Actuator
MD56

MD56 is a powerful but compact actuator up to 5000N max. thrust that is suitable for wide range of applications including medical, homecare, furniture and industrial…etc. The motor orientation can be chosen in every 30 degrees of whole round, which makes it an ideal solution for applications where installation space is limited.

Features and Options

Main applications: Furniture, Home care, Medical, Industrial

Standard feaures:

- Input voltage: 24V DC
- Max. load: 5000N (Push) / 3500N (Pull)
- Max. speed at no load: 43 mm/sec (Typical value)
- Speed at full load: 4 mm/sec (Typical value @5000N loaded)
- Stroke: 50 ~ 400mm
- Motor orientation: 360° in steps of every 30°
- Noise level: ≦65dB
- IP Level: IP21
- Preset cam type limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -25°C ~ +65°C
- Certified: CE Marking, MDD Directive 93/42/EEC

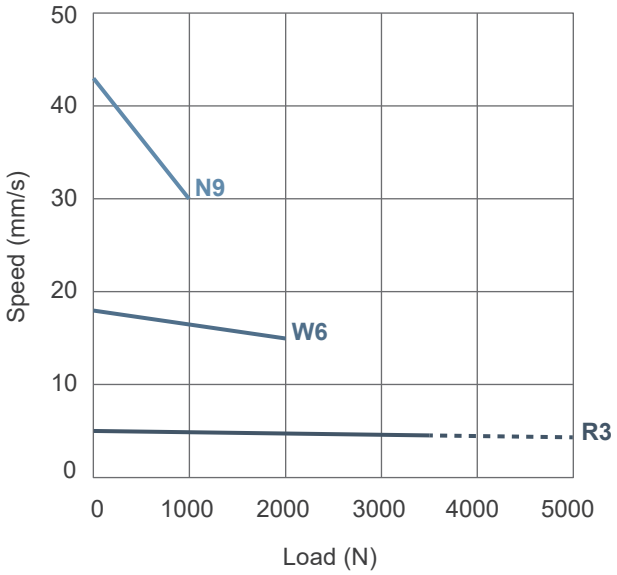
Options:

- Positioning signal feedback with Hall effect sensor x 2
- Positioning feedback with Potentiometer (POT)
- Positioning feedback with Reed sensor
- IPX6 Waterproof case

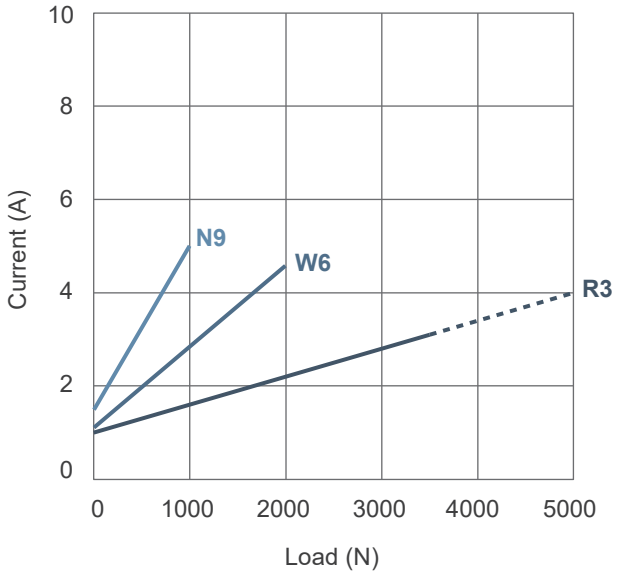
Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	*Typical Speed (mm/s)		*Typical Current (A)	
			No Load	Full Load	No Load	Full Load
MD56-X-24**R3**-XXX.XXX-XXXX0XX	5000	3500	5	4	1.0	4.0
MD56-X-24**W6**-XXX.XXX-XXXX0XX	2000	2000	18	15	1.1	4.6
MD56-X-24**N9**-XXX.XXX-XXXX0XX	1000	1000	43	30	1.5	5.0

Speed vs. Load



Current vs. Load 24V DC



Push / Pull Load —— Push Load - - -

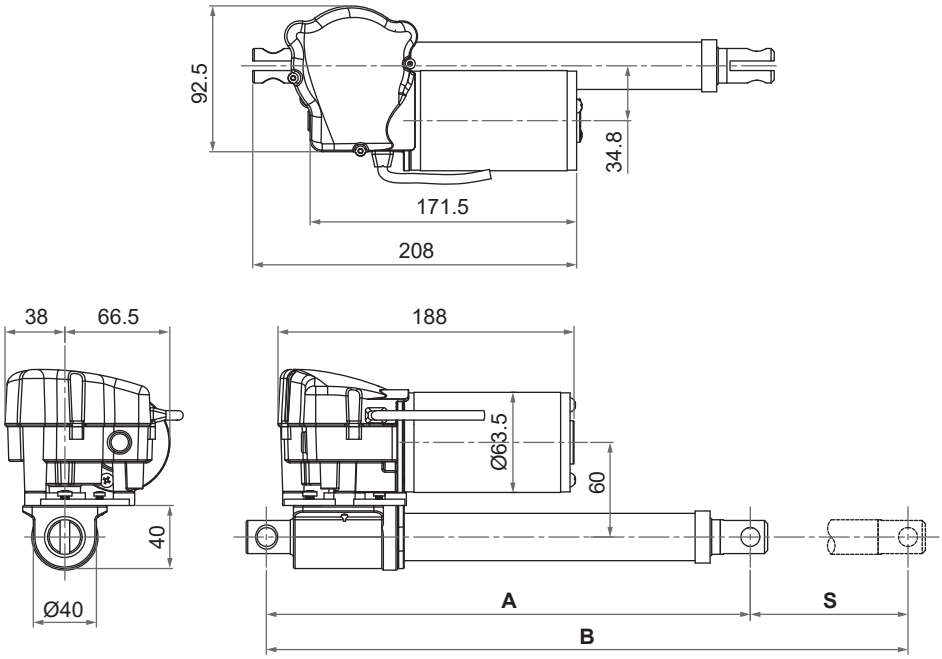
Remarks:

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

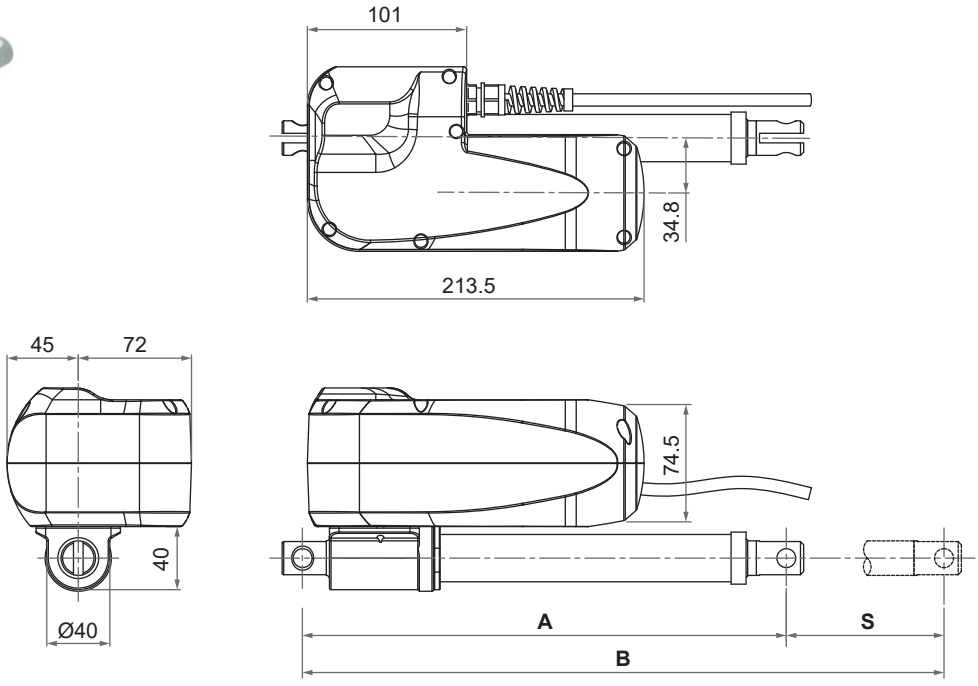
Dimensions

- **Available stroke(S) range:** 50 ~ 400mm
- **Retracted length(A):** ≧ S+156mm (±5mm)
- **Extended length(B):** Retracted length(A) + Stroke(S)
- **Housings of different options:**

- Standard type



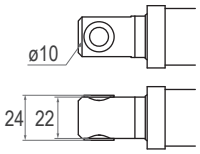
- With IPX6 waterproof case



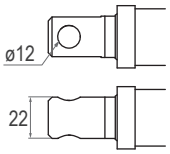
Unit: mm

● Front connector

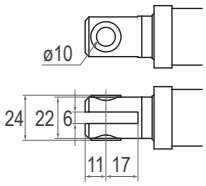
1: Aluminum solid with bushing



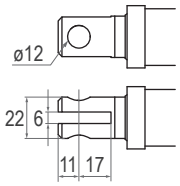
2: Aluminum solid w/o bushing



3: Zinc slot with bushing
(only for models with max. load ≦2000N)

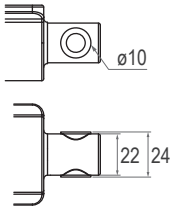


4: Zinc slot w/o bushing
(only for models with max. load ≦2000N)

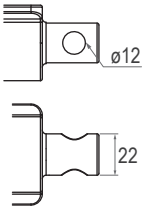


● Rear connector

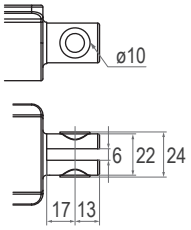
1: Aluminum solid with bushing



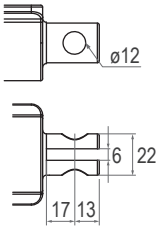
2: Aluminum solid w/o bushing



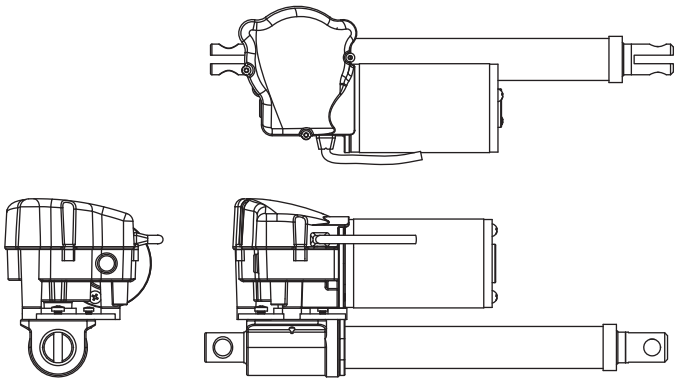
3: Aluminum slot with bushing
(only for models with max. load ≦2000N)



4: Aluminum slot w/o bushing
(only for models with max. load ≦2000N)

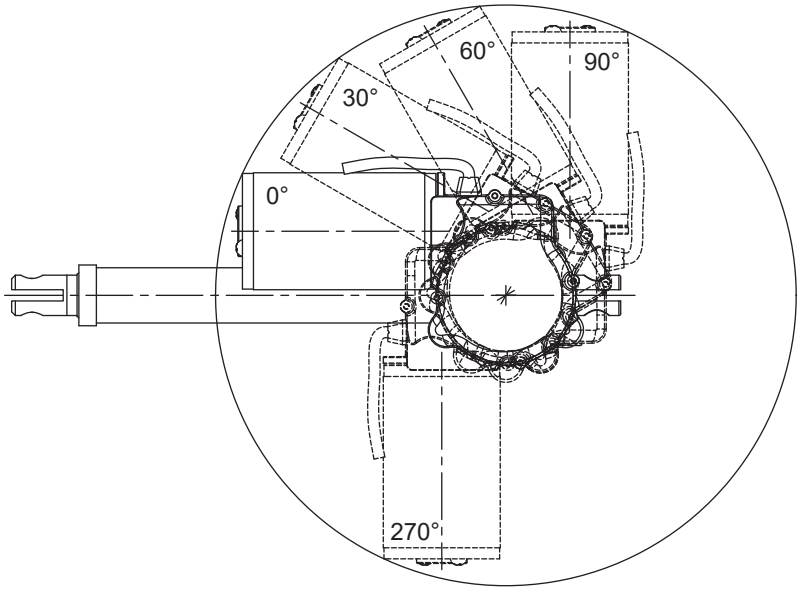


● Pivot orientation of rear connectors



Note: *Presented with slot type connector as an example.*

● Motor orientation (360° in steps of every 30°)



Note: *This drawing shows orientation definition with example of standard type.*

Compatibility

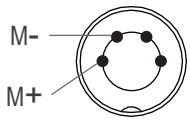
Product	Model	Application condition	MD56 spec
Control box	MD6C	Max. ≦5A current per channels	• Without positioning feedback • With 4-pin Moteck H-type or V-type DIN plug
	CB4P-HP	M1: Max. ≦9A current	• Without positioning feedback • With Moteck J2-type phone jack plug
	CB4P-SY (Synchronization)	Max. ≦4.5A current 2 channels	• With dual Hall effect sensors for positioning • With 6-pin Moteck H-type or V-type DIN plug

Note:
If the current limit of the selected control box is lower than the typical current of the actuator model under full load, the actuator could not be operated in full performance.

Cable Plug

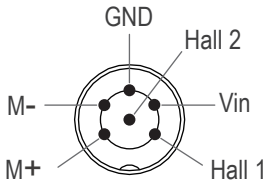
With Moteck H-type or V-type plug

● Without positioning feedback



4-pin DIN plug

● Positioning feedback with dual Hall effect sensors



6-pin DIN plug

V-type

H-type

Note: Connect M+ to “Vdc +” & M- to “Vdc -“ of DC power to extend the actuator. Switch the polarity of DC input to retract it.

Wiring

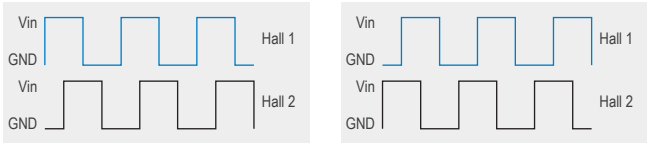
- **Basic, without positioning feedback.**

	Wire color	Definition	Comments
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 dual Hall effect sensor**

	Wire color	Definition	Definition
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	Green	GND	
	Yellow	Vin	Voltage input range: 3.5 ~ 20V
	Blue	Hall 1	Hall effect sensor resolution:
	White	Hall 2	Output voltage of signal (DATA) = Vin Hall signal data:

Model	Resolution (Pulses/mm)
MD56-X-24**R3**-XXX.XXX-XXX**H**0XX	9.83
MD56-X-24**W6**-XXX.XXX-XXX**H**0XX	4.92
MD56-X-24**N9**-XXX.XXX-XXX**H**0XX	2.07



- **With reed sensor**

	Wire color	Definition	Definition
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	White	COM	
	Yellow	NC	Reed sensor resolution:

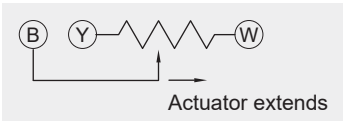
Model	Resolution (Pulses/mm)
MD56-X-24**R3**-XXX.XXX-XXX**R**0XX	2.67
MD56-X-24**W6**-XXX.XXX-XXX**R**0XX	1.33
MD56-X-24**N9**-XXX.XXX-XXX**R**0XX	0.89

Input power rating: 10VA max.
max. input voltage 100V DC(0.1A) and max. input current 1A(10V DC)

● **With Potentiometer (POT)**

<table>
<tr><th></th><th>Wire color</th><th>Definition</th><th>Comments</th></tr>
<tr><td rowspan="2">Power wires</td><td>Red
Black</td><td>DC Power</td><td>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 rowspan="3">Signal wires</td><td>White</td><td>GND</td><td></td></tr>
<tr><td>Yellow</td><td>Vin</td><td>Input voltage 70V max.</td></tr>
<tr><td>Blue</td><td>OUTPUT</td><td>Potentiometer specification:
- Potentiometer 10K ohm, 10 turns.
- Total resistance tolerance ±5%
Output voltage: Between 0 ~ Vin

Following table shows the resistance allocation for stroke 400mm. The max. resistance value at its full stroke will be proportional to the stroke specification if the model is less than 400mm, i.e. the increment of resistance per unit stroke length remanins unchanged.
<table>
<tr><th>Motor and Spindle code</th><th>Resistance value</th></tr>
<tr><td>R3</td><td>0.30 ~ 7.50 KΩ</td></tr>
<tr><td>W6, N9</td><td>0.30 ~ 7.35 KΩ</td></tr>
</table>
Tolerance: ±0.10 KΩ

The resistance value between blue and yellow wires increases when actuator extends, the resistance between blue and white wires decreases at the mean time.
 
</td></tr>
</table>

Certifications

The MD56 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 11:2015 GROUP 1 CLASS B	EN 60601-1-2:2015 IEC 61000-4-2:2008 IEC 61000-4-3:2006+A1:2007+A2:2010 IEC 61000-4-4:2012 IEC 61000-4-5:2014 IEC 61000-4-6:2013 IEC 61000-4-8:2009

Ordering Key

MD56 - S - 24 R3 - 206 . 256 - 1 1 0 H 0 0 1

Waterproof case	**0**: None (IP21) **S**: Waterproof case (IPX6)
Input voltage	**24**: 24V DC
Motor and Spindle type	**R3**: 2800rpm, 3mm pitch* **W6**: 5500rpm, 6mm pitch **N9**: 5500rpm, 9mm pitch
Retracted length (Refer to Page 3)	**XXX**
Extended length (Refer to Page 3)	**XXX**
Front connector (Refer to Page 4)	**1**: Aluminum solid with bushing, ø10mm **2**: Aluminum solid w/o bushing, ø12mm **3**: Zinc slot with bushing, ø10mm (Only for models with max. load ≦2000N) **4**: Zinc slot w/o bushing, ø12mm (Only for models with max. load ≦2000N)
Rear connector (Refer to Page 4)	**1**: Aluminum solid with bushing, ø10mm **2**: Aluminum solid w/o bushing, ø12mm **3**: Aluminum slot with bushing, ø10mm (Only for models with max. load ≦2000N) **4**: Aluminum slot w/o bushing, ø12mm (Only for models with max. load ≦2000N)
Pivot orientation of rear connector (Refer to Page 4)	**0**: 0° **9**: 90°
Positioning feedback	**0**: None **H**: Duall Hall effect sensors (Must go with IPX6 Waterproof case) **R**: Reed sensor **P**: Potentiometer
Reserved	**0**: No meaning
Motor orientation (Refer to Page 4)	**0**: 0° **3**: 30° **6**: 60° **9**: 90° **R**: 270°
Cable length	**1**: 750mm straight **2**: 1500mm straight

* **Remarks:** The front and rear connectors of the R3 motor must be solid type.