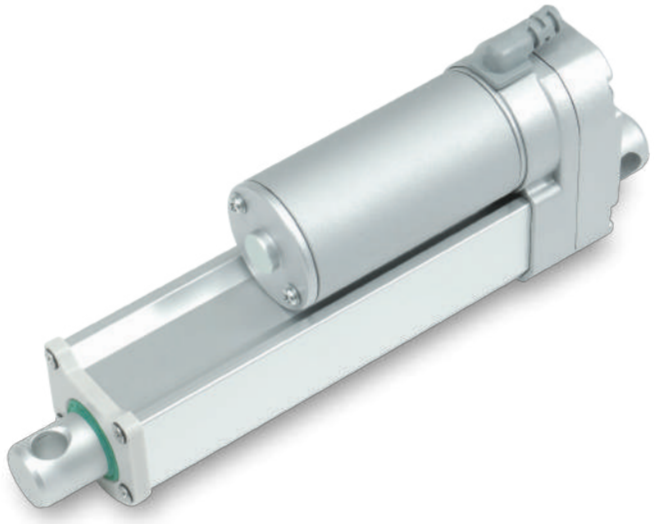
Actuator
LD20

LD20 is a compact actuator with high load capability which is designed for use in industrial, homecare and furniture. It's an ideal solution for the applications where installation space is limited, such as window opener or adjustable car driver seat.



Features and Options

Main applications: Industrial, Furniture, Home care, Medical
Standard features:

- Input voltage: 12 / 24 / 48V DC
- Max. load: 2500N (Push / Pull)
- Max. speed at no load: 27.5mm/sec (Typical value)
- Speed at full load: 4.6mm/sec (Typical value @2500N Loaded)
- Stroke: 100 / 150 / 200 / 250 / 300mm (Max. 300mm)
- Noise level: ≦70dB
- IP level: IP65
- Color: Aluminum grey
- Preset limit switches
- Duty cycle: 25%, max.1 min continuous operation in 4 min.
- Operating ambient temperature: -25°C ~ +65°C
- Certified: CE marking, EMC Directive 2014/30/EU, EN 60601 (for 24V DC motor without Hall effect sensor)

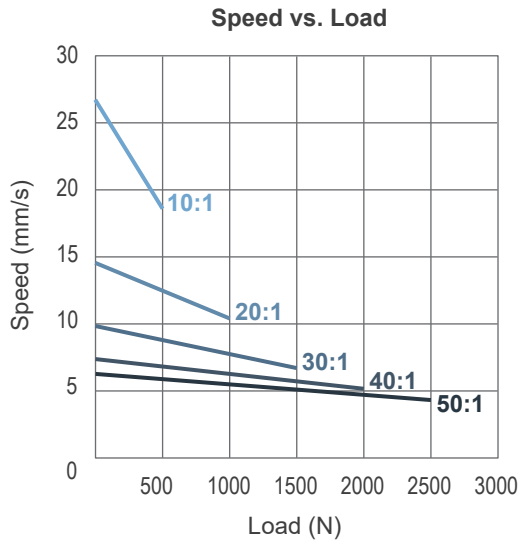
Options:

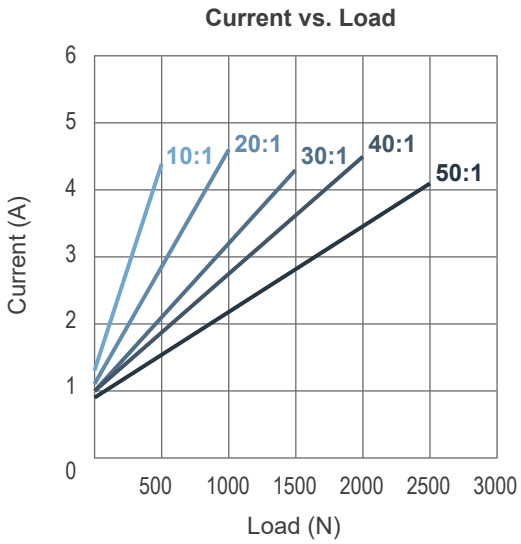
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Analog positioning feedback with Potentiometer (POT)

Performance Data

- **12V DC motor**

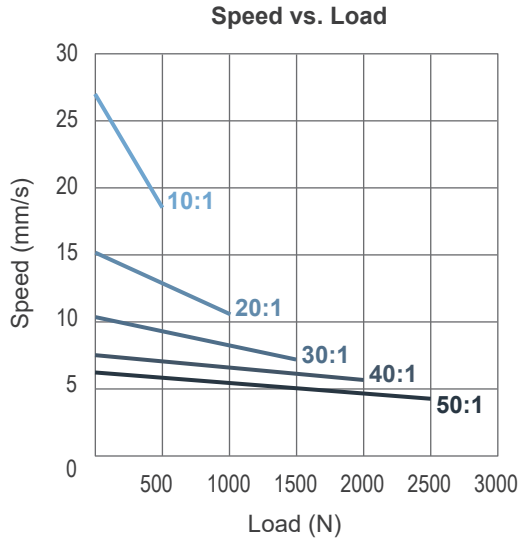
Model No.	Gear ratio	Push/Pull Max. (N)	Self-locking force Max. (N)	* Typical speed (mm/s)		* Typical current (A)	
				No load	Full load	No load	Full load
LD20-12-10-G4-XXX-XXX0X	10:1	500	1500	26.8	18.6	1.3	4.4
LD20-12-20-G4-XXX-XXX0X	20:1	1000	4500	14.7	10.4	1.1	4.6
LD20-12-30-G4-XXX-XXX0X	30:1	1500	4500	9.9	6.8	1.0	4.3
LD20-12-40-G4-XXX-XXX0X	40:1	2000	4500	7.4	5.1	1.0	4.5
LD20-12-50-G4-XXX-XXX0X	50:1	2500	4500	6.2	4.4	0.9	4.1

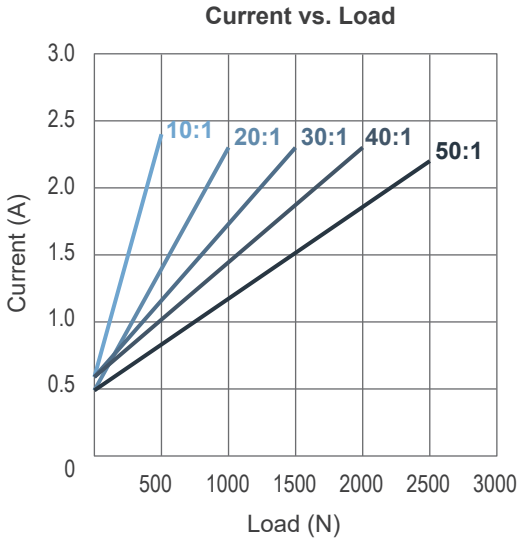




- **24V DC motor**

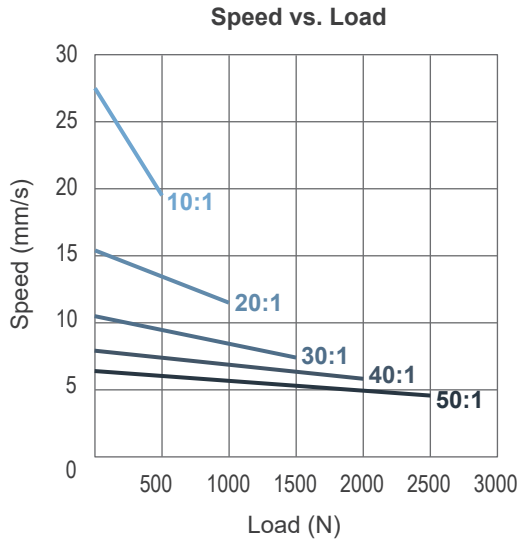
Model No.	Gear ratio	Push/Pull Max. (N)	Self-locking force Max. (N)	* Typical speed (mm/s)		* Typical current (A)	
				No load	Full load	No load	Full load
LD20-24-10-G4-XXX-XXX0X	10:1	500	1500	27.0	18.7	0.6	2.4
LD20-24-20-G4-XXX-XXX0X	20:1	1000	4500	15.1	10.7	0.5	2.3
LD20-24-30-G4-XXX-XXX0X	30:1	1500	4500	10.3	7.2	0.6	2.3
LD20-24-40-G4-XXX-XXX0X	40:1	2000	4500	7.6	5.7	0.6	2.3
LD20-24-50-G4-XXX-XXX0X	50:1	2500	4500	6.1	4.4	0.5	2.2

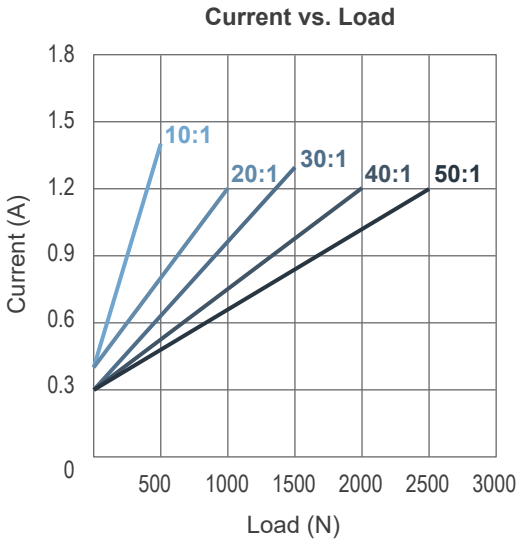




- **48V DC motor**

Model No.	Gear ratio	Push/Pull Max. (N)	Self-locking force Max. (N)	* Typical speed (mm/s)		* Typical current (A)	
				No load	Full load	No load	Full load
LD20-48-10-G4-XXX-XXX0X	10:1	500	1500	27.5	19.5	0.4	1.4
LD20-48-20-G4-XXX-XXX0X	20:1	1000	4500	15.4	11.5	0.4	1.2
LD20-48-30-G4-XXX-XXX0X	30:1	1500	4500	10.5	7.4	0.3	1.3
LD20-48-40-G4-XXX-XXX0X	40:1	2000	4500	7.9	5.8	0.3	1.2
LD20-48-50-G4-XXX-XXX0X	50:1	2500	4500	6.4	4.6	0.3	1.2





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

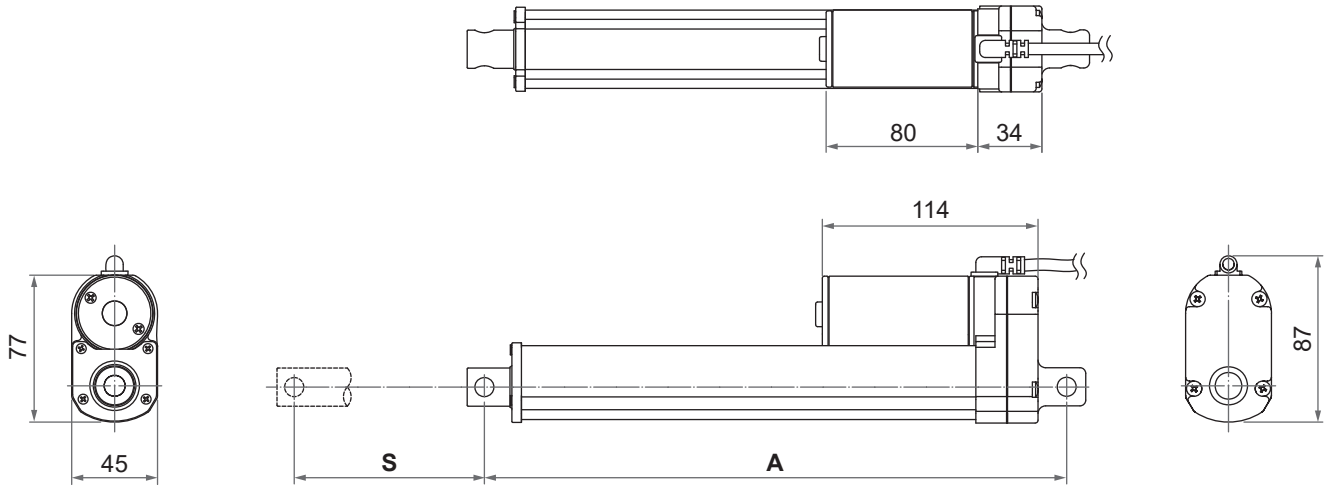
Retracted length (A)

Option	Front connector code	Stroke (S)				
		100	150	200	250	300
Basic / Hall	1, 8	205	255	305	355	405
POT	1, 8	242	292	342	392	442

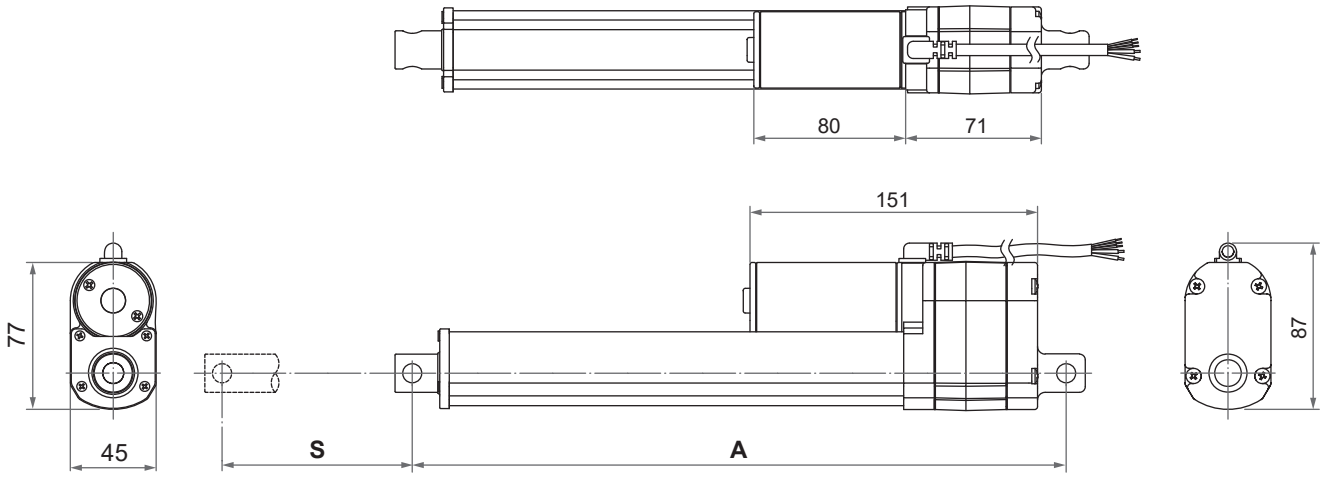
(tolerance: ±3mm)

Drawing

- Basic / With Hall effect sensor positioning feedback



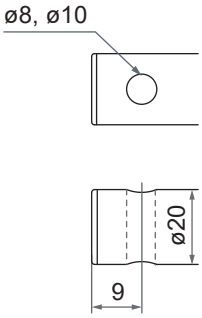
- With Potentiometer (POT)



Unit: mm

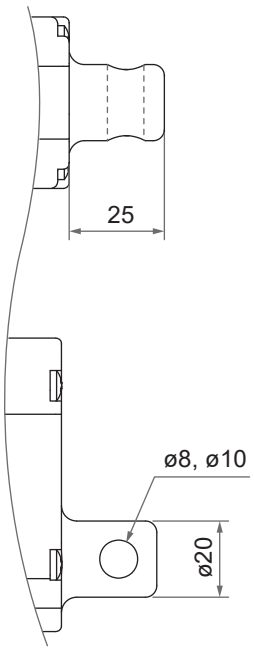
- **Front connector**

  1: Drilled hole, ø10mm
  8: Drilled hole, ø8mm



- **Rear connector**

  1: Drilled hole, ø10mm
  8: Drilled hole, ø8mm



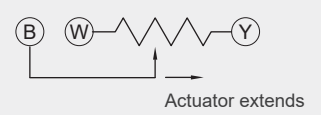
Unit: mm

Cable with Flying Leads

- **Basic, without positioning feedback.**

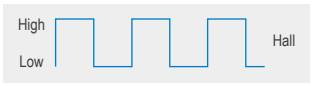
	Wire color	Definition	Descriptions
Power wires	Red	DC power	Connect red wire to “Vdc +” & black wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		

- **With Potentiometer (POT)**

	Wire color	Definition	Descriptions
Power wires	Red	DC power	Connect red wire to “Vdc +” & black wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		
Signal wires	Yellow	Vin	Input voltage 70V max.
	Blue	POT output	1. Potentiometer specification: - 10K ohm, 10 turns. - Tolerance ±5% 2. Output voltage: The voltage (resistance) between blue and white increases linearly from about 0 when the actuator extends, and decreases when it retracts.  3. There are different resolutions according to the stroke length (as table below)
	White	GND	

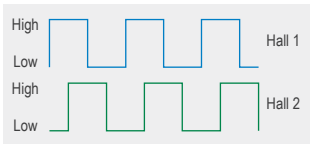
Stroke	Resistance (tolerance: ±0.3KΩ)
100mm	0.3 ~ 8.8K
150mm	0.3 ~ 9.6K
200mm	0.3 ~ 8.9K
250mm	0.3 ~ 9.5K
300mm	0.3 ~ 9.5K

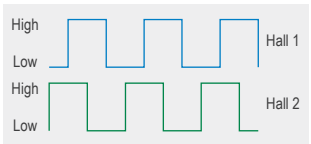
- **With single Hall effect sensor positioning feedback**

<table>
<tr><th></th><th>Wire color</th><th>Definition</th><th>Descriptions</th></tr>
<tr><td rowspan="2">Power wires</td><td>Red</td><td rowspan="2">DC power</td><td rowspan="2">Connect red wire to “Vdc +” & black wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.</td></tr>
<tr><td>Black</td></tr>
<tr><td rowspan="3">Signal wires</td><td>Yellow</td><td>Vin</td><td>Voltage input range: 3.5 ~ 20V</td></tr>
<tr><td>Blue</td><td>Hall output</td><td>High= Input - 1.2V (±0.6V)
Low= GND
Hall signal data:
 

Hall effect sensor resolution:
<table>
<tr><th>Gear ratio</th><th>Resolution (pulses/mm)</th></tr>
<tr><td>10:1</td><td>2.56</td></tr>
<tr><td>20:1</td><td>4.75</td></tr>
<tr><td>30:1</td><td>7.16</td></tr>
<tr><td>40.1</td><td>9.66</td></tr>
<tr><td>50:1</td><td>11.82</td></tr>
</table></td></tr>
<tr><td>White</td><td>GND</td><td></td></tr>
</table>

- **With dual Hall effect sensor positioning feedback**

<table>
<tr><th></th><th>Wire color</th><th>Definition</th><th>Descriptions</th></tr>
<tr><td rowspan="2">Power wires</td><td>Red</td><td rowspan="2">DC power</td><td rowspan="2">Connect red wire to “Vdc +” & black wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.</td></tr>
<tr><td>Black</td></tr>
<tr><td rowspan="3">Signal wires</td><td>Yellow</td><td>Vin</td><td>Voltage input range: 3.5 ~ 20V</td></tr>
<tr><td>Blue</td><td>Hall 1 output</td><td rowspan="2">High= Input - 1.2V (±0.6V)
Low= GND
Hall signal data:
 

Actuator extends


Actuator retracts

Hall effect sensor resolution:
<table>
<tr><th>Gear ratio</th><th>Resolution (pulses/mm)</th></tr>
<tr><td>10:1</td><td>2.56</td></tr>
<tr><td>20:1</td><td>4.75</td></tr>
<tr><td>30:1</td><td>7.16</td></tr>
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<tr><td>50:1</td><td>11.82</td></tr>
</table></td></tr>
<tr><td>Green</td><td>Hall 2 output</td></tr>
<tr><td>White</td><td>GND</td><td></td></tr>
</table>

Compatibility

Product	Model	LD20 spec
Controller	CI72	Standard
Accessory	MB22 mounting bracket (Fig. 1)	Standard, mounting hole ø8mm or ø10mm

Fig. 1

Certifications

LD20 actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

Emission	Immunity
EN 61000-6-3:2007 + A1:2011	EN 61000-6-1:2007 IEC 61000-4-2:2008 IEC 61000-4-3:2006+A1:2007+A2:2010 IEC 61000-4-8:2009

Ordering Key

LD20 -	24	- 20	- G4	- 100	- 1	1	D	0	3

Input voltage	**12**: 12V DC **24**: 24V DC **48**: 48V DC
Gear ratio	**10**: 10:1 **20**: 20:1 **30**: 30:1 **40**: 40:1 **50**: 50:1
Motor and Spindle type	**G4**: 4600rpm / Spindle pitch 4.23mm
Stroke	**100**: 100mm **150**: 150mm **200**: 200mm **250**: 250mm **300**: 300mm
Front connector *(Refer to Page 5)*	**1**: Drilled hole, ø10mm **8**: Drilled hole, ø8mm
Rear connector *(Refer to Page 5)*	**1**: Drilled hole, ø10mm **8**: Drilled hole, ø8mm
Positioning feedback	**0**: None **S**: Hall effect sensor x 1 **D**: Hall effect sensor x 2 **P**: Potentiometer (POT)
Reserved	**0**
Cable length	**0**: 300mm **3**: 900mm **5**: 1500mm **6**: 2000mm

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