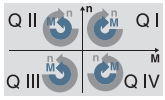
4-Q-DC Servoamplifier

4-quadrant DC amplifiers accelerate and decelerate brushed DC motors in both rotating directions. The power stages are controlled on a linear or pulsed basis.

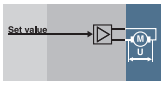
4-Quadrant operation

– Controlled acceleration and braking operation in both rotating directions (all 4 quadrants)

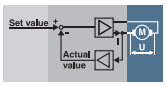


Operating modes

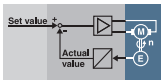
Voltage regulator
The motor is fed with a controlled voltage proportional to the set speed value. Load changes are not compensated.



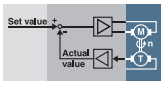
IxR compensation
As with voltage regulator however, load changes are additionally compensated. Suitable for average speed constancy demands.



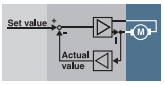
Encoder – Speed control
The speed controller compares the digital speed signal with the set value and adjusts the speed dynamically if there is a difference. Excellent control with long service life.



DC tacho – Speed control
Classical speed control using analogue actual value measurement. High speed dynamic possible.



Current control
The current controller keeps the motor current (torque) at the predetermined set value. Suitable for applications with a superior position controller.



Details on controllers can be found in the catalogue and under www.maxonmotor.com

LSC 4-Q-DC Servoamplifier

The LSC 30/2 (Linear Servo Controller) is a linear 4-Quadrant Servoamplifier used to control permanent magnet activated DC motors up to approx. 50 watts.

Linear power stage
Ideally suited for small outputs power, low electromagnetic emission, no motor choke required.

Operating modes
Voltage regulator, IxR compensation, encoder speed control, DC tacho speed control or current control adjustable with a switch from outside.

Design
Robust metal housing with variable installation options on assembly plate or 19" rack.

Set value input
Via external potentiometer, external set value voltage or using internal potentiometer.

Easy start-up procedure
Pluggable screw type terminal block, simple set-up with potentiometer, robust designed PI controller.

Electrical Data	LSC 30/2
Supply voltage V_{CC}	12 - 30 VDC
Max. output voltage	V_{CC} - 5 V
Max. output current I_{max}	2 A
Continuous output current I_{cont}	2 A
Mechanical Data	
Weight	approx. 330 g
Dimensions (LxWxH)	103x100x34 mm
Mounting	Flange for M4-screws
Order Number	
250521	LSC 30/2 4-Q-DC Servoamplifier in modular housing

ADS 4-Q-DC Servoamplifier

The ADS is a powerful pulse-width modulated (PWM) Servoamplifier for controlling permanent magnet activated DC motors of 10 – 500 watts. Available in modular housing as Standard and Power Version.

Pulsed output stage
Suitable for controlling low and high output power. 95% efficiency thanks to state-of-the-art MOSFET technology.

Operating modes
IxR compensation, encoder speed control, DC tacho speed control or current control adjustable with a switch from outside.

Design
Robust metal housing in module form offers several mounting options.

Excellent control characteristics
Stable speed behaviour when set value and disturbance variable change, fast current controller.

Protection circuit
Protected against over current, overheating and short-circuit of motor cable.

Set value input
External potentiometer or external set value voltage.

Electrical Data	ADS 50/5	ADS 50/10
Supply voltage V_{CC}	12 - 50 VDC	12 - 50 VDC
Max. output voltage	0.9 x V_{CC}	0.9 x V_{CC}
Max. output current I_{max}	10 A	20 A
Continuous output current I_{cont}	5 A	10 A
Mechanical Data		
Weight (approx.)	400 g	400 g
Dimensions (LxWxH)	180x103x26 mm	180x103x26 mm
Mounting	Flange for M4-screws	
Order Numbers		
145391	ADS 50/5 4-Q-DC Servoamplifier Standard Version in module housing	
201583	ADS 50/10 4-Q-DC Servoamplifier Power Version in module housing	
Accessories		
235811	DSR 70/30 Shunt regulator	

ADS_E 4-Q-DC Servoamplifier

The ADS_E is a powerful pulse-width modulated (PWM) Servoamplifier for controlling permanent magnet activated DC motors of 10 – 500 watts. Available in Eurocard format as Standard and Power Version.

Pulsed output stage
Suitable for controlling low and high output power. 95% efficiency thanks to state-of-the-art MOSFET technology.

Operating modes
IxR compensation, encoder speed control, DC tacho speed control or current control adjustable with a switch from outside.

Design
Standardized Eurocard version (with accessories) for the installation in a 19"-Rack or in a plug-in card system.

Excellent control characteristics
Stable speed behaviour when set value and disturbance variable change, fast current controller.

Protection circuit
Protected against over current, overheating and short-circuit of motor cable.

Set value input
External potentiometer or external set value voltage.

Electrical Data	ADS_E 50/5	ADS_E 50/10
Supply voltage V_{CC}	12 - 50 VDC	12 - 50 VDC
Max. output voltage	0.9 x V_{CC}	0.9 x V_{CC}
Max. output current I_{max}	10 A	20 A
Continuous output current I_{cont}	5 A	10 A
Mechanical Data		
Weight (approx.)	175 g	410 g
Dimensions (LxWxH)	160x100x16 mm	160x100x30.5 mm
Mounting		Rack-Installation
Order Numbers		
166143	ADS_E 50/5 4-Q-DC Servoamplifier Standard Version in Eurocard format	
168049	ADS_E 50/10 4-Q-DC Servoamplifier Power Version in Eurocard format	
Accessories		
167850	Front panel 3HE, 5TE to ADS_E 50/5	
168910	Front panel 3HE, 7TE to ADS_E 50/10	
166873	Backplane with screw terminals	

4-Q-DC Servoamplifier Data

LSC 30/2 4-Q-DC Servoamplifier
Linear 4-quadrant servoamplifier for permanent magnet activated DC motors up to approx. 50 watts.

ADS 50/5 4-Q-DC Servoamplifier
Powerful PWM servoamplifier for permanent magnet activated DC motors from 10 to approx. 250 watts output power. Available as Standard Version in module housing.

Operating modes		
	IxR compensation, voltage regulator, encoder speed control, DC tacho speed control, current control	**IxR compensation, encoder speed control, DC tacho speed control, current control**
Electrical Data		
Operating voltage V_{CC}	12 - 30 VDC	12 - 50 VDC
Max. output voltage	V_{CC} - 5 V	0.9 x V_{CC}
Max. output current I_{max}	2 A	10 A
Continuous output current I_{cont}	2 A	5 A
Switching frequency of power stage		50 kHz
Max. efficiency		95 %
Built-in motor choke		150 µH / 5 A
Input		
Set value	Configurable, -10 ... +10 V, -3.9 ... +3.9 V	-10 … +10 V
Enable	«Disable» Disable min. V_{CC} - 1 V, Enable max. GND + 1 V	«Enable» +4 … +50 V
DC tacho	min. 2 VDC, max. 50 VDC	min. 2 VDC, max. 50 VDC
Encoder signals	Channel A and channel B, max. 100 kHz, TTL	Channel A, A\, B, B\, max. 100 kHz, TTL
Output		
Status reading «Ready»	Open collector, max. 30 VDC (I_L < 20 mA)	Open collector max. 30 VDC (I_L < 20 mA)
Monitor current «Monitor I»		-10 … +10 VDC (short circuit protected)
Monitor speed «Monitor n»		-10 … +10 VDC (short circuit protected)
Voltage outputs		
Auxiliary voltages	+3.9 VDC, -3.9 VDC, max. 2 mA	+12/-12 VDC, max. 12 mA (short circuit protected)
Encoder supply voltage	+5 VDC, max. 80 mA	+5 VDC, max. 80 mA
Trim potentiometer	IxR compensation, Offset, n_{max}, I_{max}, gain	IxR compensation, Offset, n_{max}, I_{max}, gain
Protective functions	Heat monitoring of power stage	Protected against thermal overload, overcurrent and short-circuit of motor cables
Indicator	Green LED = READY, red LED = ERROR	Bi-colour LED, green = READY, red = ERROR
Ambient temperature / Humidity range		
Operation	0 … +45°C	-10 … +45°C
Storage	-40 … +85°C	-40 … +85°C
No condensation	20 … 80 %	20 … 80 %
Mechanical Data		
Weight	Approx. 330 g	Approx. 400 g
Dimensions (L x W x H)	103 x 100 x 34 mm (see page 284)	180 x 103 x 26 mm (see page 284)
Mounting threads	Flange for M4-screws	Flange for M4-screws
Connections	See page 284	See page 284
Order Number		
	250521 LSC 30/2, 4-Q-DC Servoamplifier in module housing	**145391** ADS 50/5, 4-Q-DC Servoamplifier Standard Version in module housing
Accessories		
		235811 DSR 70/30 Shunt regulator