

## 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.

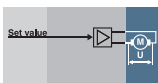
### 4-Quadrant operation

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

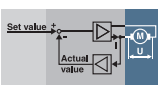


### Operating modes

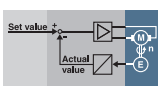
**Voltage regulator**  
The motor is fed with a controlled voltage proportional to the set speed value. Load changes are not compensated.



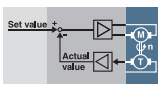
**IxR compensation**  
As with voltage regulator however, load changes are additionally compensated. Suitable for average speed constancy demands.



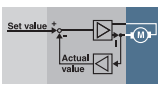
**Encoder - Speed control**  
The speed controller compares the digital speed signal with the set value and adjusts the speed dynamically if there is a difference. Excellent control with long service life.



**DC tachometer - 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.



## 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 tachometer 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 $V_{DC}$	12 - 30 VDC
Max. output voltage	$V_{DC} - 5 V$
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 tachometer speed control or current control adjustable with a switch from outside.

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

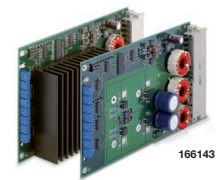
**Excellent control characteristics**  
Stable speed behaviour when set value and disturbance variable change, fast current controller.

**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 $V_{DC}$	12 - 50 VDC	12 - 50 VDC
Max. output voltage	$0.9 \times V_{DC}$	$0.9 \times V_{DC}$
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	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 tachometer 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 $V_{DC}$	12 - 50 VDC	12 - 50 VDC
Max. output voltage	$0.9 \times V_{DC}$	$0.9 \times V_{DC}$
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	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	

Details on controllers can be found in the catalogue and under [www.maxonmotor.com](http://www.maxonmotor.com)

**maxon motor**  
driven by precision

# 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

	<b>lxR compensation, voltage regulator, encoder speed control, DC tachometer speed control, current control</b>	<b>lxR compensation, encoder speed control, DC tachometer speed control, current control</b>
<b>Electrical Data</b>		
Operating voltage $V_{CC}$	12 - 30 VDC	12 - 50 VDC
Max. output voltage	$V_{CC} - 5 V$	$0.9 \times V_{CC}$
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 $\mu$ H / 5 A
<b>Input</b>		
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 tachometer	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
<b>Output</b>		
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)
<b>Voltage outputs</b>		
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
<b>Trim potentiometer</b>	lxR compensation, Offset, $n_{max}$ , $I_{max}$ gain	lxR compensation, Offset, $n_{max}$ , $I_{max}$ gain
<b>Protective functions</b>	Heat monitoring of power stage	Protected against thermal overload, overcurrent and short-circuit of motor cables
<b>Indicator</b>	Green LED = READY, red LED = ERROR	Bi-colour LED, green = READY, red = ERROR
<b>Ambient temperature / Humidity range</b>		
Operation	0 ... +45°C	-10 ... +45°C
Storage	-40 ... +85°C	-40 ... +85°C
No condensation	20 ... 80 %	20 ... 80 %
<b>Mechanical Data</b>		
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
<b>Order Number</b>		
	<b>250521</b> LSC 30/2, 4-Q-DC Servoamplifier in module housing	<b>145391</b> ADS 50/5, 4-Q-DC Servoamplifier Standard Version in module housing

## Accessories

**235811** DSR 70/30 Shunt regulator