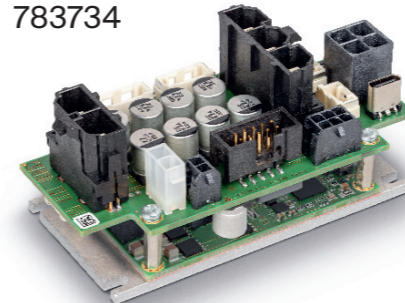
ESCON2 Compact 60/5
903533



ESCON2 Compact 60/12
854801

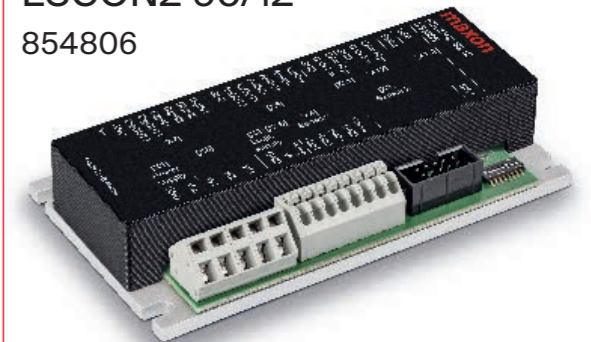


ESCON2 Compact 60/30
783734



Encased housing









ESCON2 60/12
854806



The ESCON2 line of products from maxon are small, powerful 4-quadrant PWM servo controllers. Their high power density allows flexible use for brushed DC motors and brushless EC (BLDC) motors up to 1,800 Watts with various feedback options, such as Hall sensors, incremental encoders, and absolute sensors in many drive applications. The devices are designed to be controlled by analog and digital set values or as a slave node in a CANopen network. You can also operate them via any USB or RS232 port on a Windows workstation. They feature extensive analog and digital I/O functions. They use the latest technology, such as field-oriented control (FOC) and acceleration/velocity feed forward, with high control cycle rates for easy and advanced motion control. The free Graphic User Interface (GUI) "Motion Studio" enables convenient configuration, quick monitoring and diagnostics, and automated tuning of all drive systems.



escon.maxongroup.com

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	ESCON2 Nano 24/2 (809635)	ESCON2 Micro 60/5 (809631)	ESCON2 Module 60/12 (854796)	ESCON2 Module 60/30 (783722)	ESCON2 Compact 60/2 (903540)	ESCON2 Compact 60/5 (903533)	ESCON2 Compact 60/12 (854801)	ESCON2 Compact 60/30 (783734)	ESCON2 60/12 (854806)
Product image									
Communication interfaces									
CANopen slave	max. 1 Mbit/s (external CAN-transceiver required)	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	max. 1 Mbit/s
	CANopen Application Layer and Communication Profile				CiA 301				
	CANopen Additional Application Layer Functions				CiA 302				
	CANopen Layer Setting Services (LSS) and Protocol				CiA 305				
	CANopen Electronic Data Sheet Specification				CiA 306				
	CANopen Device Profile for Drives and Motion Control				CiA 402				
	CANopen Automatic Bit-Rate Detection				CiA 801				
Serial communication interface (RS232)	max. 115'200 bit/s (external RS232-transceiver required)	max. 115'200 bit/s (external RS232-transceiver required)	max. 115'200 bit/s (external RS232-transceiver required)	max. 115'200 bit/s (external RS232-transceiver required)	-	-	-	-	-
	Gateway function RS232-to-CAN	✓	✓	✓	✓	-	-	-	-
USB					Full Speed				
	Gateway function USB-to-CAN	✓							
Motors									
Brushed DC motor up to (cont. / max.)	48 W / 144 W	300 W / 900 W	720 W / 1'440 W	1'800 W / 3'600 W	120 W / 360 W	300 W / 900 W	720 W / 1'440 W	1'800 W / 3'600 W	720 W / 1'440 W
Brushless EC motor (BLDC) up to (cont. / max.)									
Sensors (feedback)									
2026-04									
Without sensor (DC motor)					Current mode only (IOCM)				
Digital Hall sensors (EC motor)					✓				
Digital incremental encoder					✓				
SSI absolute encoder					✓				
BiSS C unidirectional absolute encoder					✓				
Commutation									
Digital Hall sensors (FOC)					✓				
Digital Hall sensors + digital incremental encoder (FOC)					✓				
Digital incremental encoder (FOC)					✓				
Absolute encoder (FOC)					✓				
Automatic commutation offset adjustment (for incremental and absolute encoders)					✓				
Electrical data									
Nominal power supply voltage V_{CC}	5...24 VDC 6...24 VDC [a]	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC
Nominal logic supply voltage V_C	-	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC	10...60 VDC
Absolute supply voltage limits V_{min} / V_{max}	4.75 VDC / 28 VDC 5.8 VDC / 28 VDC [a]	8 VDC / 62 VDC	8 VDC / 62 VDC	8 VDC / 62 VDC	8 VDC / 62 VDC	8 VDC / 62 VDC	8 VDC / 62 VDC	8 VDC / 62 VDC	8 VDC / 62 VDC
Output voltage (max.)	$0.90 \times V_{CC}$	$0.95 \times V_{CC}$	$0.90 \times V_{CC}$	$0.95 \times V_{CC}$	$0.90 \times V_{CC}$	$0.90 \times V_{CC}$	$0.90 \times V_{CC}$	$0.95 \times V_{CC}$	$0.90 \times V_{CC}$
Output current I_{cont} / I_{max}	2 A / 6 A (< 6.5 s)	5 A / 15 A (< 4 s)	12 A / 24 A (< 10 s)	30 A / 60 A (< 4 s)	2 A / 6 A (< 30 s)	5 A / 15 A (< 5 s)	12 A / 24 A (< 10 s)	30 A / 60 A (< 4 s)	12 A / 24 A (< 7.5 s)
Pulse width modulation (PWM) frequency	50 kHz	50 kHz	100 kHz	50 kHz	100 kHz	100 kHz	100 kHz	50 kHz	100 kHz
Sampling rate PI current controller					50 kHz				
Sampling rate PI speed controller					10 kHz				
Sampling rate analog input					50 kHz				
Max. efficiency	93 %	97.5 %	97.7 %	98.5 %	96 %	97 %	97.7 %	98.5 %	97.5 %
Max. speed DC motor	Limited by max. permissible motor speed and the max. output voltage of the controller.								

Feature	Modules				Ready-to-connect Units					
	ESCON2 Nano 24/2 (809635)	ESCON2 Micro 60/5 (809631)	ESCON2 Module 60/12 (854796)	ESCON2 Module 60/30 (783722)	ESCON2 Compact 60/2 (903540)	ESCON2 Compact 60/5 (903533)	ESCON2 Compact 60/12 (854801)	ESCON2 Compact 60/30 (783734)	ESCON2 60/12 (854806)	
Mechanical data										
Dimensions (L × W × H)	23 × 16 × 4.5 mm	36.8 × 23.8 × 6.5 mm	49.5 × 31 × 12.4 mm	67 × 43 × 7.8 mm	55 × 40 × 22.8 mm	55 × 40 × 22.8 mm	81 × 41 × 33.5 mm	93.5 × 46 × 41 mm	116 × 67 × 24 mm	
Weight (approx.)	2.5 g	6 g	12 g	19 g	32 g	32 g	90 g	128 g	182 g	
Mounting	Pluggable (using header) and M2 screws	Pluggable (using header) and M2 screws	Pluggable (using sockets) and M2.5 screws	Pluggable (using sockets) and M2.5 screws	M2.5 screws	M2.5 screws	M3 screws	M3 screws	M3 screws	
Environmental conditions										
Temperature [b]										
	Operation	-40 °C...+45 °C	-40 °C...+50 °C	-40 °C...+50 °C	-40 °C...+25 °C	-40 °C...+60 °C	-40 °C...+35 °C	-40 °C...+50 °C	-40 °C...+25 °C	-40 °C...+45 °C
	Extended range and derating	45 °C...70 °C (for derating check «Hardware Reference»)	50 °C...70 °C (for derating check «Hardware Reference»)	50 °C...80 °C (for derating check «Hardware Reference»)	25 °C...75 °C (for derating check «Hardware Reference»)	60 °C...65 °C (for derating check «Hardware Reference»)	35 °C...65 °C (for derating check «Hardware Reference»)	50 °C...80 °C (for derating check «Hardware Reference»)	25 °C...75 °C (for derating check «Hardware Reference»)	45 °C...85 °C (for derating check «Hardware Reference»)
	Storage	-40...+85 °C								
Altitude [b]										
	Operation	0...500 m MSL								
	Extended range	500...10'000 m MSL (for derating check «Hardware Reference»)								
Humidity										
		5...90 % (condensation not permitted)								
Directives & standards										
EMC Generic					IEC/EN 61000-6-2; IEC/EN 61000-6-3					
EMC Applied					IEC/EN 55032 (CISPR32); 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 94 V-0, unassembled PCB)					✓					
Reliability (MIL-HDBK-217F, MTBF) [b]	988'899 hours	347'202 hours	203'569 hours	317'416 hours	379'151 hours	241'778 hours	160'475 hours	225'850 hours	166'943 hours	
Operating modes										
IOCM	I/O current mode (analog & digital commanding)	✓								
IOVM	I/O velocity mode closed loop (analog & digital commanding)	✓								
CST	Cyclic Synchronous Torque Mode	✓								
CSV	Cyclic Synchronous Velocity Mode	✓								
PVM	Profile Velocity Mode	✓								
Features										
Advanced automatic control settings (Auto Tuning)					✓					
Custom persistent memory					✓					
Feed forward (acceleration/velocity for inertia and friction compensation)					✓					
Field-oriented Control (FOC) sinusoidal commutation					✓					
Digital I/O functionalities										
Inputs (configurable)					✓					
	Direction	✓								
	Drive enable	✓								
	Enable positive / negative direction	✓								
	General purpose	✓								
	Limit switch	✓								
	Mode switch (between IOCM & IOVM)	✓								
	PWM current limit	✓								
	PWM set value	✓								
	PWM set value offset	✓								
	PWM velocity limit	✓								
	PWM velocity ramp	✓								
	Quick stop	✓								

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RC servo current limit					✓				
RC servo set value					✓				
RC servo set value offset					✓				
RC servo velocity limit					✓				
RC servo velocity ramp					✓				
Set value switch (between up to 4 fixed set values)					✓				
Outputs (configurable)					✓				
Current compare					✓				
Fault					✓				
General purpose					✓				
Hall sensor frequency (commutation / rotation)					✓				
Holding brake					✓				
Limitation					✓				
Set brake					✓				
Velocity compare					✓				
Analog I/O functionalities									
Inputs (configurable)					✓				
Analog current limit					✓				
Analog set value					✓				
Analog set value offset					✓				
Analog velocity limit					✓				
Analog velocity ramp					✓				
General purpose					✓				
Outputs (configurable)					✓				
Current monitor					✓				
General purpose					✓				
Temperature monitor					✓				
Velocity monitor					✓				
Built-in limitations & protections									
Current limiter (adjustable)					✓				
Overcurrent					✓				
Short-circuit of motor winding					✓				
Thermal motor protection with sensor (adjustable)					✓				
Thermal motor protection model based (adjustable)					✓				
Thermal controller protection logic & power stage (adjustable)					✓				
Overvoltage (adjustable)					✓				
Undervoltage (adjustable)					✓				
Voltage transients					✓				
Velocity limiter (adjustable)					✓				
Loss of feedback signal					✓				
System monitoring					✓				
Error & warning behavior management					✓				

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Software (en)									
Installation program	Motion Installer								
Graphical user interface	Motion Studio You can watch video tutorials in the ESCON video library. These tutorials show how to start with «Motion Studio». They also show how to set up the communication interfaces and how to configure the controller. The tutorials give basic instructions and helpful tips. Explore the video library on Vimeo: https://vimeo.com/album/4646396								
	Startup					✓			
	Regulation tuning					✓			
	Firmware update					✓			
	Parameter upload / download					✓			
	Motion commander					✓			
	I/O monitor					✓			
	Parameters (Object dictionary)					✓			
	Status monitor					✓			
	Data recorder					✓			
	Command analyzer					✓			
	CANopen wizard					✓			
	Online help					✓			
Operating system	Windows 11, 10								
Windows DLL for PC	✓								
Linux shared object library	✓								
CAN interfaces	IXXAT National Instruments KVaser Vector								
Accessories (not included in delivery)									
854800	ESCON2 CB 60/12	-	-	✓	-	-	-	-	-
783729	ESCON2 CB 60/30	-	-	-	✓	-	-	-	-
809646	ESCON2 EB Micro	-	✓	-	-	-	-	-	-
834838	ESCON2 EB Nano	✓	-	-	-	-	-	-	-
841890	ESCON2 Micro 60/5 Thermal Accessory Kit	-	✓	-	-	-	-	-	-
902315	ESCON2 Module 60/12 Heat Spreader	-	-	✓	-	-	-	-	-
902308	ESCON2 Module 60/12 Thermal Accessory Kit	-	-	✓	-	-	-	-	-
816161	ESCON2 Module 60/30 Heat Spreader	-	-	-	✓	-	-	-	-
802197	ESCON2 Module 60/30 Thermal Pad	-	-	-	✓	-	-	-	-
876085	ESCON2 Nano 24/2 Thermal Accessory Kit	✓	-	-	-	-	-	-	-
894401	Adapter Encoder DIN 41651 to CLIK-Mate	-	-	-	-	✓	✓	✓	✓
549609	Adapter Encoder connector 1.27 to 2.54 mm pitch	-	-	-	-	✓	✓	✓	✓
520858	CAN-CAN Cable	-	-	-	-	✓	✓	✓	✓
520857	CAN-COM Cable	-	-	-	-	✓	✓	✓	✓
275934	Encoder Cable	-	-	-	-	✓	✓	✓	✓
275878	Hall Sensor Cable	-	-	-	-	✓	✓	✓	✓
846644	Motion Connector Set	-	-	-	-	✓	✓	✓	-
846645	Motion Connector Set Highest Current	-	-	-	-	-	-	-	✓
520851	Motor Cable High Current	-	-	-	-	-	-	-	✓
710930	Motor Cable High Current	-	-	-	-	-	-	✓	-
275851	Motor Cable	-	-	-	-	✓	✓	-	-
838460	Motor Cable Highest Current	-	-	-	-	-	-	-	✓
931651	Motor Cable	-	-	-	-	✓	-	-	-
847301	NTC Cable	-	-	-	-	✓	✓	✓	✓
275829	Power Cable	-	-	-	-	-	-	✓	✓
710929	Power Cable High Current	-	-	-	-	-	-	✓	-
838459	Power Cable Highest Current	-	-	-	-	-	-	-	✓

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520854	Signal Cable 7core	-	-	-	-	✓	✓	✓	✓	-
520853	Signal Cable 8core	-	-	-	-	✓	✓	✓	✓	-
262359 & 354046	Terminal Adapter and Ribbon Cable	-	-	-	-	✓	✓	✓	✓	✓
838461	USB Type A-Type C cable	-	-	-	-	✓	✓	✓	✓	✓
845854	USB Type C-Type C cable	-	-	-	-	✓	✓	✓	✓	✓

Legend

Features in gray will follow in an upcoming release.

[a] = With use of sensor supply voltage output.

[b] = For the Modules, the data was measured with the controller configured to reflect a typical customer application. For more details, check the corresponding «Hardware Reference».

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