

Actuator

FD60

FD60 is a quiet and powerful actuator up to 6000N thrust, designed for use in furniture application. Our T-control box, which can be perfectly attached and integrated to FD60, is available for customers to choose.



Features and Options

Main application: Furniture

Standard features:

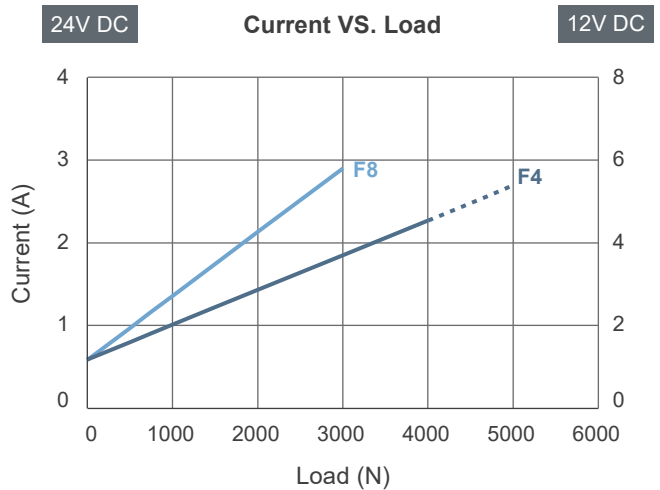
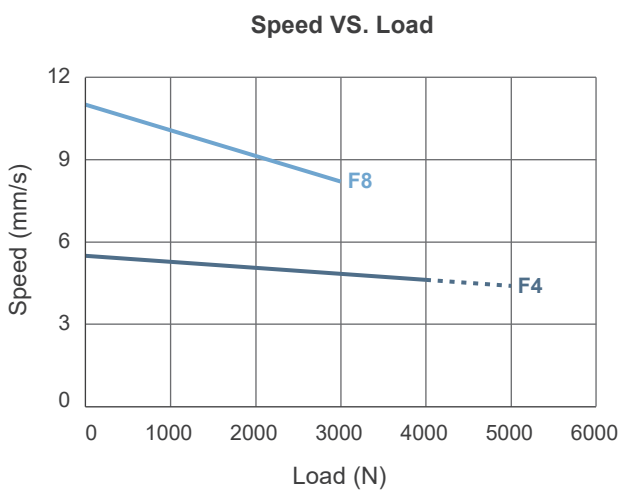
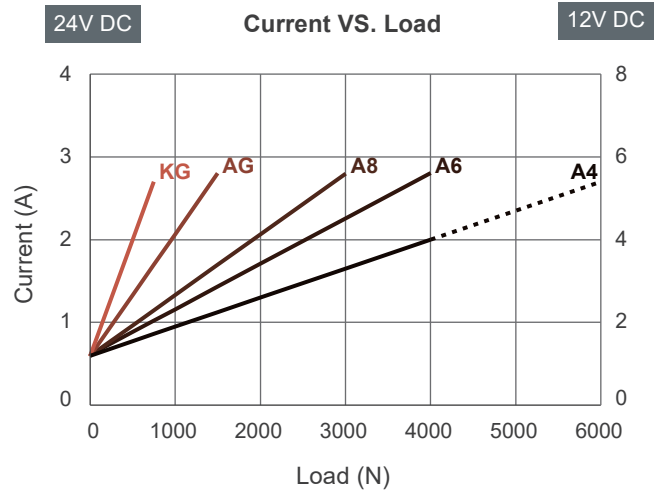
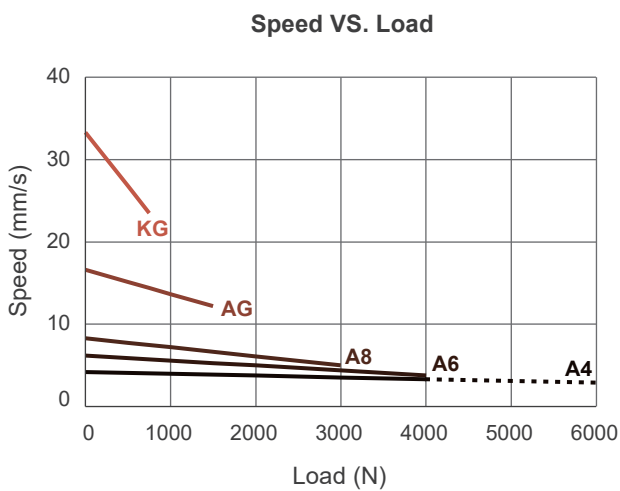
- Input voltage: 12V DC / 24V DC
- Max. load: 6000N (push) / 4000N (pull)
- Max. speed at no load: 33.3mm/sec (Typical value)
- Speed at full load: 2.9mm/sec (Typical value @6000N loaded)
- Stroke: 50 ~ 300mm
- Noise level: ≤ 50 dB
- IP level: IP42
- Preset limit switches
- Duty cycle: 10%, max. 2 min. 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
FD60-XX-A4	6000	4000	5000	4.2	2.9	1.2	0.6	5.4	2.7
FD60-XX-A6	4000	4000	2500	6.2	3.8	1.2	0.6	5.6	2.8
FD60-XX-A8	3000	3000	2000	8.3	5.0	1.2	0.6	5.6	2.8
FD60-XX-AG	1500	1500	700	16.6	12.2	1.2	0.6	5.6	2.8
FD60-XX-KG	750	750	0	33.3	23.5	1.2	0.6	5.4	2.7
FD60-XX-F4	5000	4000	5000	5.5	4.4	1.2	0.6	5.6	2.8
FD60-XX-F8	3000	3000	2000	11.0	8.2	1.2	0.6	5.8	2.9



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.

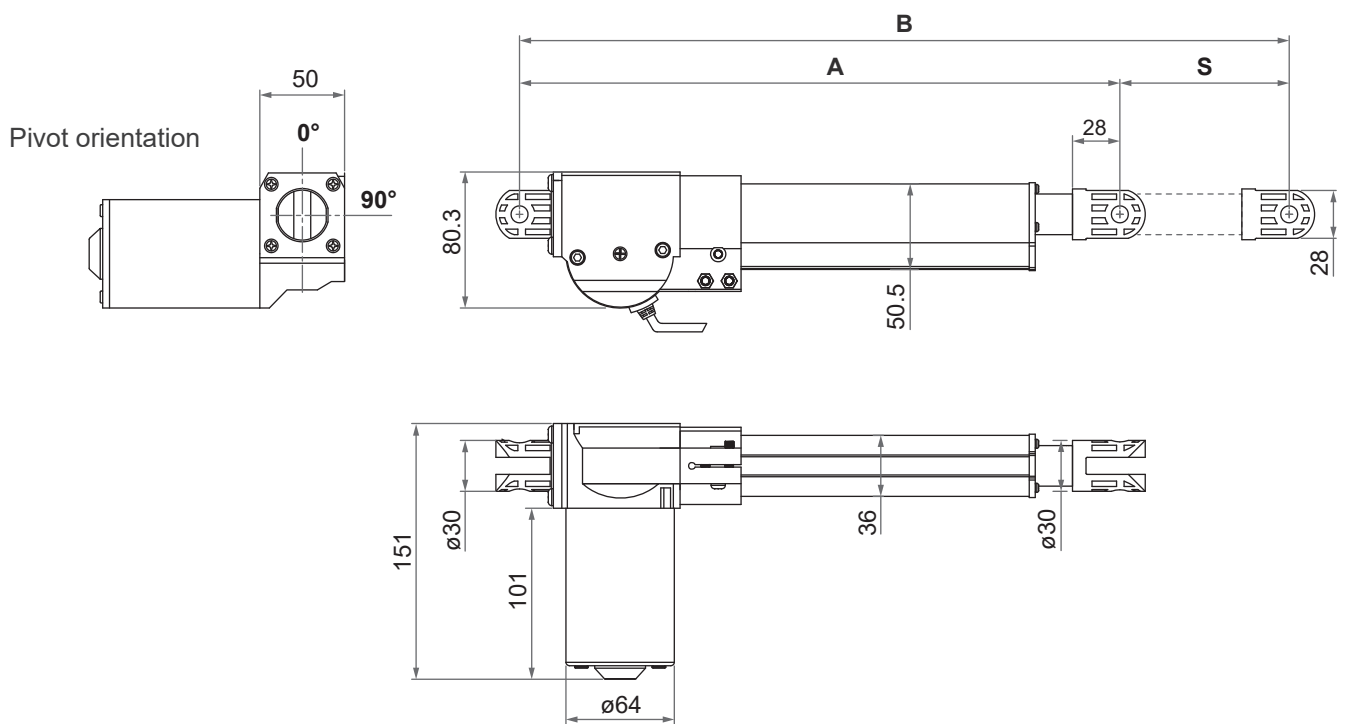
** The typical speed or typical current means the average value neither upper limit nor lower limit, which measured under room temperature and stable power. The performance curves are made with typical values.

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	1, 5, 8	2, 3, 7
1, 2	$A \geq S + 188\text{mm} (\pm 3\text{mm})$	$A \geq S + 160\text{mm} (\pm 3\text{mm})$
5 (with crank function)	$A \geq S + 198\text{mm} (\pm 3\text{mm})$	$A \geq S + 170\text{mm} (\pm 3\text{mm})$

• Drawing

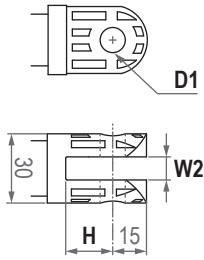


Unit: mm

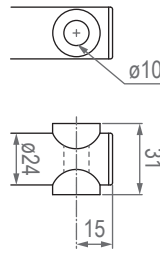
Note: As an example in 0° orientation for rear connector.

● **Front connector**

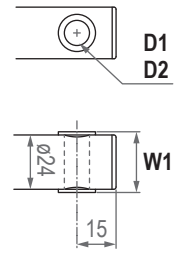
1: Plastic



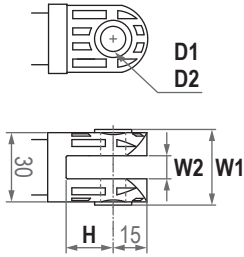
2: Drilled hole with brass bushing



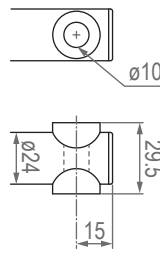
3: Drilled hole



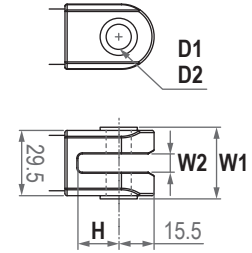
5: Metal



7: Drilled hole with nylon bushing



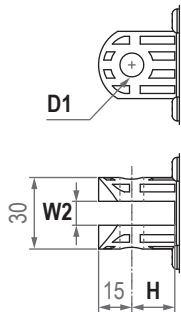
8: Enhanced metal



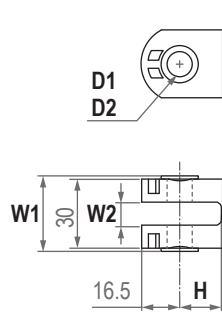
Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)	Width with bushing (W1)	Slot width (W2)	Slot depth (H)
1	$\varnothing 8, \varnothing 10, \varnothing 12$	N/A	N/A	10	20
2	N/A	N/A	N/A	N/A	N/A
3	$\varnothing 8, \varnothing 10, \varnothing 12, \varnothing 14$	$\varnothing 8, \varnothing 10$	26	N/A	N/A
5	$\varnothing 8, \varnothing 10, \varnothing 12$	$\varnothing 8, \varnothing 10$	32	10	20
7	N/A	N/A	N/A	N/A	N/A
8	$\varnothing 10, \varnothing 12$	$\varnothing 8, \varnothing 10$	31.5	8	19.5

● **Rear connector**

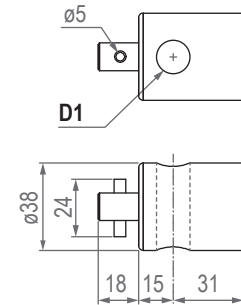
1: Plastic



2: Metal



5: Metal (with crank function)



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)
1	$\varnothing 8, \varnothing 10, \varnothing 12$	N/A	N/A	6, 10	17
2	$\varnothing 8, \varnothing 10, \varnothing 12$	$\varnothing 8, \varnothing 10$	32	6, 10	17
5	$\varnothing 14.5$	N/A	N/A	N/A	N/A

Unit: mm

Compatibility

Product	Model	FD60 spec
Control box	T-control, CS1, CS2, CB3T, CB4M, CBT2, CBTR	<ul style="list-style-type: none"> • Without positioning sensor • With Moteck F-type 4-pin DIN plug
	CF11H, CF12H	<ul style="list-style-type: none"> • Without positioning sensor • With Moteck L3-type minifit 6-pin plug
	CB3T-SY, CB4M-S, CB4M-B	<ul style="list-style-type: none"> • With dual Hall effect sensors for positioning • With Moteck F-type 6-pin DIN plug
	CB3T-SYD	<ul style="list-style-type: none"> • 12V DC motor • With dual Hall effect sensors for positioning • With Moteck F-type 6-pin DIN plug
	CF11S, CF12S	<ul style="list-style-type: none"> • With dual Hall effect sensors for positioning • With Moteck L3-type minifit 6-pin plug
	CF15	<ul style="list-style-type: none"> • 24V DC motor, A4 option • With Moteck L3-type minifit 6-pin plug
	CF01-S	<ul style="list-style-type: none"> • Without positioning feedback • With Moteck S-type DIN 41529 male plug
Hand control	Depend on control box	<ul style="list-style-type: none"> • Powered by control box
	HS15**	<ul style="list-style-type: none"> • With Moteck S-type DIN 41529 male plug
	HZ01	<ul style="list-style-type: none"> • With Moteck direct-cut power cable TL2 *
	H2G, HB, TPSG HS02, HZ02, HZ03, HZ04, HZ05, HZ06	<ul style="list-style-type: none"> • With Moteck direct-cut power cable DL2 *
Accessory	Switching mode power supply: TSW1, TSW3	<ul style="list-style-type: none"> • 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.

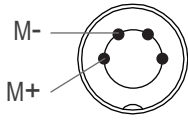
** Connect the FD60 actuator to the HS15 direct-cut hand control directly, no control box.

Cable Plug

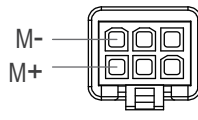
A. Connecting control devices that provide power

1. With Moetck F-type or L3-type plug

- Without positioning feedback



F-type 4-pin DIN plug

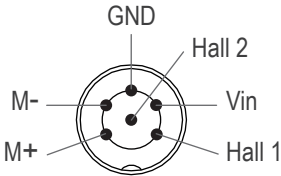


L3-type Minifit 6-pin plug

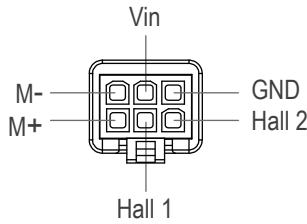


F-type plug

- Positioning feedback with dual Hall effect sensors



F-type 6-pin DIN plug



L3-type Minifit 6-pin plug



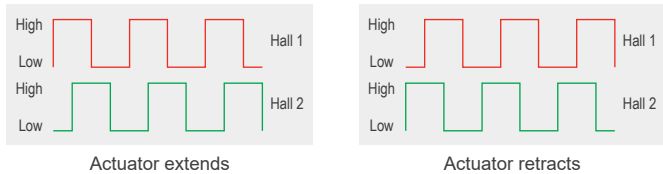
L3-type plug

2. With Moteck S-type DIN 41529 male plug



S-type plug

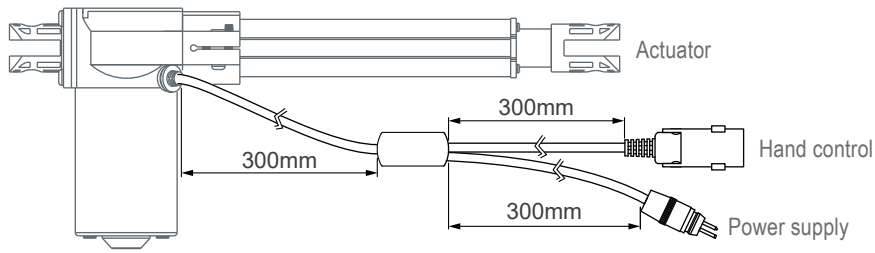
Note: Pin definition

	Definition	Descriptions															
Power	M+	Connect M+ to "Vdc +" & M- to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.															
	M-																
Signal	Vin	Voltage input range: 5 ~ 20V															
	Hall 1 output	High= Input - 1.2V ($\pm 0.6V$) Low= GND Hall signal data:  <p style="text-align: center;">Actuator extends Actuator retracts</p>															
	Hall 2 output	Hall effect sensor resolution: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model No.</th> <th>Resolution (pulses/mm)</th> </tr> </thead> <tbody> <tr> <td>FD60-XX-A4-XXX.XXX-CXX-HSX</td> <td>10.0</td> </tr> <tr> <td>FD60-XX-F4-XXX.XXX-CXX-HSX</td> <td>10.0</td> </tr> <tr> <td>FD60-XX-A6-XXX.XXX-CXX-HSX</td> <td>6.67</td> </tr> <tr> <td>FD60-XX-A8-XXX.XXX-CXX-HSX</td> <td>5.0</td> </tr> <tr> <td>FD60-XX-F8-XXX.XXX-CXX-HSX</td> <td>5.0</td> </tr> <tr> <td>FD60-XX-AG-XXX.XXX-CXX-HSX</td> <td>2.50</td> </tr> <tr> <td>FD60-XX-KG-XXX.XXX-CXX-HSX</td> <td>1.25</td> </tr> </tbody> </table>	Model No.	Resolution (pulses/mm)	FD60-XX-A4-XXX.XXX-CXX-HSX	10.0	FD60-XX-F4-XXX.XXX-CXX-HSX	10.0	FD60-XX-A6-XXX.XXX-CXX-HSX	6.67	FD60-XX-A8-XXX.XXX-CXX-HSX	5.0	FD60-XX-F8-XXX.XXX-CXX-HSX	5.0	FD60-XX-AG-XXX.XXX-CXX-HSX	2.50	FD60-XX-KG-XXX.XXX-CXX-HSX
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FD60-XX-KG-XXX.XXX-CXX-HSX	1.25																
	GND																

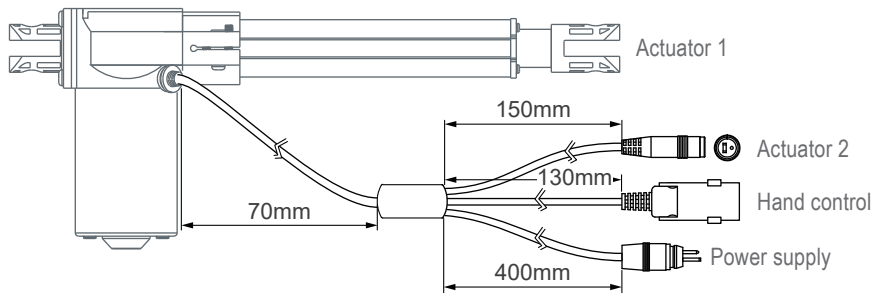
B. Connecting control devices that DO NOT provide power

1. Cable solution

- With direct-cut power cable DL2

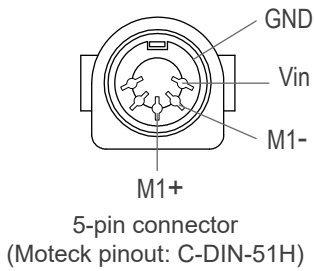


- With direct-cut power cable TL2

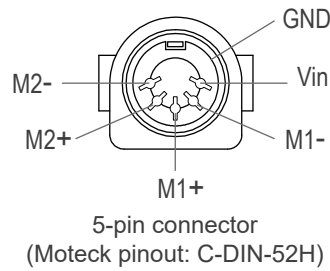


2. Hand control connector: with Moteck U-type female connector

- 1 drive

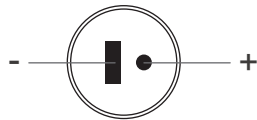


- 2 drives

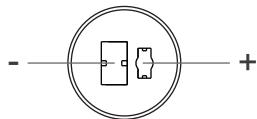


Note: Connect M1+ to "Vdc +" & M1- to "Vdc -" of DC power to extend the M1 actuator. Switch the polarity of DC input to retract it. Definition of the M2 actuator is the same.

3. Power plug: with Moteck R-type DIN 41529 male plug



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



U-type connector



R-type plug




R-type connector

Cable with Flying Leads

- Basic, without positioning feedback.

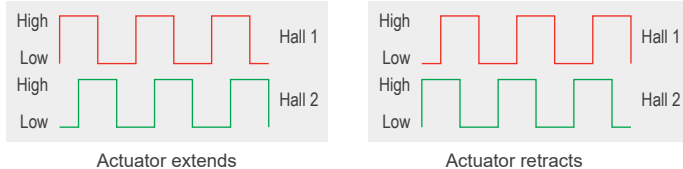
	Wire color	Definition	Descriptions
Power wires	White	DC Power	Connect white wire to "Vdc +" & black wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		

- With single Hall effect sensor for positioning

	Wire color	Definitions	Descriptions
Power wires	Blue	DC Power	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.
	Brown		
Signal wires	Yellow	Vin	Voltage input range: 5 ~ 20V
	Red	Hall output	High= Input - 1.2V ($\pm 0.6V$) Low= GND Hall signal data:
			
			Hall effect sensor resolution:
Black	GND		

Model No.	Resolution (Pulses/mm)
FD60-XX-A4-XXX.XXX-CXX-HS1	10.0
FD60-XX-F4-XXX.XXX-CXX-HS1	10.0
FD60-XX-A6-XXX.XXX-CXX-HS1	6.67
FD60-XX-A8-XXX.XXX-CXX-HS1	5.0
FD60-XX-F8-XXX.XXX-CXX-HS1	5.0
FD60-XX-AG-XXX.XXX-CXX-HS1	2.50
FD60-XX-KG-XXX.XXX-CXX-HS1	1.25

• With dual Hall effect sensors for positioning

	Wire color	Definitions	Descriptions																
Power wires	Blue	DC Power	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.																
	Brown																		
Signal wires	Yellow	Vin	Voltage input range: 5 ~ 20V																
	Red	Hall 1 output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data: 																
	Green	Hall 2 output	Hall effect sensor resolution: <table border="1" data-bbox="678 728 1404 1030"> <thead> <tr> <th>Model No.</th> <th>Resolution (Pulses/mm)</th> </tr> </thead> <tbody> <tr> <td>FD60-XX-A4-XXX.XXX-CXX-HS2</td> <td>10.0</td> </tr> <tr> <td>FD60-XX-F4-XXX.XXX-CXX-HS2</td> <td>10.0</td> </tr> <tr> <td>FD60-XX-A6-XXX.XXX-CXX-HS2</td> <td>6.67</td> </tr> <tr> <td>FD60-XX-A8-XXX.XXX-CXX-HS2</td> <td>5.0</td> </tr> <tr> <td>FD60-XX-F8-XXX.XXX-CXX-HS2</td> <td>5.0</td> </tr> <tr> <td>FD60-XX-AG-XXX.XXX-CXX-HS2</td> <td>2.50</td> </tr> <tr> <td>FD60-XX-KG-XXX.XXX-CXX-HS2</td> <td>1.25</td> </tr> </tbody> </table>	Model No.	Resolution (Pulses/mm)	FD60-XX-A4-XXX.XXX-CXX-HS2	10.0	FD60-XX-F4-XXX.XXX-CXX-HS2	10.0	FD60-XX-A6-XXX.XXX-CXX-HS2	6.67	FD60-XX-A8-XXX.XXX-CXX-HS2	5.0	FD60-XX-F8-XXX.XXX-CXX-HS2	5.0	FD60-XX-AG-XXX.XXX-CXX-HS2	2.50	FD60-XX-KG-XXX.XXX-CXX-HS2	1.25
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FD60-XX-KG-XXX.XXX-CXX-HS2	1.25																		
Black	GND																		

Certifications

FD60 actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

Emission	Immunity
EN55014-1:2017+A11:2020	EN 55014-2:2015

Ordering Key

FD60- 24 - A4 - 350 - 470 - C 1 2 - HS3 - PO-BK - 0	
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 KG: 2500rpm / 16mm pitch F4: 3300rpm / 4mm pitch F8: 3300rpm / 8mm pitch
Retracted length <i>(Refer to Page 3)</i>	XXX
Extended length <i>(Refer to Page 3)</i>	XXX
Front connector <i>(Refer to Page 4)</i>	1: Plastic 2: Drilled hole with brass bushing 3: Drilled hole 5: Metal 7: Drilled hole with nylon bushing 8: Enhanced metal
Rear connector <i>(Refer to Page 4)</i>	1: Plastic 2: Metal 5: Metal (with crank function)
Positioning feedback	Blank: None HS3: Hall effect sensor x 1 HS4: Hall effect sensor x 2
Option <i>(Multiple choice is allowed)</i>	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 <i>(Refer to Page 7)</i> B: Direct-cut power cable TL2 <i>(Refer to Page 7)</i>