

# 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.



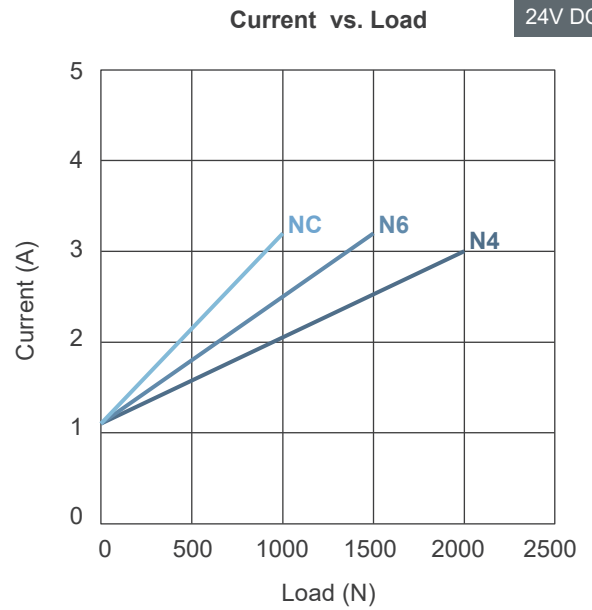
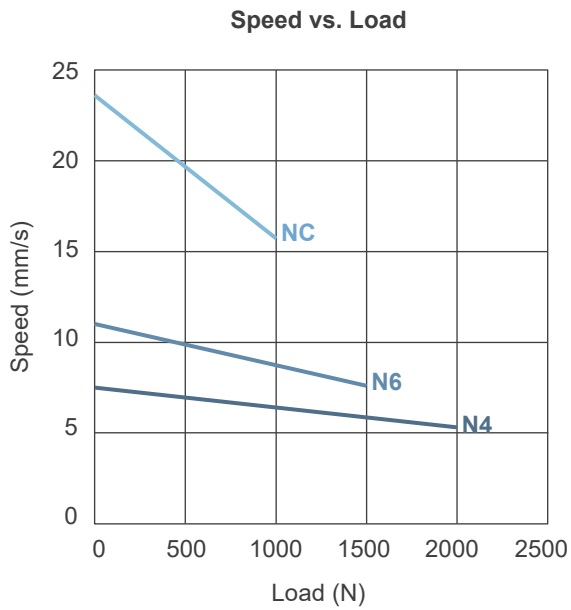
### Features and Option

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- Main applications: Office, Leisure & Recreation, Medical Care, Industrial
- Input voltage: 24V DC
- Max. load: 2000N (Push/Pull)
- 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:  $\leq 50$ dB
- IP level: IPX5
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -20°C ~ +65°C
- Certified: CE Marking, Directive 2014/30/EU.  
EN 60601-1-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-8
- Option: Positioning signal 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 <b>N4</b> -XXX.XXX-XXX005X	2000	7.5	5.3	1.1	3.0
MD21-24 <b>N6</b> -XXX.XXX-XXX005X	1500	11.0	7.6	1.1	3.2
MD21-24 <b>NC</b> -XXX.XXX-XXX005X	1000	23.6	15.7	1.1	3.2



**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.

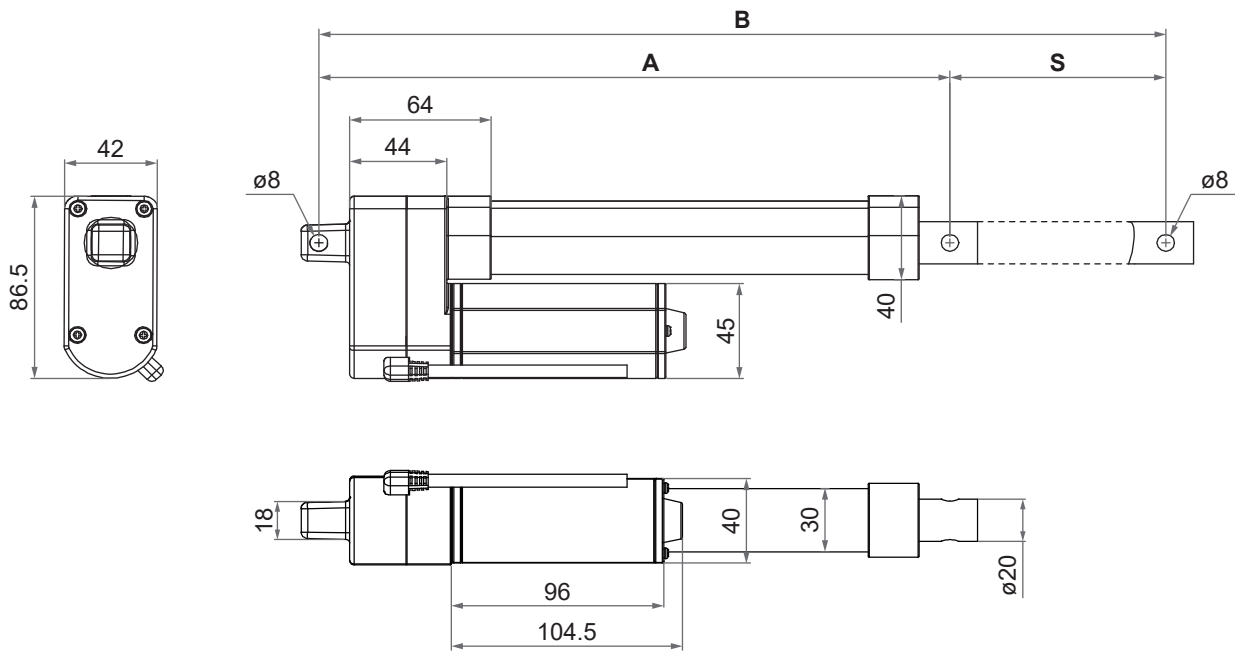
## Dimensions

- 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	2, 4	3, 6
Retracted length (A)	$A \geq S + 135\text{mm}$ (±3mm)	$A \geq S + 145\text{mm}$ (±3mm)

• 301 ≤ S ≤ 400mm, retracted length (A) + 30mm  
 • S ≥ 401mm, Please consult MOTECK sales representative for feasibility and the available retracted length.

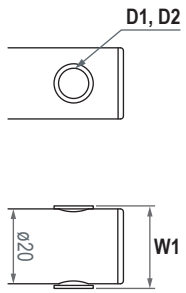
### • Drawing



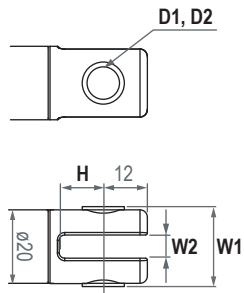
Unit: mm

● **Front connector**

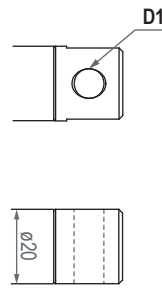
2: Drilled hole



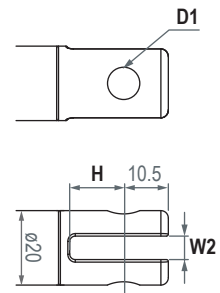
3: Metal slot



4: Plastic solid



6: Plastic slot

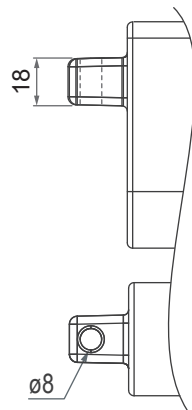
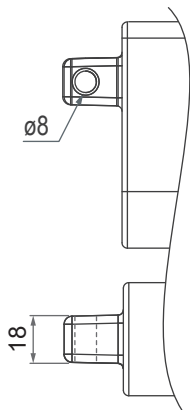


Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)	Width with bushing (W1)	Slot width (W2)	Slot depth (H)
2	ø8, ø10	ø8	22	N/A	N/A
3	ø8, ø10	ø8	22	6	11.5
4	ø8, ø10	N/A	N/A	N/A	N/A
6	ø8, ø10	N/A	N/A	6	15

● **Pivot orientation of rear connector**

0: Metal 0°

9: Metal 90°



Unit: mm

## Compatibility

Product	Model	MD21 spec
<b>Control box</b>	T-control, CS1, CS2, CBT2, CB3T, CB4M	<ul style="list-style-type: none"> <li>• Without positioning feedback</li> <li>• With Moteck F-type 4-pin DIN plug</li> </ul>
	CB3T-SY, CB3T-SYD, CB4M-S, CB4M-B	<ul style="list-style-type: none"> <li>• With dual Hall effect sensors for positioning</li> <li>• With Moteck F-type 6-pin DIN plug</li> </ul>
	CM45	<ul style="list-style-type: none"> <li>• Without positioning feedback</li> <li>• With Moteck H-type 4-pin DIN plug</li> </ul>
	CB2P, CB4P, MD6C, MD7C	<ul style="list-style-type: none"> <li>• Without positioning feedback</li> <li>• With Moteck H-type or V-type 4-pin DIN plug</li> </ul>
	CB4P-SY, CM23	<ul style="list-style-type: none"> <li>• With dual Hall effect sensors for positioning</li> <li>• With Moteck H-type 6-pin DIN plug</li> </ul>
	CM41-M, CB5P-M	<ul style="list-style-type: none"> <li>• With Moteck LR-type 6-pin minifit plug</li> </ul>
<b>Accessory</b>	MB22 mounting bracket (Fig. 1)	<ul style="list-style-type: none"> <li>• Standard, mounting hole <math>\varnothing 8\text{mm}</math> or <math>\varnothing 10\text{mm}</math></li> </ul>
	C15 clamp (Fig. 2)	<ul style="list-style-type: none"> <li>• Comply with the section shape and size of the outer tube.</li> </ul>



Fig. 1

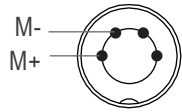


Fig. 2

# Cable Plug

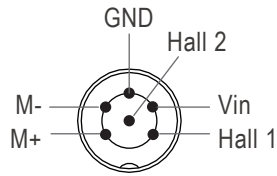
## With Moteck F-type, H-type or V-type DIN plug

- Without positioning feedback



4-pin DIN plug

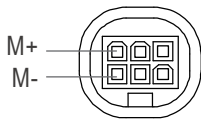
- With dual Hall effect sensors for positioning



6-pin DIN plug

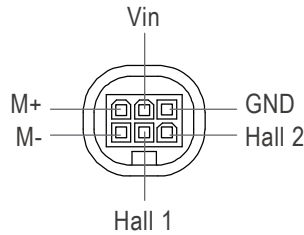
## With Moteck LR-type minifit plug

- Without positioning feedback



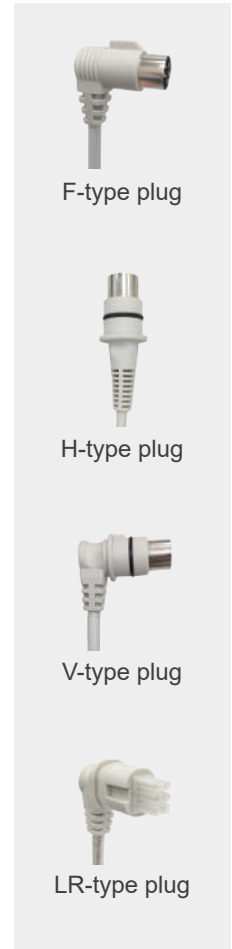
6-pin minifit plug

- 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

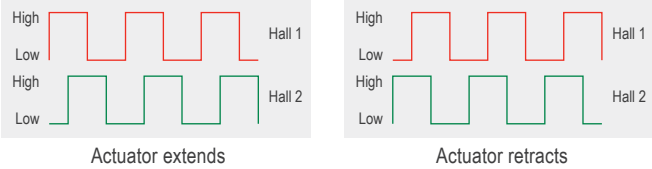
LR-type plug

## Cable with Flying Leads

- 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		

- With dual Hall effect sensors 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		
Signal wires	Yellow	Vin	Voltage input range: 5 ~ 20V
	Red	Hall 1 output	High= Input - 1.2V ( $\pm 0.6V$ ) Low= GND Hall signal data:  <p>The diagram shows two timing scenarios. In the 'Actuator extends' scenario, Hall 1 (red) is high and Hall 2 (green) is low. In the 'Actuator retracts' scenario, Hall 1 (red) is low and Hall 2 (green) is high. Both signals are square waves.</p>
	Green	Hall 2 output	Hall effect sensor resolution:
	Black	GND	

Model	Resolution (pulses/mm)
MD21-24N4-XXX.XXX-XXH00XX	10.50
MD21-24N6-XXX.XXX-XXH00XX	7.00
MD21-24NC-XXX.XXX-XXH00XX	3.50

## Ordering Key

	MD21- 24 N4 412 612 3 9 0 0 0 5 0
<b>Input voltage</b>	24: 24V DC
<b>Motor and Spindle type</b>	N4: 3800rpm / 4mm pitch N6: 3800rpm / 6mm pitch NC: 3800rpm / 12mm pitch
<b>Retracted length</b> <i>(Refer to Page 3)</i>	XXX
<b>Extended length</b> <i>(Refer to Page 3)</i>	XXX
<b>Front connector</b> <i>(Refer to Page 3)</i>	2: Drilled hole 3: Metal slot 4: Plastic solid 6: Plastic slot
<b>Pivot orientation of rear connector</b> <i>(Refer to Page 4)</i>	0: Metal 0° 9: Metal 90°
<b>Positioning feedback</b>	0: None H: Hall effect sensor x 2
<b>Reserved</b>	0
<b>Reserved</b>	0
<b>IP level</b>	5: IPX5
<b>Cable length</b>	0: 300mm straight 1: 1000mm straight A: 450mm with 300mm coiled

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