

Actuator

MD57

MD57 is a compact actuator that is suitable for wide range of applications including homecare, furniture, medical 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, such as electric wheelchairs. There are 4 kinds of housing according to different options like limit switch, positioning feedback, IPX6 protection and 12V DC high power motor.



Features and Options

Main applications: Furniture, Home care, Medical

Standard features:

- Spindle type: ACME screw
- Input voltage: 24V DC / 12V DC
- Max. load: 4000N (Push / Pull)
- Max. speed at no load: 12.6mm/sec (Typical value)
- Speed at full load: 3.5mm/sec (Typical value @4000N Loaded)
- Stroke: 50 ~ 300mm
- Motor orientation: 360° in steps of every 30°
- Rear connector's pivot orientation can be chosen in every 30 degrees.
- Noise level: ≤65dB
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -20°C ~ +65°C
- Certified: CE Marking, EN 60601-1-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-8.
EN 60601-1:2006+A1:2013 for 12V DC high power motor only.

Options:

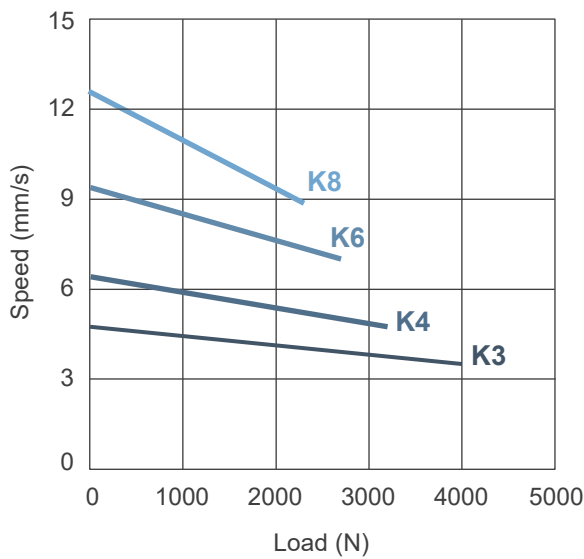
- 12V DC high power motor (Must be equipped with limit switch)
- Analog and absolute positioning feedback with Potentiometer (POT)
- Relative positioning signal feedback with dual Hall effect sensors (Must be equipped with limit switch or IPX6 waterproof case)
- Preset limit switches
- IPX6 waterproof case

Performance Data

Model No.	Input voltage (V DC)	Push / Pull Max. (N)	Typical speed (mm/s) *		Typical current (A) *	
			No load	Full load	No load	Full load
MD57-X-24 K3 -XXX.XXX-XX.....	24	4000	4.8	3.5	0.7	3.5
MD57-X-24 K4 -XXX.XXX-XX.....	24	3200	6.4	4.8	0.7	3.4
MD57-X-24 K6 -XXX.XXX-XX.....	24	2700	9.4	7.0	0.7	3.8
MD57-X-24 K8 -XXX.XXX-XX.....	24	2300	12.6	8.9	0.8	4.0
MD57-X-12 W4 -XXX.XXX-XX.....	12	4000	12.0	9.5	3.0	16.0

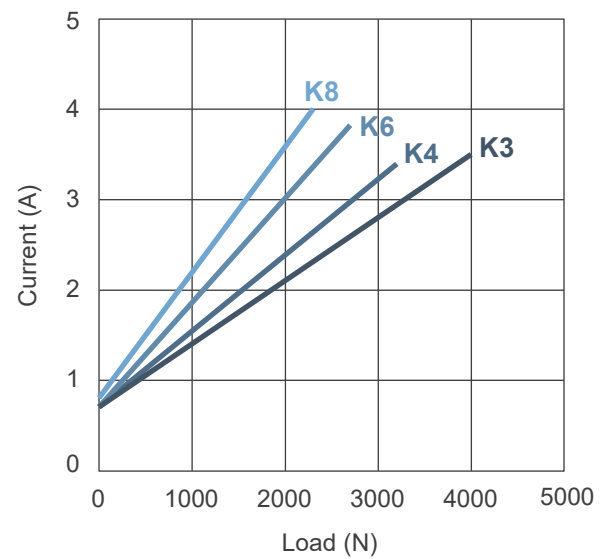
Speed vs. Load

24V DC



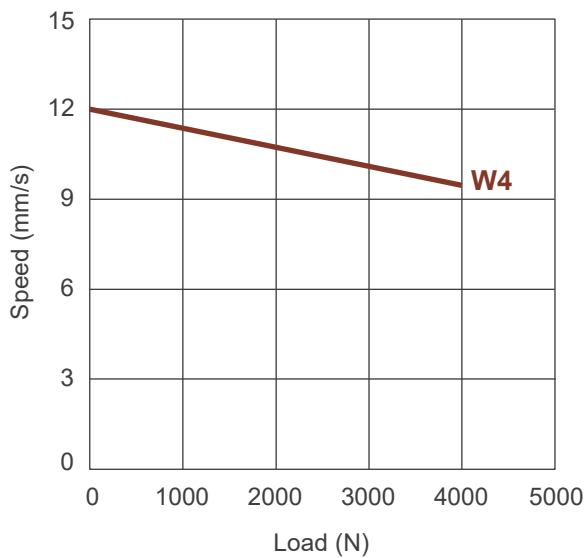
Current vs. Load

24V DC



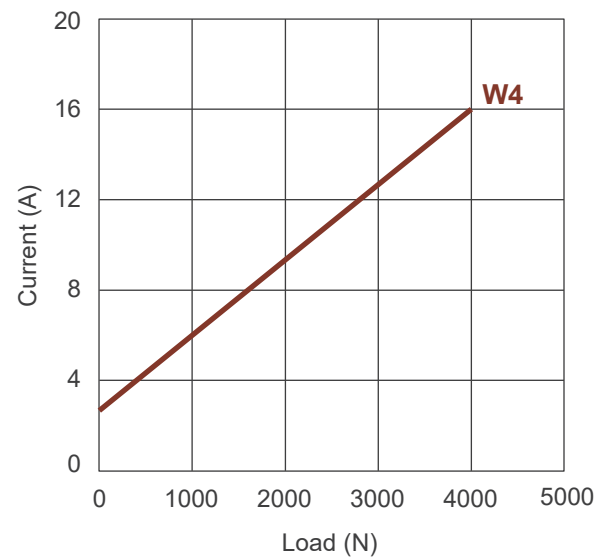
Speed vs. Load

12V DC



Current vs. Load

12V DC



Remarks:

* 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

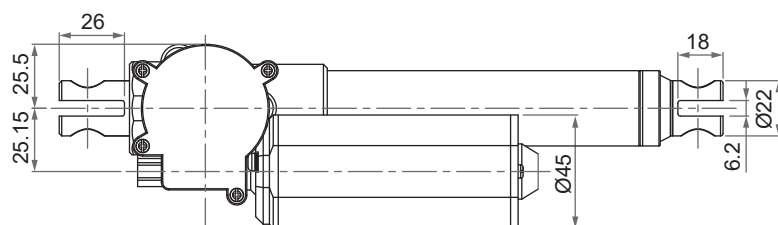
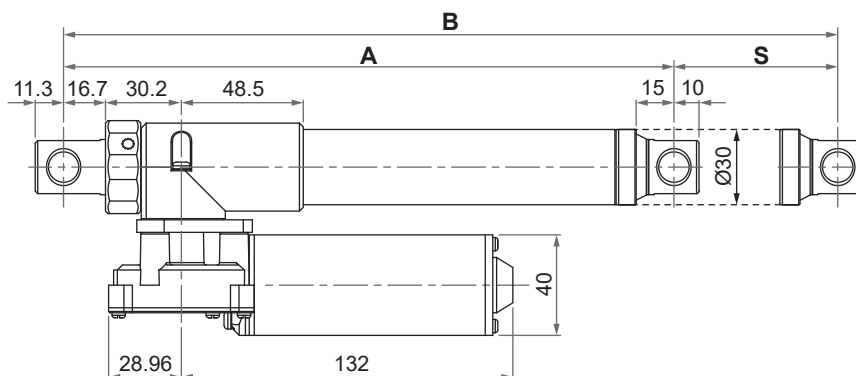
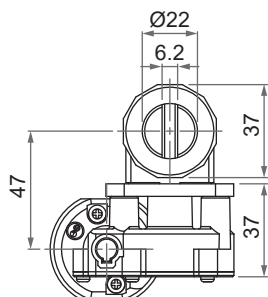
Available stroke (S) range = 50 ~ 300mm (±3mm)

Retracted length (A) = $\geq S + 143\text{mm}$ (±3mm)

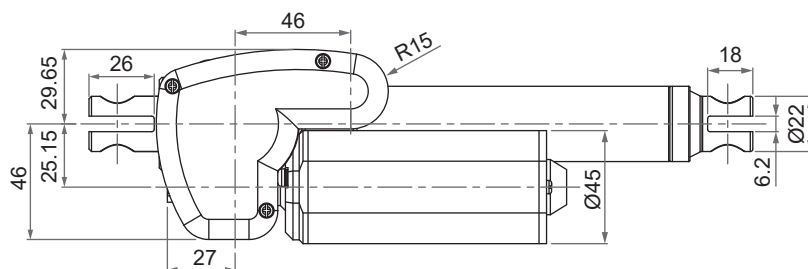
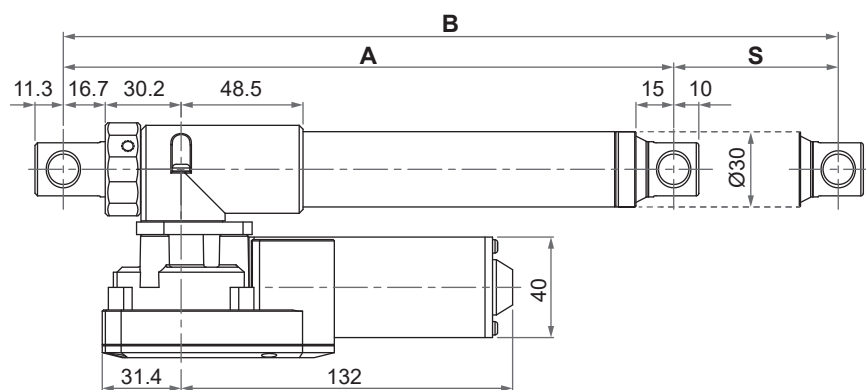
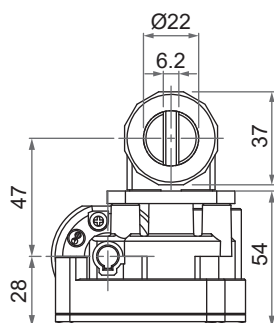
Extended length (B) = Retracted length (A) + Stroke (S)

Housings of different options:

- Basic

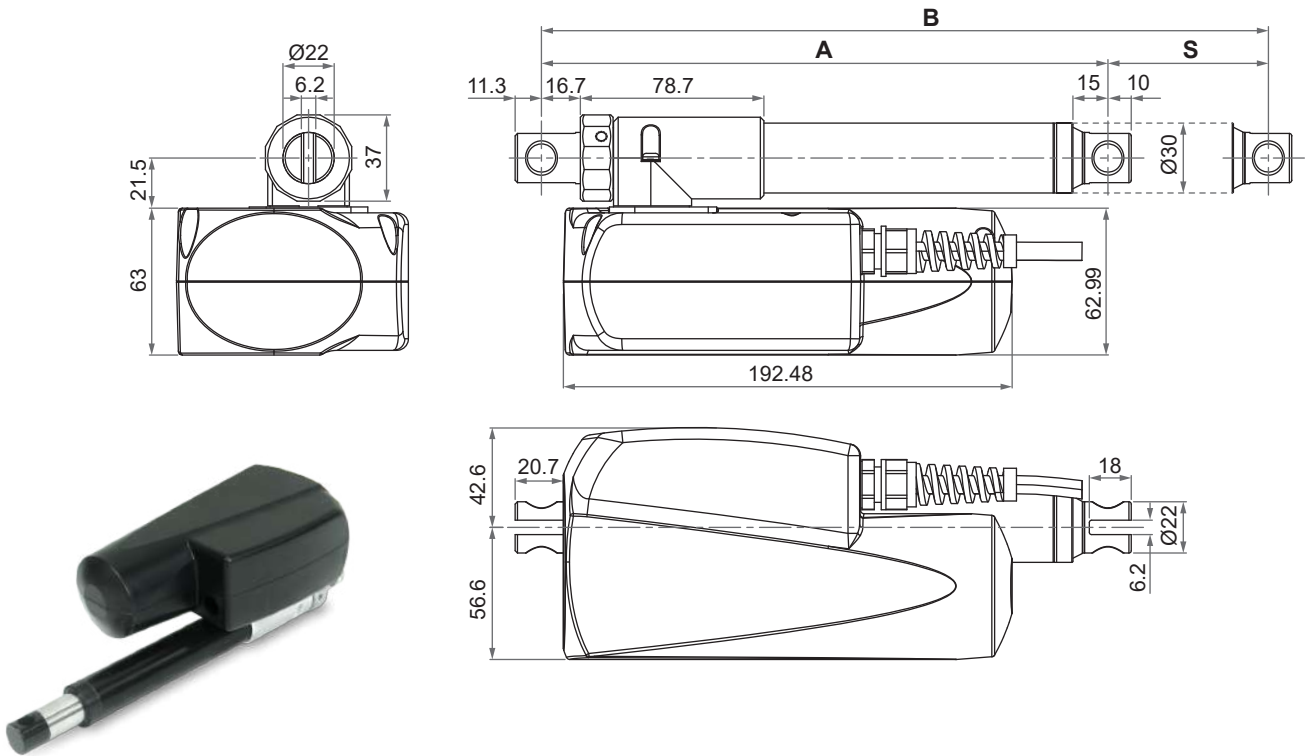


- With limit switch or Potentiometer (POT)



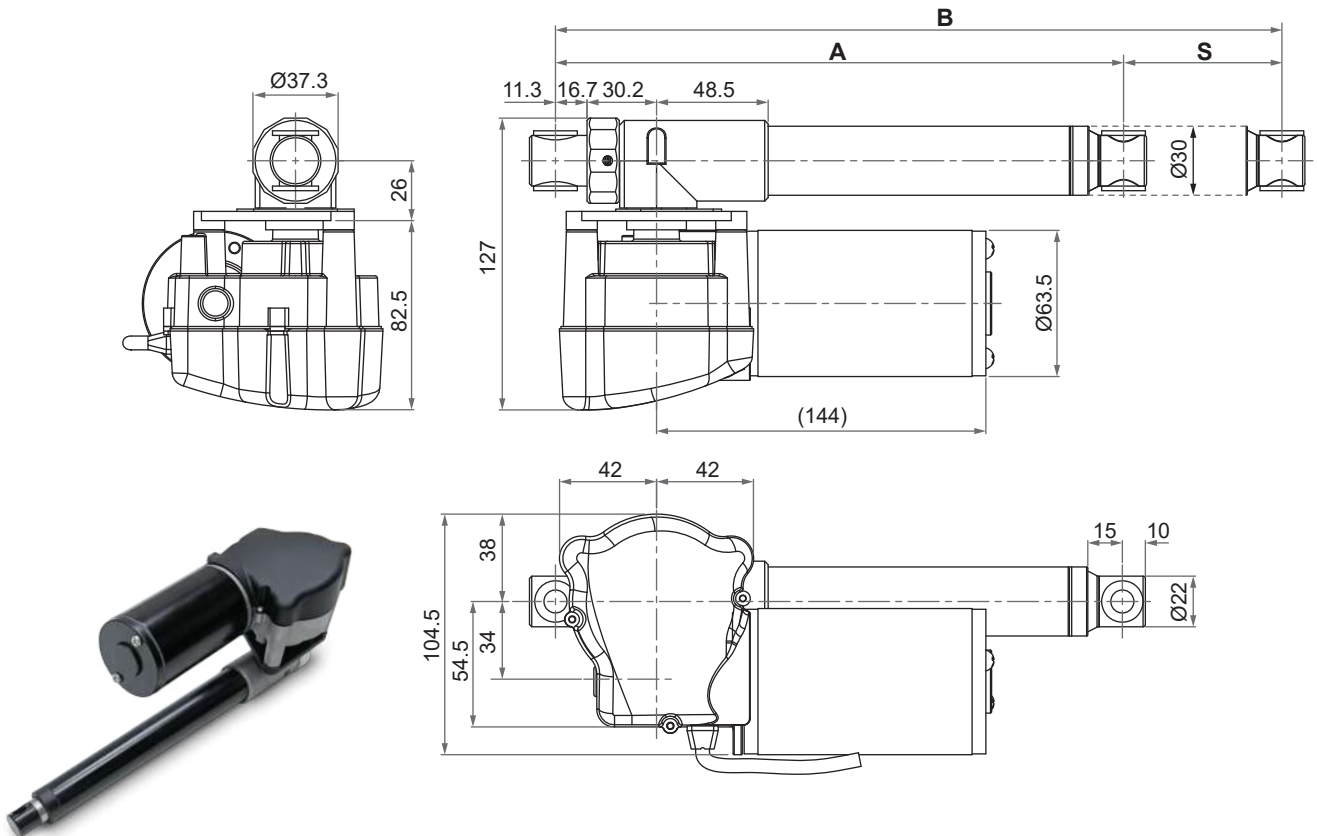
Unit: mm

- With IPX6 waterproof case



Note: Waterproof case model can contain limit switch, Hall sensor or POT option.

- 12V DC High power motor

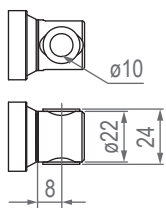


Note: 12V DC High power motor model without position signal feedback device and waterproof case option.

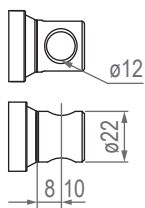
Unit: mm

Front connector

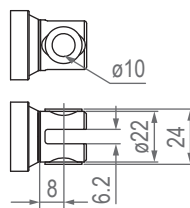
1: Solid with bushing



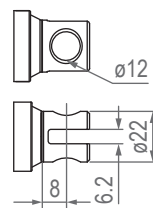
2: Solid w/o bushing



3: Slot with bushing

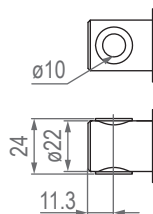


4: Slot w/o bushing

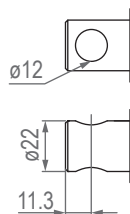


Rear connector

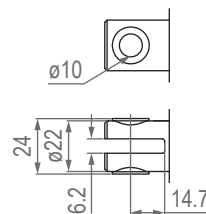
1: Solid with bushing



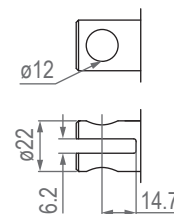
2: Solid w/o bushing



3: Slot with bushing



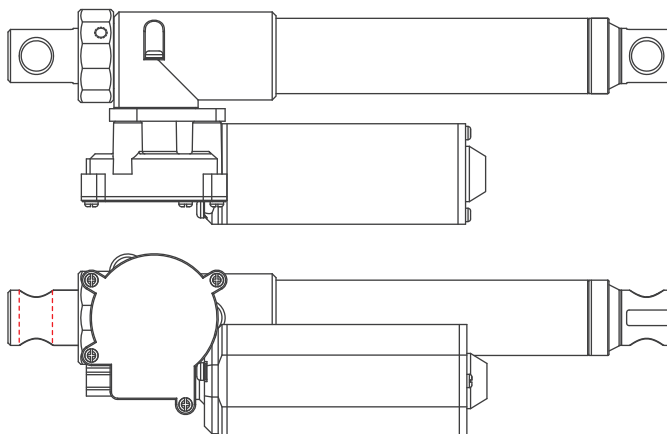
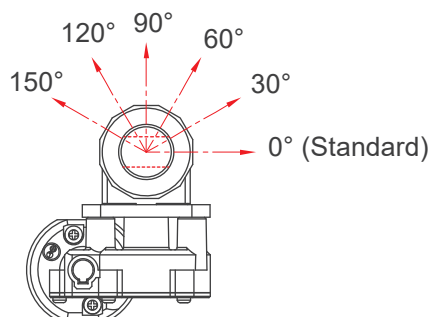
4: Slot w/o bushing



Unit: mm

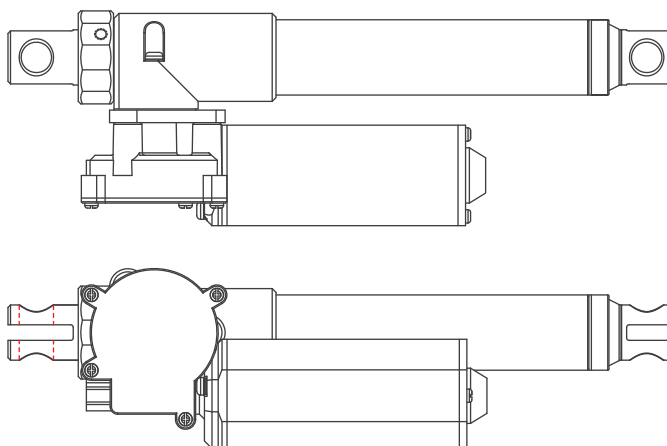
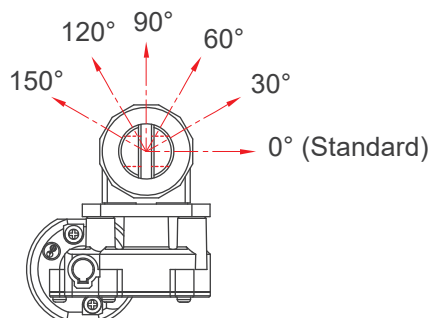
Pivot orientation of rear connectors

• Solid type



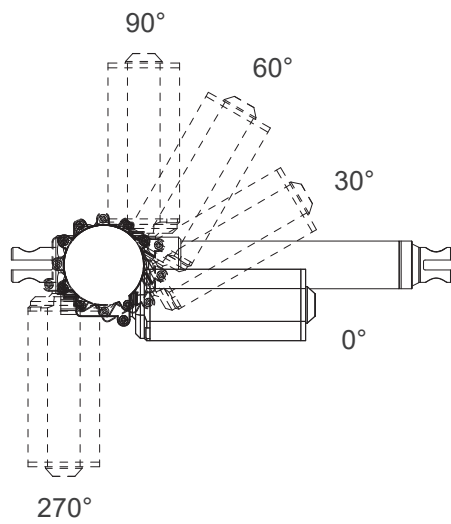
Note: Presented with solid type connector as an example in 0° orientation.

• Slot type



Note: Presented with slot type connector as an example in 0° orientation.

- Motor orientation (can be chosen in every 30 degrees of whole round)



Note: Presented with basic type as an example.

Compatibility

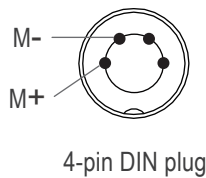
Product	Model	Application condition	MD57 spec
Control box	T-control, CS1, CS2, CBT2, CB3T, CB4M	Max. current $\leq 3A$	<ul style="list-style-type: none"> • 24V motor • Without positioning feedback • With Moteck F-type DIN plug
	CB3T-SY, CB4M-S, CB4M-B	Max. current $\leq 3A$	<ul style="list-style-type: none"> • 24V motor • With dual Hall effect sensors for positioning • With Moteck F-type DIN plug
Controller	CI72	Max. current $\leq 20A$	<ul style="list-style-type: none"> • 12V/24V motor • With limit switches (Synchronization must be equipped with position signal feedback) • Wiring with flying leads

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.

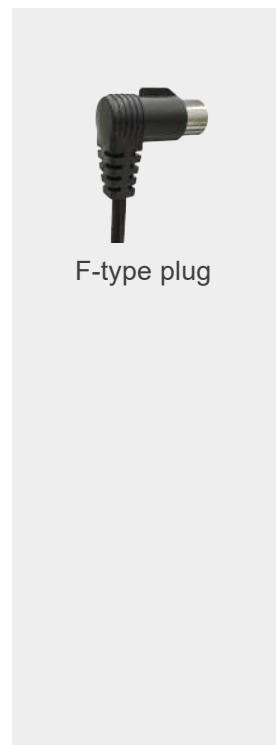
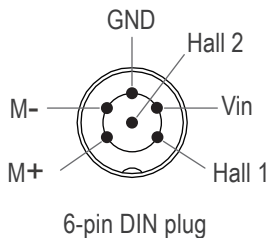
Cable Plug

With Moteck F-type DIN plug

- Without positioning feedback



- Positioning feedback with dual Hall effect sensors



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 with Flying Leads

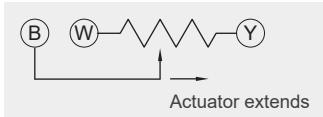
• Basic, without limit switch or positioning feedback.

	Wire color	Definition	Descriptions
Power wires	Red	DC power	<ul style="list-style-type: none"> • 24V • 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 limit switches, without positioning feedback.

	Wire color	Definition	Descriptions
Power wires	Red	DC power	<ul style="list-style-type: none"> • 12V or 24V (Depends on option) • 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 Potentiometer (POT) absolute positioning feedback

	Wire color	Definition	Descriptions																																							
Power wires	Red	DC power	<ul style="list-style-type: none">• 24V• 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	Yellow	Vin	Input voltage 70V max.																																							
	Blue	POT output	<div><p>1. Potentiometer specification:</p><ul style="list-style-type: none">- 10K ohm, 10 turns.- Tolerance $\pm 5\%$<p>2. Output voltage: The voltage (resistance) between blue and white increases linearly from about 0 when the actuator extends, and decreases when it retracts.</p><div></div><p>3. For the combination of motor type and stroke, the resistance between blue and white wires is as follows:</p><table><tr><th rowspan="2">Stroke (mm)</th><th colspan="4">Motor and spindle type</th></tr><tr><th>K3</th><th>K4</th><th>K6</th><th>K8</th></tr><tr><td>50</td><td>0.30 ~ 9.35</td><td>0.30 ~ 9.02</td><td>0.30 ~ 7.61</td><td>0.30 ~ 5.78</td></tr><tr><td>100</td><td>0.30 ~ 5.98</td><td>0.30 ~ 4.56</td><td>0.30 ~ 9.35</td><td>0.30 ~ 9.02</td></tr><tr><td>150</td><td>0.30 ~ 8.83</td><td>0.30 ~ 6.69</td><td>0.30 ~ 4.56</td><td>0.30 ~ 3.50</td></tr><tr><td>200</td><td>0.30 ~ 7.65</td><td>0.30 ~ 8.83</td><td>0.30 ~ 5.98</td><td>0.30 ~ 4.56</td></tr><tr><td>250</td><td>0.30 ~ 7.44</td><td>0.30 ~ 8.78</td><td>0.30 ~ 7.40</td><td>0.30 ~ 5.63</td></tr><tr><td>300</td><td>0.30 ~ 8.87</td><td>0.30 ~ 8.57</td><td>0.30 ~ 8.83</td><td>0.30 ~ 6.69</td></tr></table><p style="text-align: right;">Tolerance: $\pm 0.10 \text{ K}\Omega$</p></div>	Stroke (mm)	Motor and spindle type				K3	K4	K6	K8	50	0.30 ~ 9.35	0.30 ~ 9.02	0.30 ~ 7.61	0.30 ~ 5.78	100	0.30 ~ 5.98	0.30 ~ 4.56	0.30 ~ 9.35	0.30 ~ 9.02	150	0.30 ~ 8.83	0.30 ~ 6.69	0.30 ~ 4.56	0.30 ~ 3.50	200	0.30 ~ 7.65	0.30 ~ 8.83	0.30 ~ 5.98	0.30 ~ 4.56	250	0.30 ~ 7.44	0.30 ~ 8.78	0.30 ~ 7.40	0.30 ~ 5.63	300	0.30 ~ 8.87	0.30 ~ 8.57	0.30 ~ 8.83	0.30 ~ 6.69
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	White	GND																																								

• With dual Hall effect sensors positioning feedback

	Wire color	Definition	Descriptions										
Power wires	Red	DC power	<ul style="list-style-type: none">• 24V• 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	Yellow	Vin	Voltage input range: 5 ~ 20V										
	Blue	Hall 1 output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data: <div><div><div><div>Vin</div><div>GND</div><div>Vin</div><div>GND</div></div><div><div>Hall 1</div><div>Hall 2</div></div></div><div>Actuator extends</div><div><div><div>Vin</div><div>GND</div><div>Vin</div><div>GND</div></div><div><div>Hall 1</div><div>Hall 2</div></div></div><div>Actuator retracts</div></div>										
	Green	Hall 2 output	Hall effect sensor resolution: <table><thead><tr><th>Model</th><th>Resolution (pulses/mm)</th></tr></thead><tbody><tr><td>MD57-X-24K3-XXX.XXX-XXXHXXX</td><td>20.67</td></tr><tr><td>MD57-X-24K4-XXX.XXX-XXXHXXX</td><td>15.50</td></tr><tr><td>MD57-X-24K6-XXX.XXX-XXXHXXX</td><td>10.33</td></tr><tr><td>MD57-X-24K8-XXX.XXX-XXXHXXX</td><td>7.75</td></tr></tbody></table>	Model	Resolution (pulses/mm)	MD57-X-24K3-XXX.XXX-XXXHXXX	20.67	MD57-X-24K4-XXX.XXX-XXXHXXX	15.50	MD57-X-24K6-XXX.XXX-XXXHXXX	10.33	MD57-X-24K8-XXX.XXX-XXXHXXX	7.75
	Model	Resolution (pulses/mm)											
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MD57-X-24K6-XXX.XXX-XXXHXXX	10.33												
MD57-X-24K8-XXX.XXX-XXXHXXX	7.75												
White	GND												

Ordering Key

		MD57- 0 - 24 K4 - 350 . 470 - 1 1 0 H L 0 1									
Waterproof case	0: None S: IPX6 waterproof case										
Input voltage	24: 24V DC 12: 12V DC (Refer to remarks below for conditions [*])										
Motor and spindle type	K3: 6200rpm, 3mm pitch K4: 6200rpm, 4mm pitch K6: 6200rpm, 6mm pitch K8: 6200rpm, 8mm pitch W4: 5500rpm, 4mm pitch										
Retracted length (Refer to Page 3 & 4)	XXX										
Extended length (Refer to Page 3 & 4)	XXX										
Front connector (Refer to Page 5)	1: Solid with bushing, Ø10mm 2: Solid w/o bushing, Ø12mm 3: Slot with bushing, Ø10mm 4: Slot w/o bushing, Ø12mm										
Rear connector (Refer to Page 5)	1: Solid with bushing, Ø10mm 2: Solid w/o bushing, Ø12mm 3: Slot with bushing, Ø10mm 4: Slot w/o bushing, Ø12mm										
Pivot orientation of rear connector (Refer to Page 5)	0: 0° (Standard) 9: 90° 3: 30° C: 120° 6: 60° F: 150°										
Positioning feedback	0: None H: Dual Hall effect sensors (Must be equipped with limit switch or IPX6 waterproof case) P: Potentiometer										
Limit switch	L: Limit switch										
Motor orientation (Refer to Page 6)	0: 0° 9: 90° 3: 30° R: 270° 6: 60°										
Cable length	1: 250mm 2: 750mm										

* Remarks:

1. Waterproof case and positioning feedback are not available when choosing 12V DC high power motor.
2. Only W4 motor and spindle type available.
3. Must be equipped with limit switch.

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