Actuator
MD21

MD21 is a compact and quiet actuator which is suitable for various applications with limited installation space, such as recliners, beds, and other applications.

Content

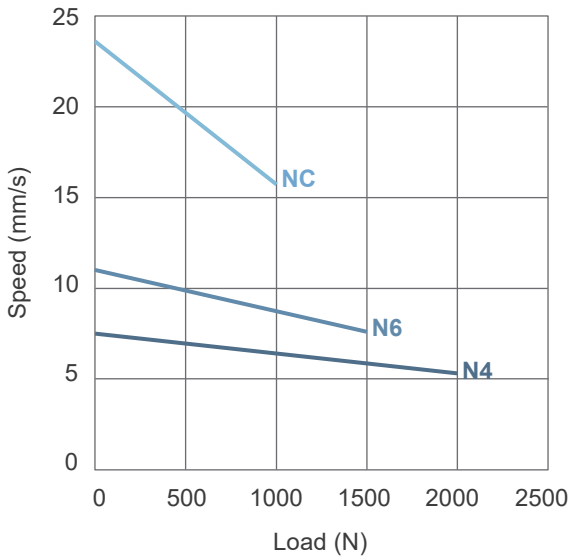
Features and Options

- Main applications: Office / Leisure & Recreation / Medical Care / Industry
- Input voltage: 24V DC
- Max. load: 2000N (Push/Pull)
- Max. speed at no load: 23.6mm/sec (Typical value)
- Speed at full load: 5.3mm/sec (Typical value @2000N Loaded)
- Stroke: 50～400mm
- Noise level: ≦50dB
- IP level: IPX5 (Static; non-action)
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -20°C～+65°C
- Storage ambient temperature: -25°C～+65°C
- Certified:
  - CE Marking, EMC Directive 2014/30/EU
  - CE Marking, EN 60601-1-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-8
- Positioning: Optional digital positioning feedback with dual Hall effect sensors

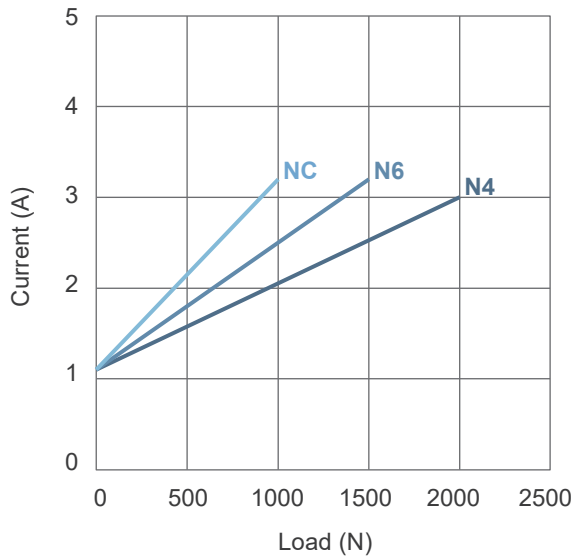
Performance Data

Model No.	Push/Pull Max. (N)	* Typical speed (mm/s)		* Typical current (A)	
		No load	Full load	No load	Full load
MD21-24**N4**-XXX.XXX-XXX005X	2000	7.5	5.3	1.1	3.0
MD21-24**N6**-XXX.XXX-XXX005X	1500	11.0	7.6	1.1	3.2
MD21-24**NC**-XXX.XXX-XXX005X	1000	23.6	15.7	1.1	3.2

Speed VS. Load



Current VS. Load 24V DC



Note:

* 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.

● Inrush current

- When the actuator starts to operate, an inrush current of about 0.2 seconds will be generated. The starting inrush current of MD21 can reach about 3 times of the typical current under the actuator load.
- If a circuit board power supply is used, the specifications must be sufficient to handle the inrush current. If batteries are used as the power source, inrush current will not be a problem.
- MOTECK controllers are designed to take into account the inrush current when the actuator starts. If the user provides his or her own controller, this feature must be considered in the specifications and protection mechanisms. Besides, the connectors, switches and relays selected by users must also be able to withstand the starting currents.

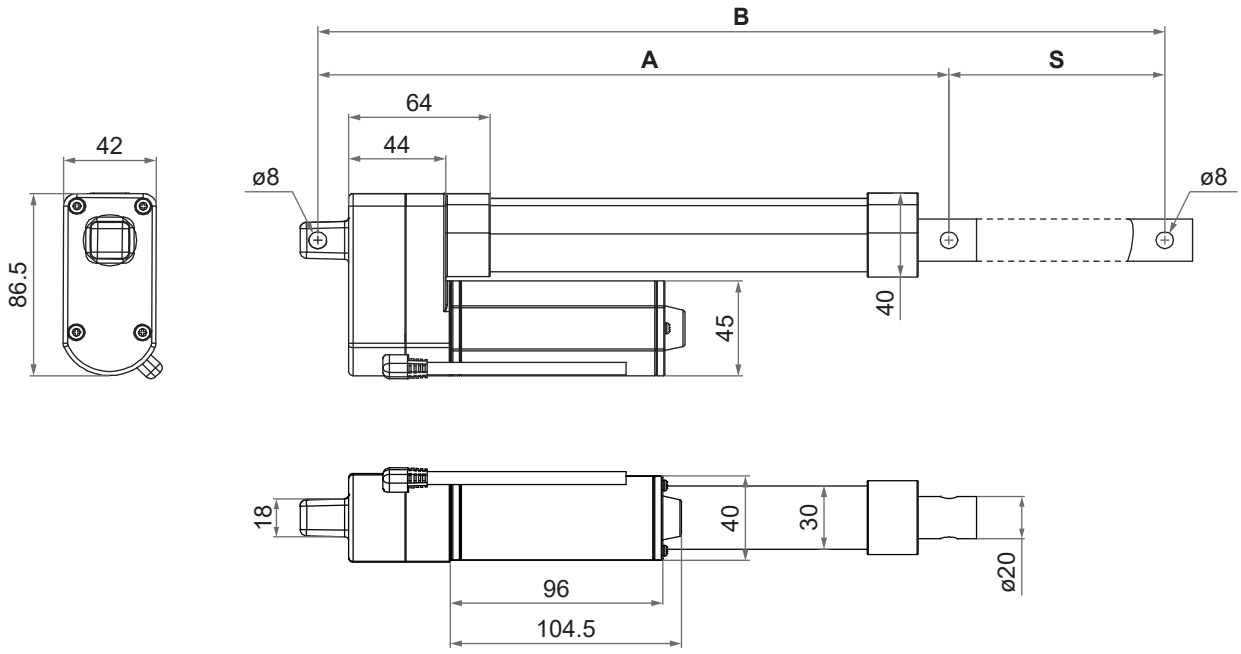
Dimensions

1. Installation dimension

- Available stroke (S) range = 50~400mm (±3mm)
- Extended length (B) = Retracted length (A) + Stroke (S)
- Retracted length (A)

Stroke (S)	50≦S≦300mm	
Front connector type	2, 4	3
Retracted length (A)	A≧S+135mm (±3mm)	A≧S+145mm (±3mm)
• 301≦S≦400mm, retracted length (A) + 30mm. • S≧401mm, Please consult MOTECK sales representative for feasibility and the available retracted length.		

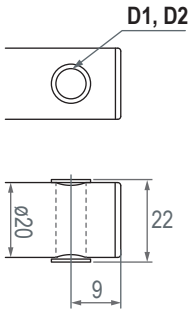
2. Drawing



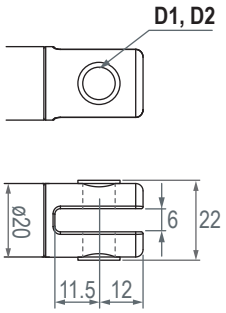
Unit: mm

3. Front connector type

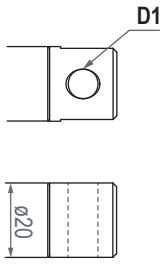
2: Drilled hole



3: Metal slot



4: Plastic solid

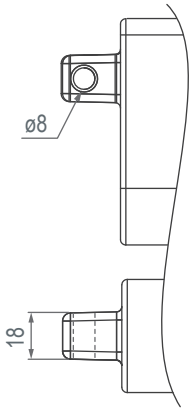


Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)
2	ø8, ø10	ø8
3	ø8, ø10	ø8
4	ø8, ø10	N/A

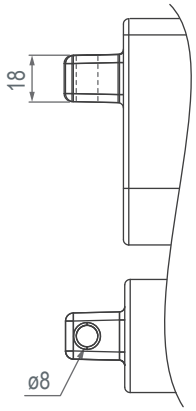
4. Pivot orientation of rear connector

Metal

0: 0°



9: 90°



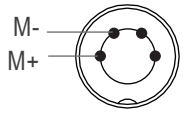
Compatibility

Product	Model	MD21 spec
Control box	T-control, CS1, CS2, CBT2, CB3T, CB4M	• Without positioning feedback • With Moteck F-type 4-pin DIN plug
	CB3T-SY, CB3T-SYD, CB4M-S, CB4M-B	• With dual Hall effect sensors for positioning • With Moteck F-type 6-pin DIN plug
	CM45	• Without positioning feedback • With Moteck H-type 4-pin DIN plug
	CB2P, CB4P, MD6C	• Without positioning feedback • With Moteck H-type 4-pin DIN plug
	MD7C	• Without positioning feedback • With Moteck V-type 4-pin DIN plug
	CB4P-SY, CM23	• With dual Hall effect sensors for positioning • With Moteck H-type 6-pin DIN plug
	CM41-M, CB5P-M	• With Moteck LR-type 6-pin minifit plug
Accessory	MB22 mounting bracket 	• Standard, mounting hole ø8mm or ø10mm

Cable Plug

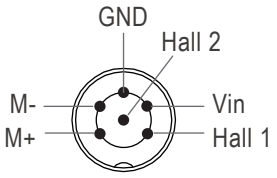
• With Moteck F-type, H-type or V-type DIN plug

- Without positioning feedback



4-pin DIN plug

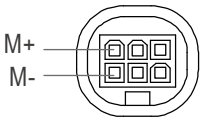
- With dual Hall effect sensors for positioning



6-pin DIN plug

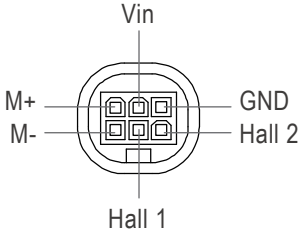
• With Moteck LR-type minifit plug

- Without positioning feedback



6-pin minifit plug

- With dual Hall effect sensors for positioning



6-pin minifit plug

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

F-type plug

H-type plug

V-type plug

LR-type plug

Cable with Flying Leads

1. Basic, without positioning feedback.

	Wire color	Definition	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		

2. With dual Hall effect sensors 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>Blue</td><td rowspan="2">DC Power</td><td rowspan="2">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>Brown</td></tr>
<tr><td rowspan="4">Signal wires</td><td>Yellow</td><td>Vin</td><td>Voltage input range: 5 ~ 20V</td></tr>
<tr><td>Red</td><td>Hall 1 output</td><td rowspan="2">High= Input - 1.2V (±0.6V)
Low= GND
Hall signal data:
 

Hall effect sensor resolution:
<table>
<tr><th>Model</th><th>Resolution (pulses/mm)</th></tr>
<tr><td>MD21-24N4-XXX.XXX-XXH00XX</td><td>7.594</td></tr>
<tr><td>MD21-24N6-XXX.XXX-XXH00XX</td><td>5.063</td></tr>
<tr><td>MD21-24NC-XXX.XXX-XXH00XX</td><td>2.531</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

MD21- 24 N4 - 412 . 612 - 3 9 0 0 0 5 0

Input voltage	**24**: 24V DC
Motor and Spindle type	**N4:** 3800rpm / 4mm pitch **N6:** 3800rpm / 6mm pitch **NC:** 3800rpm / 12mm pitch
Retracted length (Refer to Page 5)	**XXX**
Extended length (Refer to Page 5)	**XXX**
Front connector type (Refer to Page 6)	**2**: Drilled hole **3**: Metal slot **4**: Plastic solid
Pivot orientation of rear connector (Refer to Page 6)	**0**: 0° **9**: 90°
Positioning feedback	**0**: None **H**: Hall effect sensor x 2
Reserved	**0**
Reserved	**0**
IP level	**5**: IPX5
Cable length	**0**: 300mm straight **1**: 1000mm straight **A**: 450mm with 300mm coiled