Actuator
FD61

FD61 is a quiet and powerful actuator up to 6000N thrust, designed for use in furniture application. Compared to FD60, the motor size of FD61 is more compact. There are several models with different speed and load for customer to choose.

Features and Options

Main application: Furniture

Standard features:

- Input voltage: 12V DC / 24V DC
- Max. load: 6000N (push) / 4000N (pull)
- Speed at no load: 33.3mm/sec (typical value)
- Speed at full load: 2.9mm/sec (typical value @6000N loaded)
- Stroke: 50 ~ 300mm
- Noise level: ≦50dB
- IP level: IP42
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -20°C ~ +65°C
- Certified: CE Marking, EMC Directive 2014/30/EU,
  UL 962 Standard for Household and Commercial Furnishings.

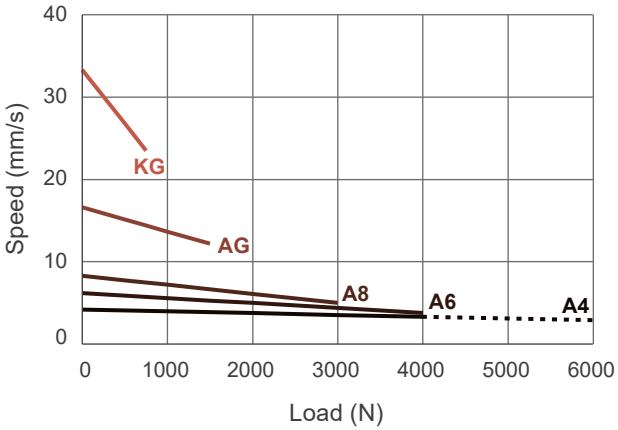
Options:

- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical push only extension tube
- Mechanical brake

Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	* Self-locking ability (N)	** Typical speed (mm/s)		** Typical current (A)			
				No load	Full load	No load		Full load	
						12V	24V	12V	24V
FD61-XX-**A4**	6000	4000	5000	4.2	2.9	1.2	0.6	5.4	2.7
FD61-XX-**A6**	4000	4000	2500	6.2	3.8	1.2	0.6	5.6	2.8
FD61-XX-**A8**	3000	3000	2000	8.3	5.0	1.2	0.6	5.6	2.8
FD61-XX-**AG**	1500	1500	700	16.6	12.2	1.2	0.6	5.6	2.8
FD61-XX-**KG**	750	750	0	33.3	23.5	1.2	0.6	5.4	2.7

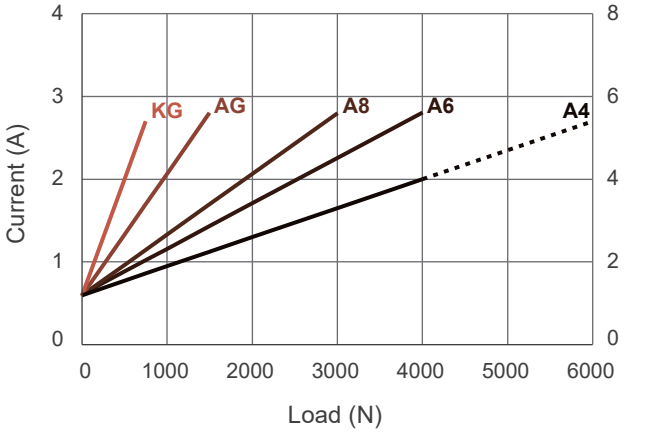
Speed vs. Load



24V DC

Current vs. Load

12V DC



Push / Pull load —— Push load - - -

Remarks:

* The self-locking ability is performed by short circuit the motor terminals when the actuator is powered off. All MOTECK compatible control boxes are designed with this feature. Mechanical brake in push direction is available upon request, to further enhance the self-locking ability to maximum load.

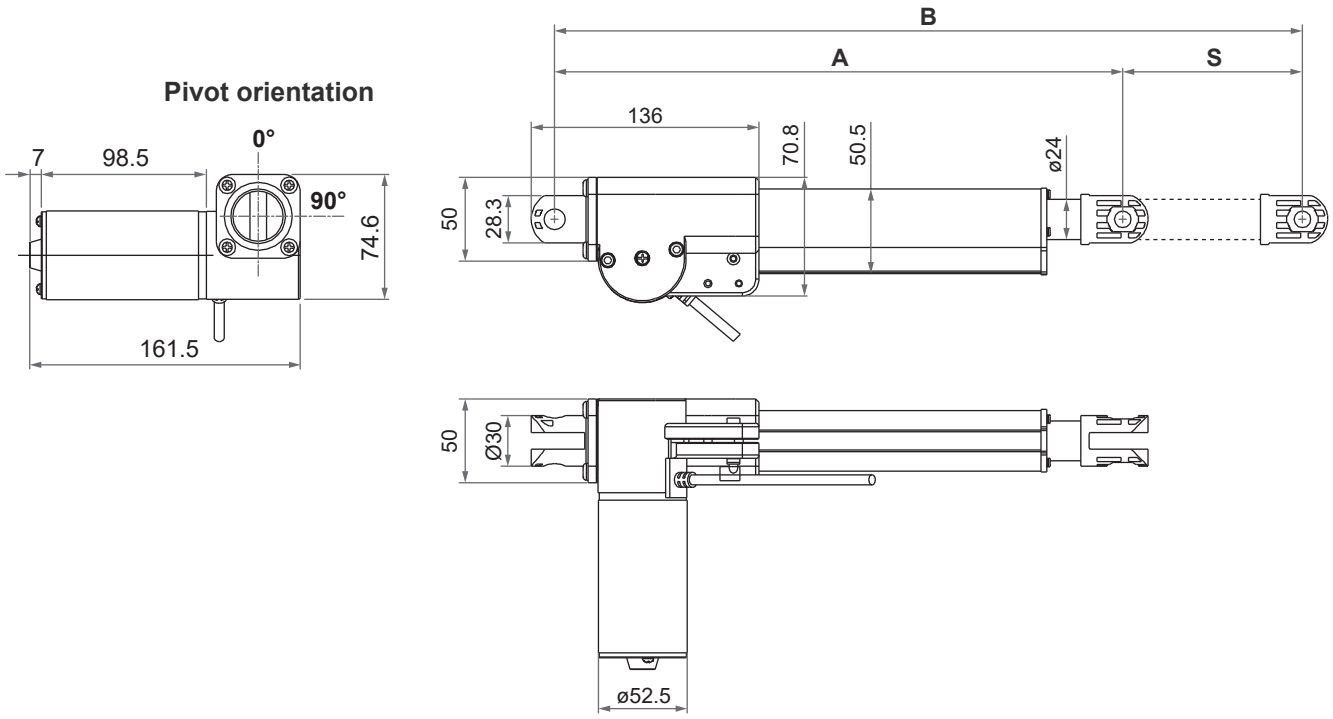
** The typical speed or typical current means the average value neither upper limit nor lower limit. The performance curves are made with typical values.

Dimensions

- **Available stroke (S) range** = 50 ~ 300mm (±3mm)
- **Extended length (B)** = Retracted length (A) + Stroke (S)
- **Retracted length (A)**

Front connector code / Rear connector code	3, 7	1, 5, 8
2	A≧S+150mm (±3mm)	A≧S+178mm (±3mm)

- **Drawing**

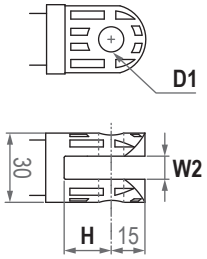


Note: As an example in 0° orientation for rear connector.

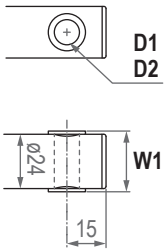
Unit: mm

● Front connector

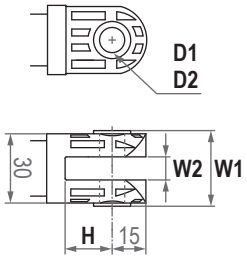
1: Plastic



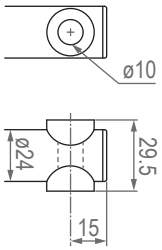
3: Drilled hole



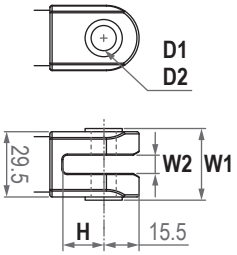
5: Metal



7: Drilled hole with nylon bushing



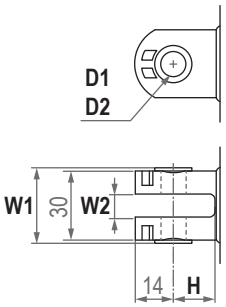
8: Enhanced metal



Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)	Width with bushing (W1)	Slot width (W2)	Slot depth (H)
1	ø8, ø10, ø12	N/A	N/A	10	20
3	ø8, ø10, ø12, ø14	ø8, ø10	26	N/A	N/A
5	ø8, ø10, ø12	ø8, ø10	32	10	20
7	N/A	N/A	N/A	N/A	N/A
8	ø10, ø12	ø8, ø10	31.5	8	19.5

● Rear connector

2: Metal



Rear connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)	Width with bushing (W1)	Slot width (W2)	Slot depth (H)
2	ø10, ø12	ø8, ø10	32	10	17.7

Unit: mm

Compatibility

Product	Model	FD61 spec
Control box	T-control, CS1, CS2, CB3T, CB4M, CBT2	• Without positioning sensor • With Moteck F-type 4-pin DIN plug
	CF11H, CF12H	• Without positioning sensor • With Moteck L3-type minifit 6-pin plug
	CB3T-SY, CB4M-S, CB4M-B	• With dual Hall effect sensors for positioning • With Moteck F-type 6-pin DIN plug
	CB3T-SYD	• 12V DC motor • With dual Hall effect sensors for positioning • With Moteck F-type 6-pin DIN plug
	CF11S, CF12S	• With dual Hall effect sensors for positioning • With Moteck L3-type minifit 6-pin plug
Hand control	Depend on control box	• Powered by control box
	H3B, HZ01	• With Moteck Direct-cut power cable TL2 *
	HB, H2G, HZ02, HZ03, HZ04, HZ05, HZ06, HS02	• With Moteck Direct-cut power cable DL2 *
Accessory	TSW1 Switching mode power supply	• With Moteck Direct-cut power cables DL2 or TL2

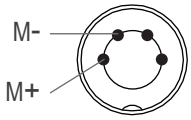
Remarks:

* Connect Direct-cut power cable to DC power supply and hand control directly, no control box.

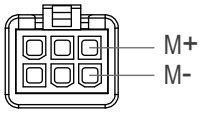
Cable Plug

With Moetck F-type or L3-type plug (Required to be connected to the control box):

● Without positioning feedback



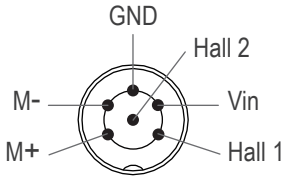
F-type 4-pin DIN plug



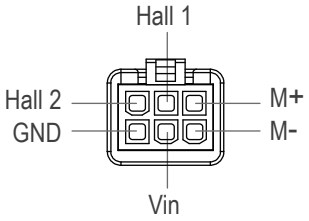
L3-type Minifit 6-pin plug

F-type plug

● Positioning feedback with Hall effect sensors



F-type 6-pin DIN plug



L3-type Minifit 6-pin plug

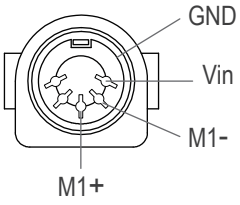
L3-type plug

Note:
1. Connect M+ to “Vdc +” & M- to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.
2. The pin definition of Hall 2 is provided only when dual Hall sensors is selected.

With Direct-cut power cable DL2 or TL2 (NOT required to be connected to any control box):

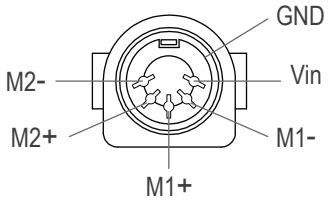
● Hand control connector: with Moteck U-type female connector

- 1 drive



5-pin connector
(Moteck pinout: C-DIN-51H)

- 2 drives

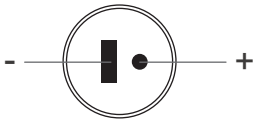


5-pin connector
(Moteck pinout: C-DIN-52H)

U-type female connector

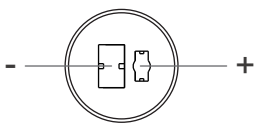
Note: Connect M1+ to “Vdc +” & M1- to “Vdc -“ of DC power to extend the M1 actuator. Switch the polarity of DC input to retract it. Definition of the M2 actuator is the same.

● Power plug: with Moteck R-type DIN 41529 male plug



R-type male plug

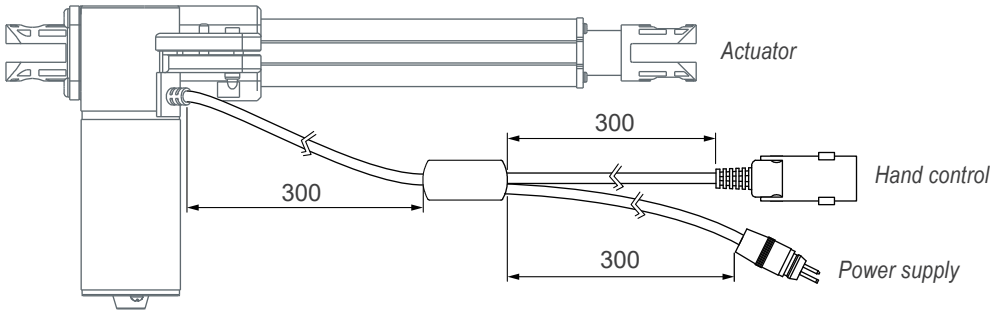
● Connector for 2nd actuator: with Moteck R-type DIN 41529 female connector (for TL2 only)



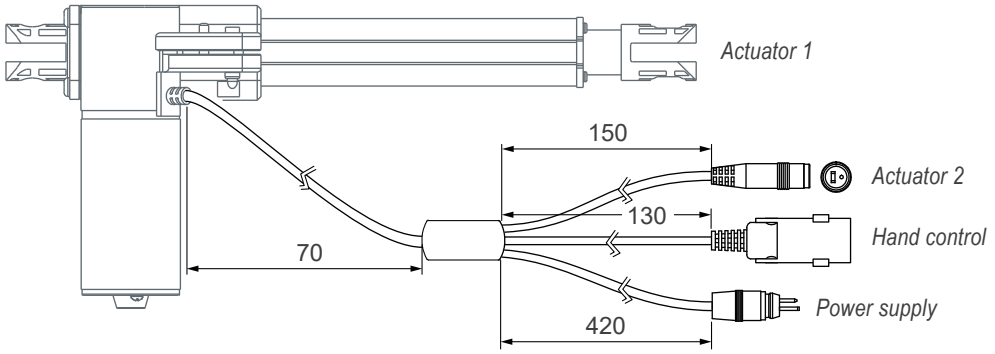
R-type female connector

● Cable length

- With Direct-cut power cable DL2



- With Direct-cut power cable TL2



Unit: mm

Cable with Flying Leads

● Basic, without positioning feedback.

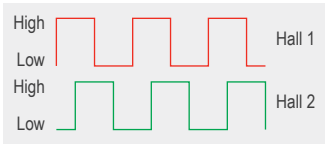
	Wire color	Definition	Descriptions
Power wires	White	DC Power	Connect white wire to “Vdc +” & black wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		

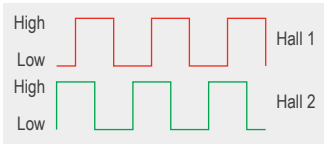
● With single Hall effect sensor for positioning

<table>
<tr><th></th><th>Wire color</th><th>Definitions</th><th>Descriptions</th></tr>
<tr><td rowspan="2">Power wires</td><td>Blue
Brown</td><td>DC Power</td><td>Connect blue wire to “Vdc +” & brown wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.</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>Red</td><td>Hall output</td><td>High= Input - 1.2V (±0.6V)
Low= GND
Hall signal data:
 

Hall effect sensor resolution:
<table>
<tr><th>Model No.</th><th>Resolution (pulses/mm)</th></tr>
<tr><td>FD61-XX-A4-XXX.XXX-CXX-HSX</td><td>10.0</td></tr>
<tr><td>FD61-XX-A6-XXX.XXX-CXX-HSX</td><td>6.67</td></tr>
<tr><td>FD61-XX-A8-XXX.XXX-CXX-HSX</td><td>5.0</td></tr>
<tr><td>FD61-XX-AG-XXX.XXX-CXX-HSX</td><td>2.5</td></tr>
<tr><td>FD61-XX-KG-XXX.XXX-CXX-HSX</td><td>1.25</td></tr>
</table></td></tr>
<tr><td>Black</td><td>GND</td><td></td></tr>
</table>

● With dual Hall effect sensors for positioning

<table>
<tr><th></th><th>Wire color</th><th>Definitions</th><th>Descriptions</th></tr>
<tr><td rowspan="2">Power wires</td><td>Blue
Brown</td><td>DC Power</td><td>Connect blue wire to “Vdc +” & brown wire to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.</td></tr>
<tr><td rowspan="4">Signal wires</td><td>Yellow</td><td>Vin</td><td>Voltage input range: 3.5 ~ 20V</td></tr>
<tr><td>Red</td><td>Hall 1 output</td><td rowspan="3">High= Input - 1.2V (±0.6V)
Low= GND
Hall signal data:
 

Actuator extends


Actuator retracts

Hall effect sensor resolution:
<table>
<tr><th>Model No.</th><th>Resolution (pulses/mm)</th></tr>
<tr><td>FD61-XX-A4-XXX.XXX-CXX-HSX</td><td>10.0</td></tr>
<tr><td>FD61-XX-A6-XXX.XXX-CXX-HSX</td><td>6.67</td></tr>
<tr><td>FD61-XX-A8-XXX.XXX-CXX-HSX</td><td>5.0</td></tr>
<tr><td>FD61-XX-AG-XXX.XXX-CXX-HSX</td><td>2.5</td></tr>
<tr><td>FD61-XX-KG-XXX.XXX-CXX-HSX</td><td>1.25</td></tr>
</table></td></tr>
<tr><td>Green</td><td>Hall 2 output</td></tr>
<tr><td>Black</td><td>GND</td><td></td></tr>
</table>

Ordering Key

FD61- 24 - A4 - 350 . 470 -C 1 2 - HS3 - PO-BK - A

Input voltage	**12**: 12V DC **24**: 24V DC
Motor and Spindle type	**A4:** 2500rpm / 4mm pitch **A6:** 2500rpm / 6mm pitch **A8:** 2500rpm / 8mm pitch **AG:** 2500rpm / 16mm pitch K**G:** 2500rpm / 16mm pitch
Retracted length *(Refer to Page 3)*	**XXX**
Extended length *(Refer to Page 3)*	**XXX**
Front connector *(Refer to Page 4)*	**1**: Plastic **3**: Drilled hole **5**: Metal **7**: Drilled hole with nylon bushing **8**: Enhanced metal
Rear connector *(Refer to Page 4)*	**2**: Metal
Positioning feedback	**Blank**: Without positioning feedback **HS3**: Hall effect sensor x 1 **HS4**: Hall effect sensor x 2
Option *(Multiple choice is allowed)*	**Blank**: None **PO**: Mechanical push only extension tube **BK**: Mechanical brake
Cable length	**0**: 300mm straight **1**: 1000mm straight **2**: 450mm with 300mm coiled **A**: Direct-cut power cable DL2 *(Refer to Page 7)* **B**: Direct-cut power cable TL2 *(Refer to Page 7)*

Certifications

FD61 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 Catagory I