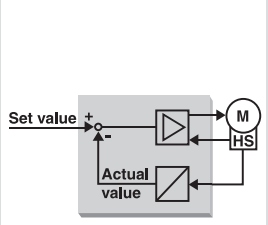

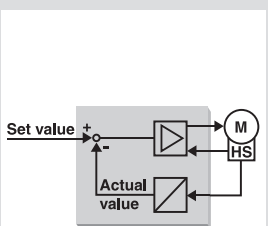

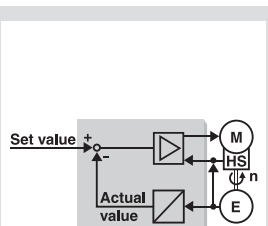



4-Q-EC Amplifier Summary

The basic function of EC motors electronics is the electronic commutation of the motor winding.

Simple speed controls are possible with Hall sensors. For high-quality controls the speed is detected using encoder signals.

The combination of EC motors and 4-quadrant amplifiers offers highly dynamic drive systems.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Hall sensors closed loop</p> 		<p>4-Q-EC Amplifier DECV 50/5</p> <ul style="list-style-type: none"> - 4-Q speed controller with Hall sensors (controlled acceleration and braking) - Motor speed and the current limitation can be adjusted through two different external set values - Direction and Enable can be set - Connection ready module - Motor current 5 A / 10 A - Supply voltage 12 up to 50 VDC - Particularly suitable for low-impedance motors <p>Details on page 390</p> <p>Part Numbers DECV 50/5 305259</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Hall sensors closed loop</p> 		<p>4-Q-EC Amplifier DEC 70/10</p> <ul style="list-style-type: none"> - 4-Q speed controller with Hall sensors (controlled acceleration and braking) - Voltage regulator with IxR compensation, digital speed controller (via Hall sensors) or current controller - Motor speed is adjustable by a built-in potentiometer or by an external set value voltage - Connection ready module - Motor current 10 A / 20 A - Supply voltage 10 up to 70 VDC <p>Details on page 390</p> <p>Part Numbers DEC 70/10 306089</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Hall sensors and encoder closed loop</p> 		<p>4-Q-EC Servoamplifier DES</p> <ul style="list-style-type: none"> - Dynamical control of speed and torque - Sinusoidal commutation - Suitable for positioning applications - 4-Q operation - Connection ready module - Communication by RS232 or CAN possible <p>Details on page 391</p> <p>Part Numbers DES 50/5 205679 DES 70/10 228597</p>

DES 50/5 4-Q-EC Servoamplifier

CAN RS232 GUI



The DES (Digital EC Servoamplifier) is a very powerful digital servoamplifier with sinusoidal commutation for perfectly controlling EC motors up to 250 watts. The motor used must be fitted with Hall sensors and a 3-channel encoder.

Operating modes

Digital speed controller and current controller (torque controller), suitable for positioning tasks.

Digital

Digital signal processor (DSP) allows fast digital controlling. Parameters can be set digitally in a reproducible way.

Easy start-up procedure

Simple connection, compatible with maxon EC motors. Easy adjustment using few potentiometers or alternatively configurable and commanding by serial interface (RS232 or CAN).

Protection circuit

Monitoring of overcurrent, short-circuiting of motor cables and overvoltage.

PC based commanding

Support by graphical user interface (GUI), Windows DLL for RS232 with several programming examples.

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DES 70/10 4-Q-EC Servoamplifier

CAN RS232 GUI



The DES (digital EC servoamplifier) is a very powerful digital servoamplifier with sinusoidal commutation for perfectly controlling EC motors up to 700 watts. The motor used must be fitted with Hall sensors and a 3-channel encoder.

Operating modes

Digital speed controller and current controller (torque controller), suitable for positioning tasks.

Digital

Digital signal processor (DSP) allows fast digital controlling. Parameters can be set digitally in a reproducible way.

Easy start-up procedure

Simple connection, compatible with maxon EC motors. Easy adjustment using few potentiometers or alternatively configurable and commanding by serial interface (RS232 or CAN).

Protection circuit

Monitoring of overcurrent, short-circuiting of motor cables and overvoltage.

PC based commanding

Support by graphical user interface (GUI), Windows DLL for RS232 with several programming examples.

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Dimensions and connections page 395

maxon special program

4-Q-EC Servoamplifier Data

CAN RS232 GUI



DES 50/5 4-Q-EC Servoamplifier
Digital servoamplifier with sinusoidal commutation for perfectly controlling EC motors with Hall sensors and encoder and an output of up to 250 watts.



DES 70/10 4-Q-EC Servoamplifier
Digital servoamplifier with sinusoidal commutation for perfectly controlling EC motors with Hall sensors and encoder and an output of up to 700 watts.

maxon special program

Operating modes	Speed controller, current controller	Speed controller, current controller
Electrical Data		
Operating voltage V_{CC}	12 - 50 VDC	24 - 70 VDC
Max. output voltage	$0.9 \times V_{CC}$	$0.9 \times V_{CC}$
Max. output current I_{max}	15 A	30 A
Continuous output current I_{cont}	5 A	10 A
Switching frequency of power stage	50 kHz	50 kHz
Max. efficiency	92 %	92 %
Band width current controller	1 kHz	1 kHz
Max. speed (1 pole pair)	25 000 rpm	25 000 rpm
Built-in motor choke per phase	160 μ H / 5 A	Minimum required terminal inductance 400 μ H
Input		
Set value configurable (1024 Steps)	-10...+10 V/0...+5 V	-10...+10 V/0...+5 V
"Enable"	+2.4...50 V	+2.4...50 V
Digital 1 (Switch "Monitor n" / "Monitor l")	+2.4...50 V	+2.4...50 V
Digital 2 (Switch speed- / current controller)	+2.4...50 V	+2.4...50 V
STOP	+2.4...50 V	+2.4...50 V
Encoder signals	A, A\, B, B\, I, I\ max. 1 MHz 3-channel encoder is required	A, A\, B, B\, I, I\ max. 1 MHz 3-channel encoder is required
Hall sensor signals	H1, H2, H3	H1, H2, H3
Output		
Monitor configurable	-10...+10 V/0...+5 V	-10...+10 V/0...+5 V
Status reading "Ready"	Open Collector, max. 30 V ($I_L < 20$ mA)	Open Collector, max. 30 V ($I_L < 20$ mA)
Voltage outputs		
Encoder supply voltage	+5 VDC, max. 100 mA	+5 VDC, max. 100 mA
Hall sensors supply voltage	+5 VDC, max. 50 mA	+5 VDC, max. 50 mA
Auxiliary voltage		+5 VDC, max. 20 mA
Interface		
RS232	RxD; TxD (max. 115 200 bit/s)	RxD; TxD (max. 115 200 bit/s)
CAN	high; low (max.1 Mbit/s)	high; low (max.1 Mbit/s)
Trim potentiometer	n_{max} , Offset, I_{max} , gain	n_{max} , Offset, I_{max} , gain
Indicator	Bi-colour LED, green = READY, red = ERROR	Bi-colour LED, green = READY, red = ERROR
Ambient temperature and humidity range		
Operation	-10...+45°C	-10...+45°C
Storage	-40...+85°C	-40...+85°C
No condensation	20...80%	20...80%
Mechanical Data		
Weight	Approx. 430 g	Approx. 400 g
Dimensions (L x W x H)	180 x 103 x 26 mm (see page 395)	180 x 103 x 29 mm (see page 395)
Mounting threads	Flange for M4-screws	Flange for M4-screws
Connections	See page 395	See page 395
Part Numbers		
	205679 DES 50/5, digital 4-Q-EC Servoamplifier in module housing	228597 DES 70/10, digital 4-Q-EC Servoamplifier in module housing

Accessories		
	223774 Encoder adapter according to DIN41651 screw type terminal block	347919 Choke module 3 x 0.1 mH, 10 A
	235811 DSR 70/30 Shunt regulator	223774 Encoder adapter according to DIN41651 on screw type terminal block
		235811 DSR 70/30 Shunt regulator