

# Actuator

## LD3

LD3 features its compact design, which is suitable for various applications that require limited installation space, such as window opener, adjustable car driver set and medical equipment.



### Feature

---

- Main applications: Industrial, home care, furniture, medical
- Input voltage: 12V DC / 24V DC
- Max. load: 1000N (Push / Pull)
- Max. static load: 2500N (Push / Pull)
- Typical speed at no load: 43.9 mm/sec
- Typical speed at full load: 5.5 mm/sec (1000N load)
- Stroke: 50 / 100 / 150 / 200 / 250 / 300 mm
- Noise level: Please refer to Performance Data
- IP Protection level: IP54
- Color: Aluminum grey
- Preset limit switches
- Duty cycle: 25%, max. 1 min. continuous operation in 4 min.
- Ambient operation temperature: -25°C ~ +65°C
- Certified: CE Marking, Electromagnetic Compatibility Directive 2014/30/EU (for LD3 only),  
Medical Device Directive 93/42/EEC (for LD3M only)

## Option

---

- Medical version (LD3M, approved according to EN60601)
- Quiet version (LD3Q, noise level  $\leq 55$ dB)
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Analog positioning feedback with Potentiometer (POT)
- IP Protection level: IP65
- Clamp: Clamp connection is available if rear connector is not preferred (*Fig. 1*)
- Mounting bracket (MB22) (*Fig. 2*)



Fig. 1

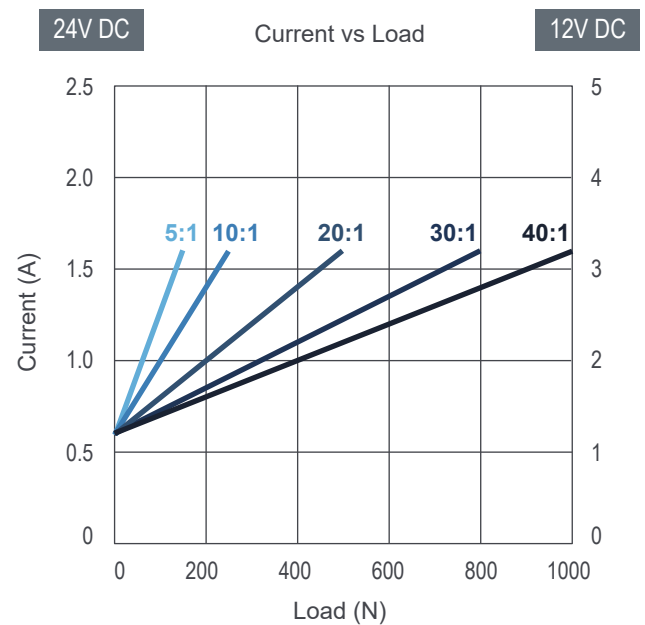
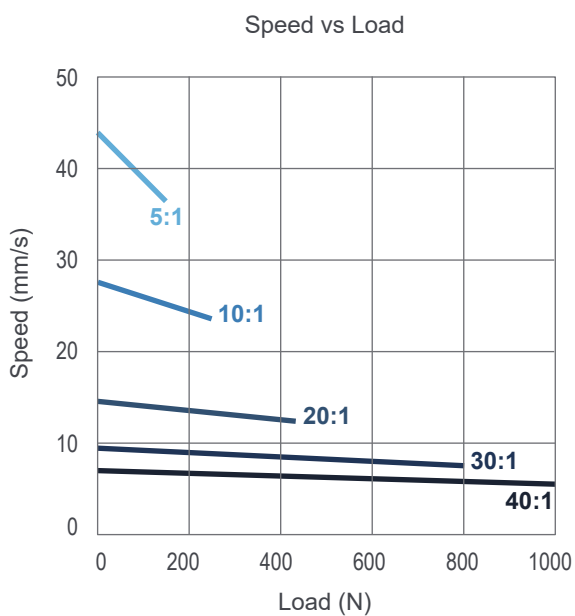


Fig. 2

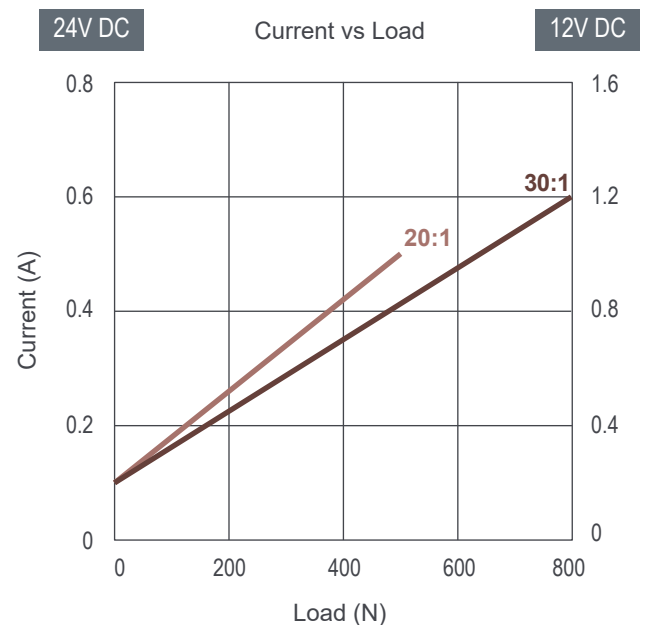
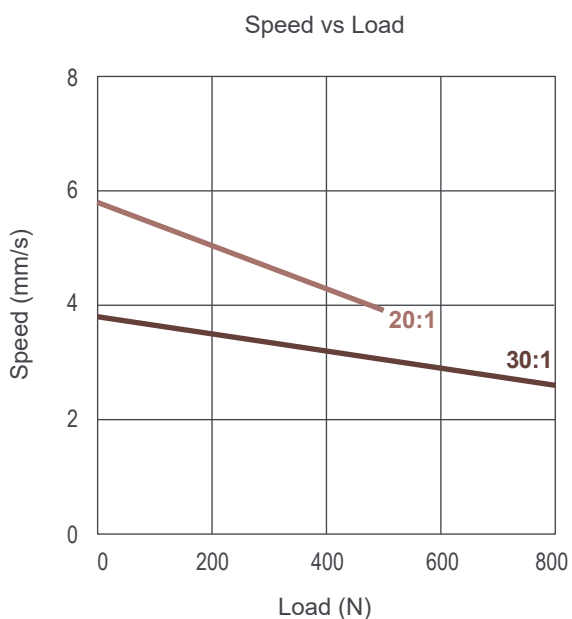
## Performance Data

Model No.	Gear Ratio	Push / Pull Max. (N)	Self-locking force Max. (N)	Typical Speed (mm/s)		Typical Current (A)				Noise Level (dB)
				No Load	Full Load	No Load		Full Load		
						24V	12V	24V	12V	
LD3(M)-XX-05-K3...	5:1	150	2500	43.9	36.5	0.6	1.2	1.6	3.2	≤70
LD3(M)-XX-10-K3...	10:1	250	2500	27.6	23.5	0.6	1.2	1.6	3.2	≤70
LD3(M)-XX-20-K3...	20:1	500	2500	14.6	12.3	0.6	1.2	1.6	3.2	≤70
LD3(M)-XX-30-K3...	30:1	800	2500	9.5	7.5	0.6	1.2	1.6	3.2	≤70
LD3(M)-XX-40-K3...	40:1	1000	2500	7.0	5.5	0.6	1.2	1.6	3.2	≤70
LD3Q-XX-20-D3...	20:1	500	2500	5.8	3.9	0.1	0.2	0.5	1.0	≤55
LD3Q-XX-30-D3...	30:1	800	2500	3.8	2.6	0.1	0.2	0.6	1.2	≤55

### LD3 & LD3M



### LD3Q



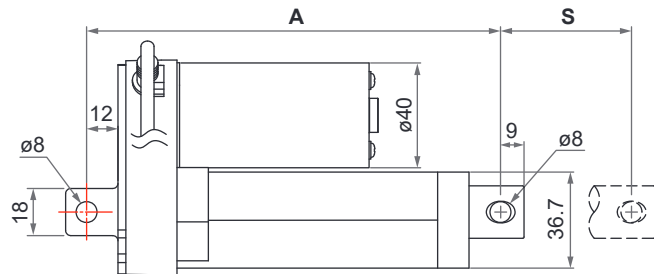
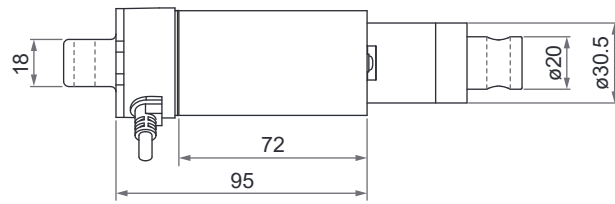
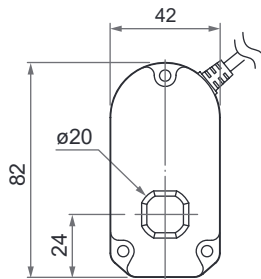
### Remarks:

- \* The typical speed or typical current means the average value neither upper limit nor lower limit. The performance curves are made with typical values.

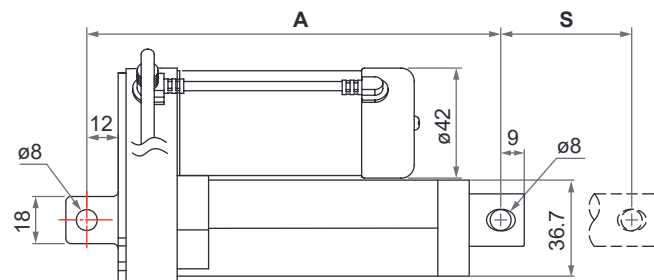
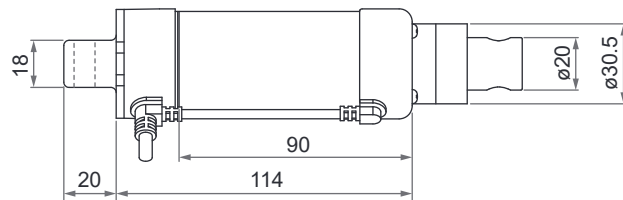
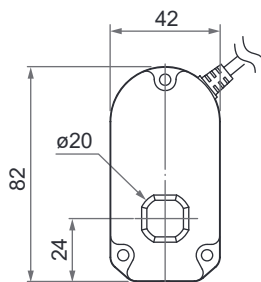
## Dimensions

### Regular version (LD3) & Quiet version (LD3Q)

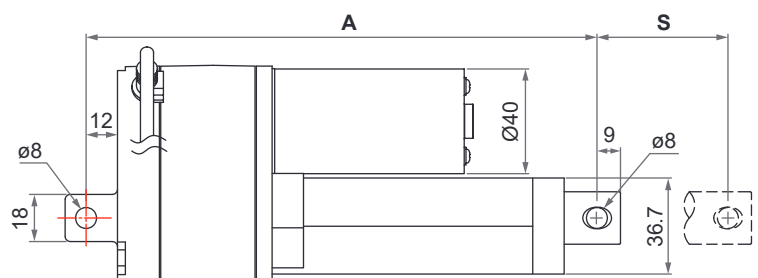
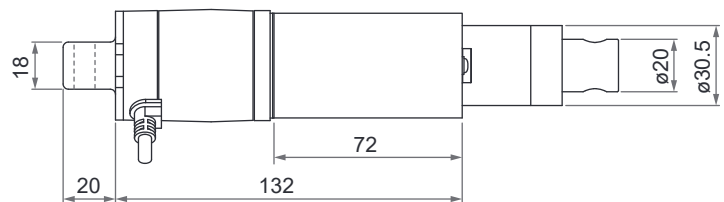
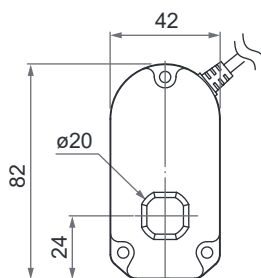
#### • Basic



#### • With Hall effect sensor



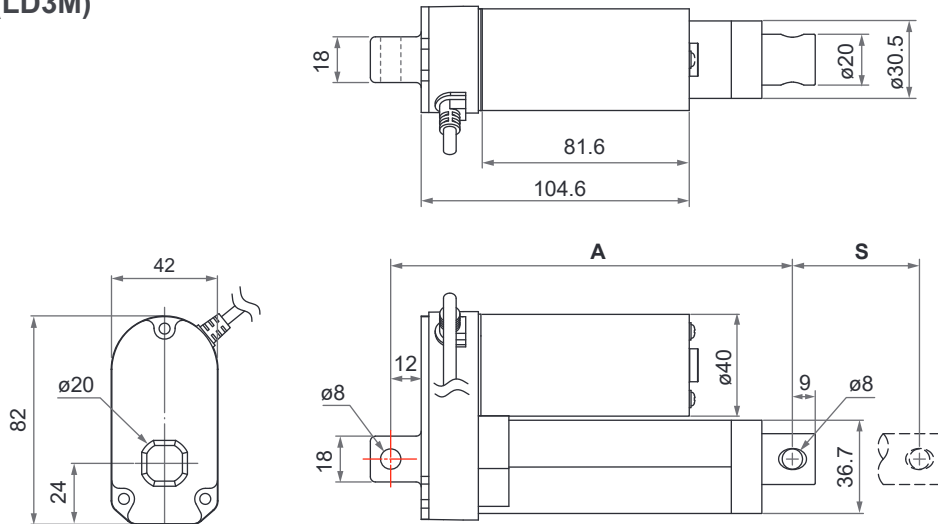
#### • With Potentiometer



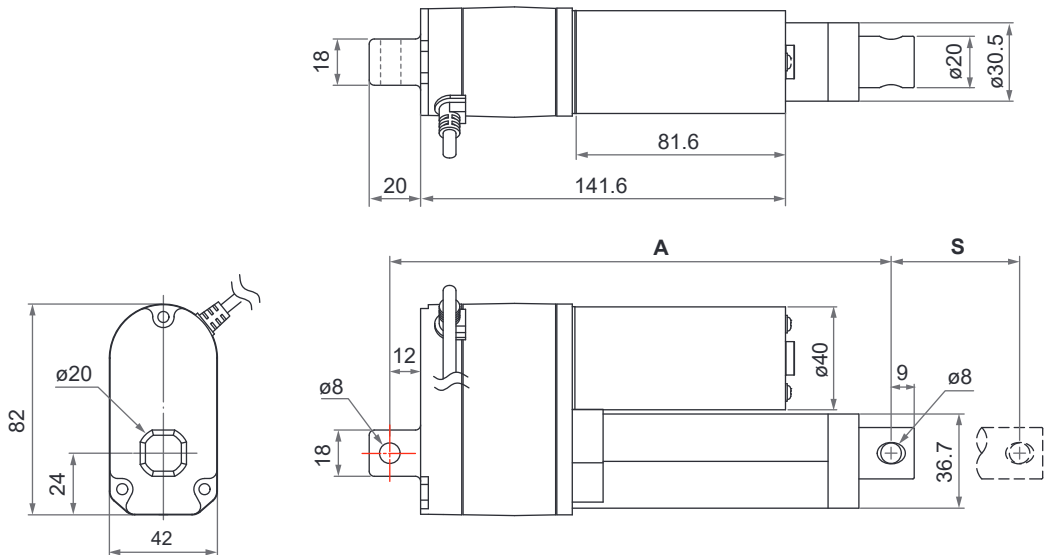
**Note:** As an example in 0° orientation for rear connector.

## Medical version (LD3M)

### • Basic



### • With Potentiometer



**Note:** As an example in 0° orientation for rear connector.

### • Installation Dimension

#### Retracted length (A)

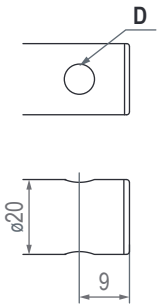
Option	Front connector code	Stroke (S)					
		50	100	150	200	250	300
Standard or Hall sensor	1	158	209	260	311	362	413
	3	199	250	301	352	403	454
	6	168.5	219.5	270.5	321.5	372.5	423.5
POT	1	195	246	297	348	399	450
	3	236	287	338	389	440	491
	6	205.5	256.5	307.5	358.5	409.5	460.5

(tolerance: ±3mm)

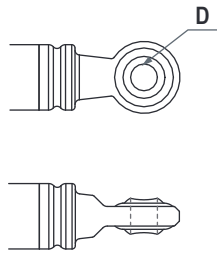
**Note:** The dimension "A" is shown in page 4 & 5, as indicated in the figure above.

● **Front Connector**

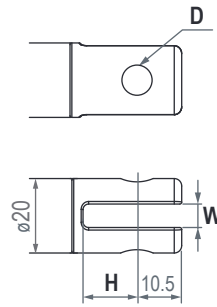
1: Drilled hole



3: Spherical rod eye

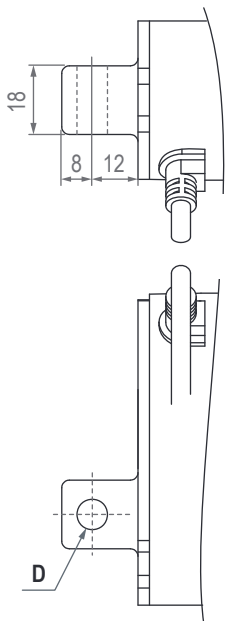


6: Plastic slot

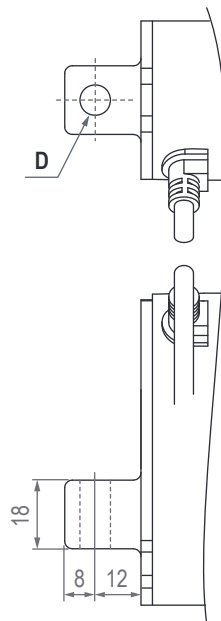


● **Rear connector**

1: Zinc alloy clevis, 0°

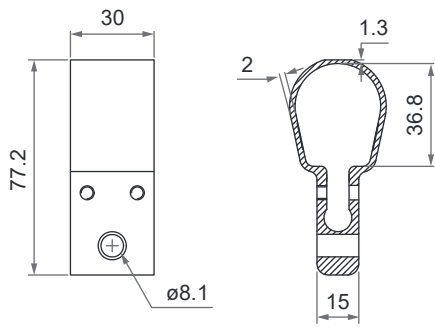


3: Zinc alloy clevis, 90°

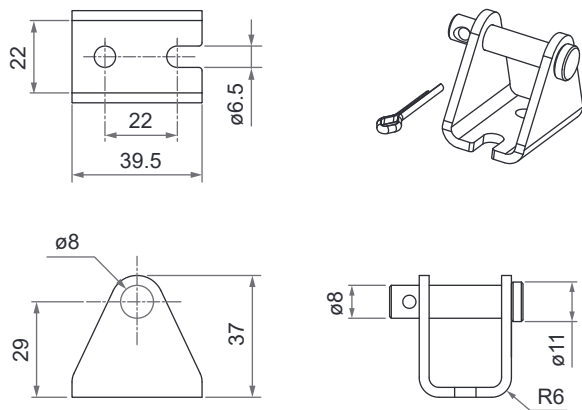


Front connector code	Diameter of pivot without bushing (D)	Slot width (W)	Slot depth (H)
1	$\phi 6.4, \phi 8, \phi 10$	N/A	N/A
3	$\phi 8$	N/A	N/A
6	$\phi 8, \phi 10$	6	15
Rear connector code			
1	$\phi 6.4, \phi 8, \phi 10$	N/A	N/A
3	$\phi 6.4, \phi 8, \phi 10$	N/A	N/A

• Clamp



• Mounting bracket (MB22)



## Compatibility

### Regular version (LD3) & Quiet version (LD3Q)

Product	Model	LD3 & LD3Q spec
Control box	T Control, CS1, CS2, CBT2, CB3T, CB4M	- Without positioning sensor feedback - 4-Pin Moteck F-type DIN plug
	CB2P, CB4P, CB4P-HP, MD6C, MD7C	- Without positioning sensor feedback - 4-Pin Moteck H-type or V-type DIN plug
	CB3T-SY, CB3T-SYD, CB4M-S, CB4M-B	- With dual Hall effect sensors - 6-Pin Moteck F-type DIN plug

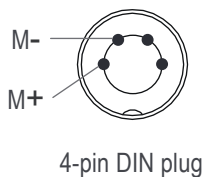
### Medical version (LD3M)

Product	Model	LD3M spec
Control box	CB2P, CB4P, CB4P-HP, MD6C, MD7C	- Without positioning sensor feedback - 4-Pin Moteck H-type or V-type DIN plug

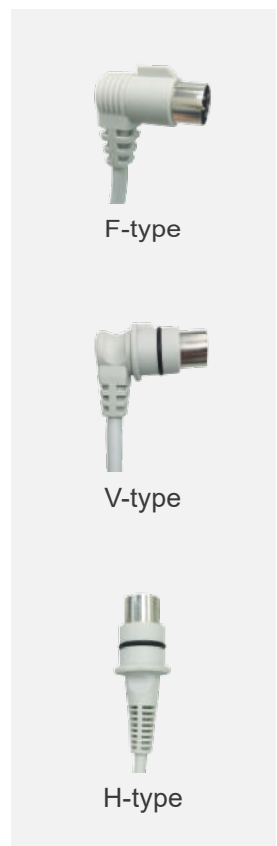
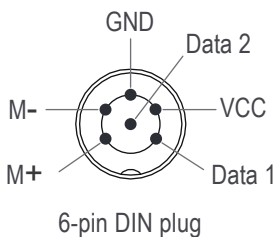
## Cable Plug

With Moteck F-type, V-type or H-type DIN plug (required to be connected to the control box):

- Without positioning sensor feedback



- With dual Hall effect sensors



**Note:** Connect Pin (M+) to “+” & Pin (M-) to “-“ of DC power, the actuator will extend.



# Wiring

## Wire definitions:

### • Without positioning sensor feedback

Power	
Red	Black
M+	M-

**Note:**

1. Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.



### • With Hall effect sensor x 1

Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	DATA

**Note:**

1. Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.
2. Hall effect sensor resolution

Gear ratio	Resolution (pulses/mm)
5:1	2.27
10:1	3.62
20:1	6.86
30:1	11.0
40:1	14.5

3. Voltage input range (VCC): 3.5~20V
4. Output voltage of signal (Data) = Input voltage of VCC
5. Hall signal data



### • With Hall effect sensor x 2

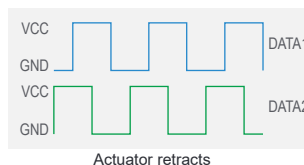
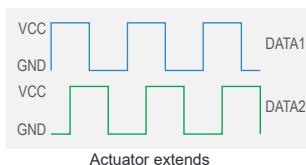
Power		Signal			
Red	Black	White	Yellow	Blue	Green
M+	M-	GND	VCC	DATA1	DATA2

**Note:**

1. Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.
2. Hall effect sensor resolution

Gear ratio	Resolution (pulses/mm)
5:1	2.27
10:1	3.62
20:1	6.86
30:1	11.0
40:1	14.5

3. Voltage input range (VCC): 3.5~20V
4. Output voltage of signal (Data) = Input voltage of VCC
5. Hall signal data



● With Potentiometer (POT)

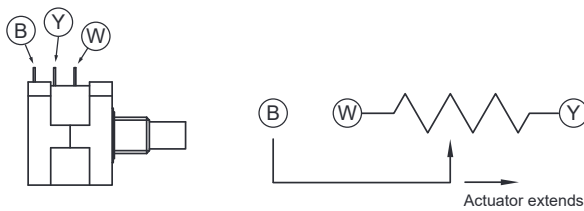
Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data

**Note:**

1. Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.
2. The resistance between blue and white wires increases when the actuator extends, and decreases when it retracts.
3. Potentiometer resistance

Stroke (mm)	Resistance (tolerance: $\pm 0.3K\Omega$ )
50	0.3 ~ 9.3K
100	0.3 ~ 9.7K
150	0.3 ~ 8.6K
200	0.3 ~ 9.6K
250	0.3 ~ 9.3K
300	0.3 ~ 9.3K

4. Voltage input range (VCC): 70V/0.007A(10K)
5. Output voltage of signal (Data) = Input voltage of VCC
6. Potentiometer data



## Ordering Key

Regular version

**LD3 - 24 - 10 - K3 - 100 - C 1 1 - HS2 - 54 - M2 - C**

<b>Input voltage</b>	<b>12:</b> 12V DC <b>24:</b> 24V DC
<b>Gear ratio</b>	<b>05, 10, 20, 30, 40</b> (Refer to Performance Data)
<b>Motor and Spindle type</b>	<b>K3</b> (Refer to Performance Data)
<b>Stroke</b>	<b>050:</b> 50 mm <b>100:</b> 100 mm <b>150:</b> 150 mm <b>200:</b> 200 mm <b>250:</b> 250 mm <b>300:</b> 300 mm
<b>Front connector</b>	<b>1:</b> Drilled hole <b>3:</b> Spherical rod eye <b>6:</b> Plastic slot (Refer to page 6)
<b>Rear connector</b>	<b>1:</b> Zinc alloy clevis, 0° <b>3:</b> Zinc alloy clevis, 90° (Refer to page 6)
<b>Positioning feedback</b>	<b>Blank:</b> None <b>HS1:</b> Hall effect sensor x 1 <b>HS2:</b> Hall effect sensor x 2 <b>POT:</b> Potentiometer
<b>IP Protection level</b>	<b>54:</b> IP54 (standard) <b>65:</b> IP65
<b>Mounting bracket (MB22)</b>	<b>Blank:</b> None <b>M1:</b> Mounting bracket x 1 <b>M2:</b> Mounting bracket x 2
<b>Clamp</b>	<b>Blank:</b> None <b>C:</b> Clamp

Quiet version

LD3Q - 24 - 10 - D3 - 100 - C 1 1 - HS2 - 54 - M2 - C

<b>Input voltage</b>	<b>12:</b> 12V DC <b>24:</b> 24V DC
<b>Gear ratio</b>	<b>20, 30</b> (Refer to Performance Data)
<b>Motor and Spindle type</b>	<b>D3</b> (Refer to Performance Data)
<b>Stroke</b>	<b>050:</b> 50 mm <b>100:</b> 100 mm <b>150:</b> 150 mm <b>200:</b> 200 mm <b>250:</b> 250 mm <b>300:</b> 300 mm
<b>Front connector</b>	<b>1:</b> Drilled hole <b>3:</b> Spherical rod eye <b>6:</b> Plastic slot (Refer to page 6)
<b>Rear connector</b>	<b>1:</b> Zinc alloy clevis, 0° <b>3:</b> Zinc alloy clevis, 90° (Refer to page 6)
<b>Positioning feedback</b>	<b>Blank:</b> None <b>HS1:</b> Hall effect sensor x 1 <b>HS2:</b> Hall effect sensor x 2
<b>IP Protection level</b>	<b>54:</b> IP54 (standard) <b>65:</b> IP65
<b>Mounting bracket (MB22)</b>	<b>Blank:</b> None <b>M1:</b> Mounting bracket x 1 <b>M2:</b> Mounting bracket x 2
<b>Clamp</b>	<b>Blank:</b> None <b>C:</b> Clamp

Medical version

LD3M - 24 - 10 - K3 - 100 - C 1 1 - POT - 65 - M2 - C

<b>Input voltage</b>	12: 12V DC 24: 24V DC
<b>Gear ratio</b>	05, 10, 20, 30, 40 (Refer to Performance Data)
<b>Motor and Spindle type</b>	K3 (Refer to Performance Data)
<b>Stroke</b>	050: 50 mm 100: 100 mm 150: 150 mm 200: 200 mm 250: 250 mm 300: 300 mm
<b>Front connector</b>	1: Drilled hole 3: Spherical rod eye 6: Plastic slot (Refer to page 6)
<b>Rear connector</b>	1: Zinc alloy clevis, 0° 3: Zinc alloy clevis, 90° (Refer to page 6)
<b>Positioning feedback</b>	Blank: None POT: Potentiometer
<b>IP Protection level</b>	54: IP54 (standard) 65: IP65
<b>Mounting bracket (MB22)</b>	Blank: None M1: Mounting bracket x 1 M2: Mounting bracket x 2
<b>Clamp</b>	Blank: None C: Clamp

## Certifications

---

### Regular version

The LD3 actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

Emission	Immunity
EN 55014-1:2006+A1:2009+A2:2011	EN 55014-2:1997+A1:2001+A2+:2008 Category I

### Medical version

The LD3M actuator is compliant with the following regulations, in terms of the essential conformity requirements of MDD Directive of 93/42/EEC.

Emission	Immunity
EN 60601-1-2:2015 CISPR 11:2009+A1:2010 GROUP I CLASS B	EN 60601-1:2006+A1:2013

---

#### Terms of Use

The user is responsible for application suitability of Moteck products. As ongoing improvement process continues, products listed on the Moteck website are subject to change without prior notice. Moteck reserves the right to terminate the sales or remove any product displayed on the website, or listed in its catalogues.