

# 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.



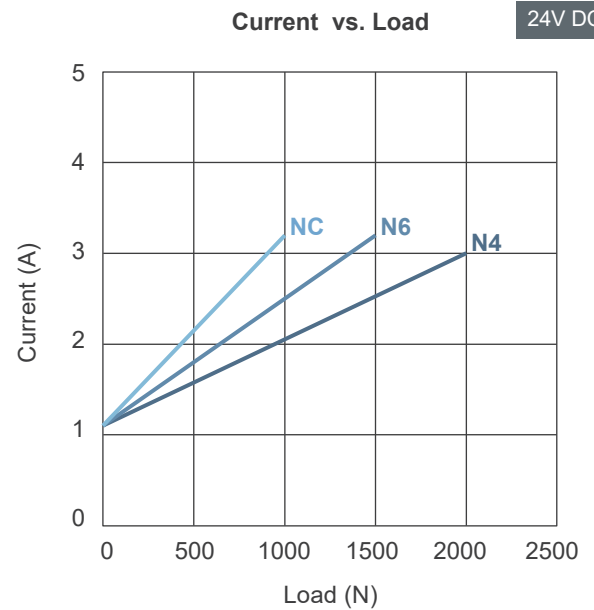
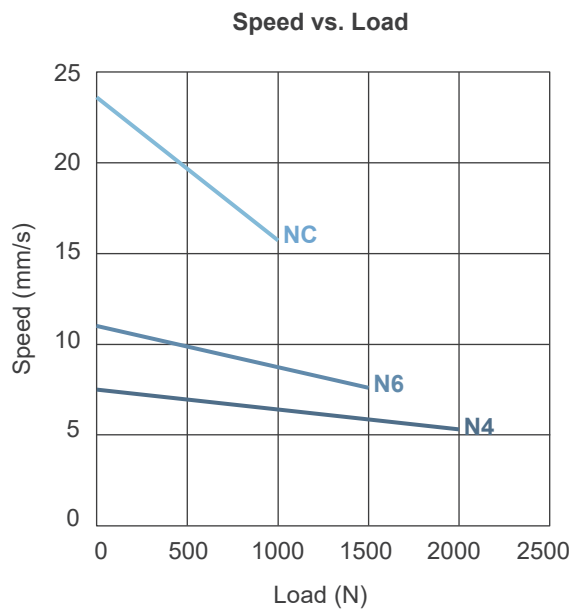
### Features and Options

---

- Main applications: Office, Leisure & Recreation, Medical Care, Industrial
- 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:  $\leq 50$ dB
- IP level: IPX5
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature:  $-20^{\circ}\text{C} \sim +65^{\circ}\text{C}$
- Certified: CE Marking, Directive 2014/30/EU.  
EN 60601-1-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-8
- Options: 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:**

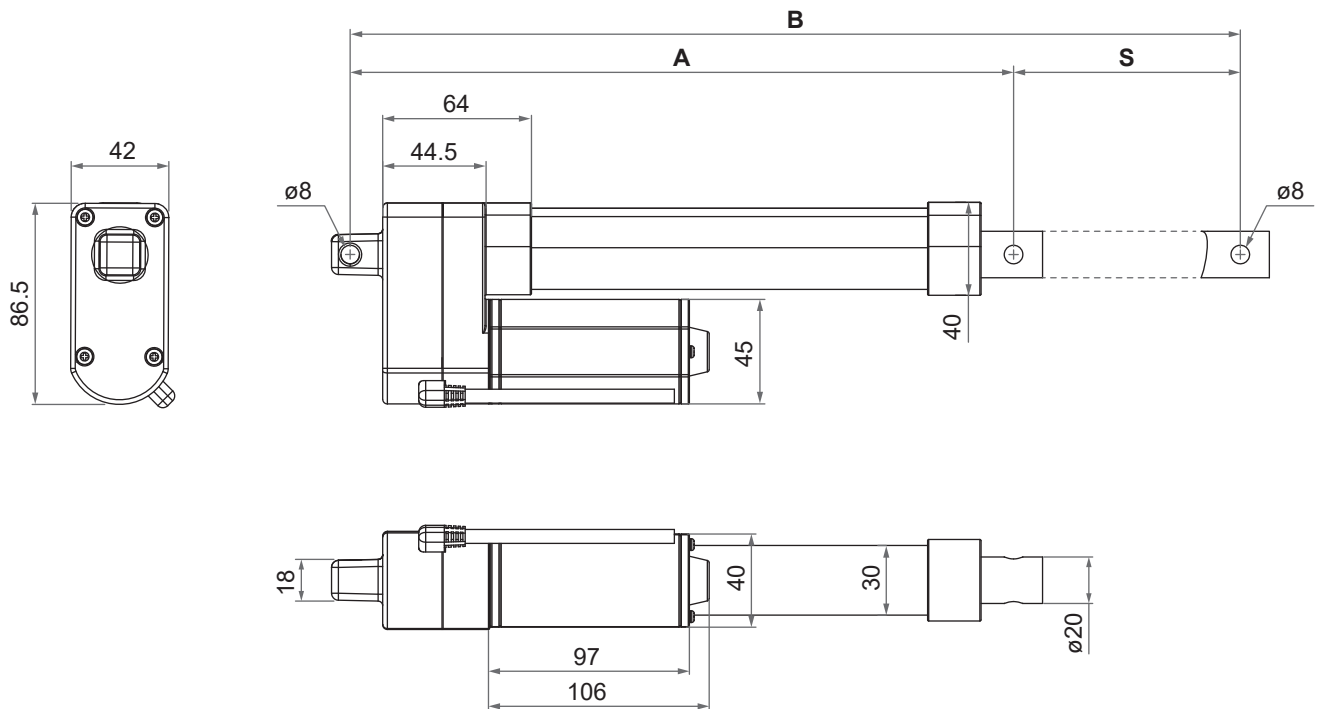
- \* The typical speed or typical current means the average value neither upper limit nor lower limit. The performance curves are made with typical values.

## 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)
<ul style="list-style-type: none"> <li>• 301 ≤ S ≤ 400mm, retracted length (A) + 30mm</li> <li>• S ≥ 401mm, Please consult MOTECK sales representative for feasibility and the available retracted length.</li> </ul>		

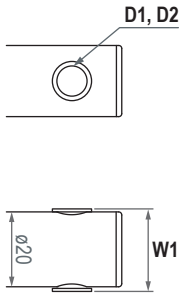
### • Drawing



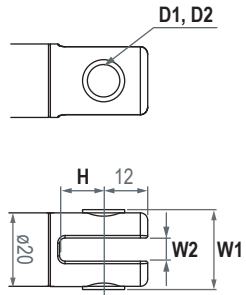
Unit: mm

● **Front connector**

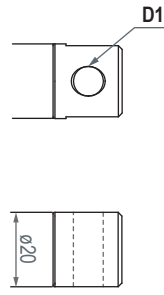
2: Drilled hole



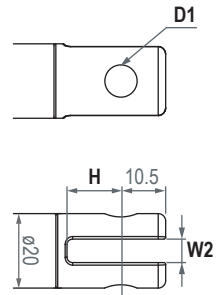
3: Metal slot



4: Plastic solid



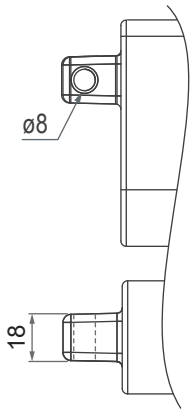
6: Plastic slot



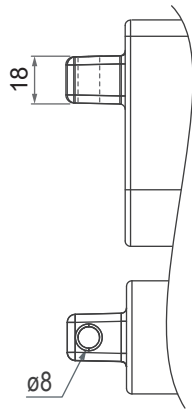
Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)	Width with bushing (W1)	Slot width (W2)	Slot depth (H)
2	ø8, ø10	ø8	22	N/A	N/A
3	ø8, ø10	ø8	22	6	11.5
4	ø8, ø10	N/A	N/A	N/A	N/A
6	ø8, ø10	N/A	N/A	6	15

● **Pivot orientation of rear connector**

0: Metal 0°



9: Metal 90°



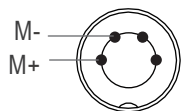
## Compatibility

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	<ul style="list-style-type: none"> <li>With dual Hall effect sensors for positioning</li> <li>With Moteck H-type or V-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>

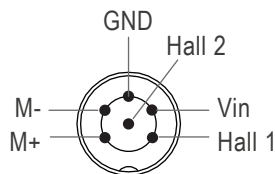
## Cable Plug

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

- Without positioning feedback
- With dual Hall effect sensors for positioning



4-pin DIN plug



6-pin DIN plug



F-type plug



H-type plug



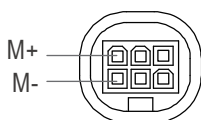
V-type plug



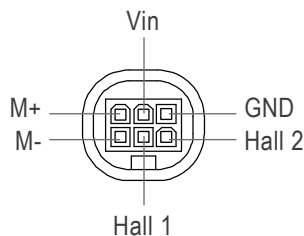
LR-type plug

### Moteck LR-type minifit plug

- Without positioning feedback
- With dual Hall effect sensors for positioning



6-pin minifit plug



6-pin minifit plug

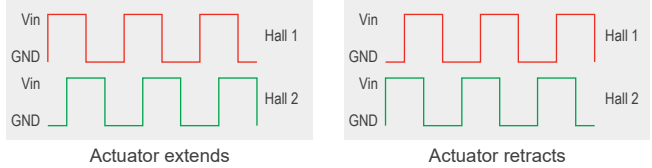
**Note:** Connect M+ to "Vdc +" & M- to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.

# Wiring

- Without positioning feedback

	Wire color	Definition	Comments
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 Hall effect sensor x 2

	Wire color	Definition	Comments								
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	Black	GND									
	Yellow	Vin	Voltage input range: 3.5 ~ 20V								
	Red	Hall 1 output	Hall effect sensor resolution: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Model</th> <th>Resolution (pulses/mm)</th> </tr> </thead> <tbody> <tr> <td>MD21-24N4-XXX.XXX-XXH00XX</td> <td>10.50</td> </tr> <tr> <td>MD21-24N6-XXX.XXX-XXH00XX</td> <td>7.00</td> </tr> <tr> <td>MD21-24NC-XXX.XXX-XXH00XX</td> <td>3.50</td> </tr> </tbody> </table>	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
	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										
Green	Hall 2 output	Output voltage of signal (DATA) = Vin Hall signal data:									
			 <p>The diagrams show two scenarios: 'Actuator extends' and 'Actuator retracts'. In both, the input Vin is a square wave. For 'Actuator extends', Hall 1 (red) is high and Hall 2 (green) is low. For 'Actuator retracts', Hall 1 (red) is low and Hall 2 (green) is high.</p>								

## 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> (Refer to Page 3)	XXX
<b>Extended length</b> (Refer to Page 3)	XXX
<b>Front connector</b> (Refer to Page 4)	2: Drilled hole 3: Metal slot 4: Plastic solid 6: Plastic slot
<b>Pivot orientation of rear connector</b> (Refer to Page 4)	0: Metal 0° 9: Metal 90°
<b>Positioning feedback</b>	0: None H: Hall effect sensor x 2
<b>Reserved</b>	0: No meaning
<b>Reserved</b>	0: No meaning
<b>IP level</b>	5: IPX5
<b>Cable length</b>	0: 300mm straight 1: 1000mm straight A: 450mm with 300mm coiled

### Terms of Use

The user is responsible for the suitability of MOTECK products, and the products listed on the MOTECK website are subject to change without notice. MOTECK reserves the right to terminate sales or delete any products displayed on the website or listed in its catalog.