

Actuator MK32



MK32 is a small actuator with push/pull force up to 3500N. It features compact outline and low noise level that is mainly suitable for medical and furniture applications such as recliners, beds, etc., as well as various industrial applications with limited installation space.

Content

Features and Options	3
Performance Data	4
1. 24V motor	4
2. 24V low-power motor	5
3. 12V motor	5
4. Inrush current	6
Dimensions	6
1. Installation dimension	6
2. Drawing	7
3. Front connector type	8
4. Rear connector type	8
Compatibility	9
Cable Plug	9
1. Basic (Without positioning feedback)	9
2. With dual Hall effect sensors for positioning	9
Cable with Flying Leads	10
1. Basic (Without positioning feedback)	10
2. With dual Hall effect sensors for positioning	10
3. With Potentiometer (POT) absolute positioning feedback	11
Ordering Key	12
Certifications	13

Features and Options

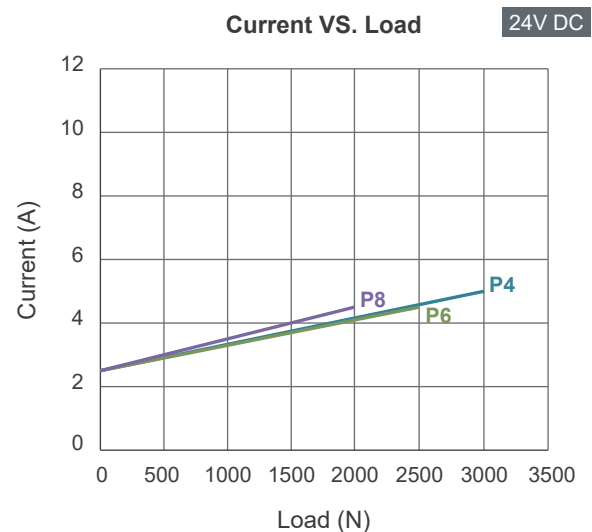
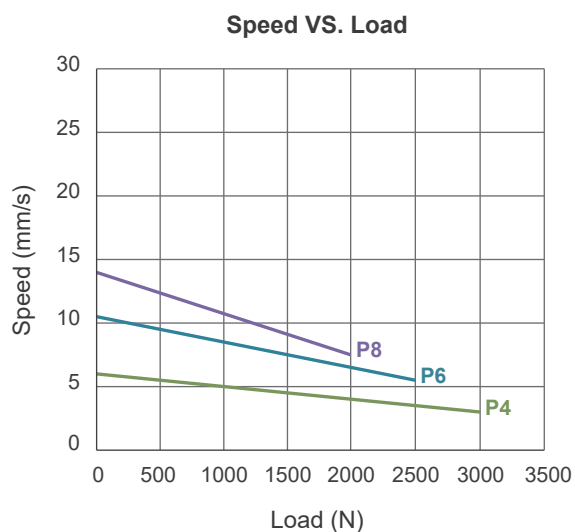
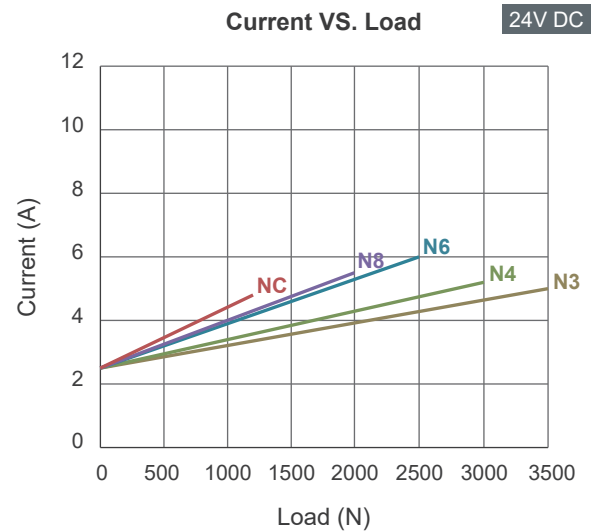
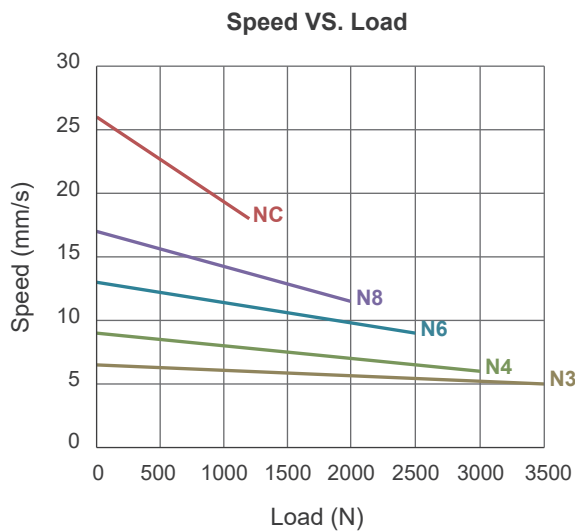
- Main applications: Medical / Furniture / Industry
- Input voltage: 12V DC / 24V DC
- Max. load: 3500N (Push/Pull)
- Max. static load: 5000N (Push/Pull)
- Speed at no load: 26.0mm/sec (12mm pitch, refer to performance data.)
- Speed at full load: 5.0mm/sec (3mm pitch @3500N loaded, refer to performance data.)
- Stroke: 50~600mm (The max. stroke is depending on load, refer to Dimensions.)
- Noise level: ≤ 52 dB
- IP level: IPX4, IP66
- Aluminum alloy outer tube and gear box
- Preset limit switches
- Positioning:
 - Optional digital positioning feedback with dual Hall effect sensors
 - Optional analog positioning feedback with Potentiometer (POT)
- Optional safety nut (in push direction)
- Optional mechanical push only extension tube
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -20°C~+65°C (Full performance +5°C~40°C)
- Storage ambient temperature: -25°C~+70°C
- Certified: CE Marking
 - N-type motor: Electromagnetic Compatibility Directive 2014/30/EU
 - H-type motor: EN 60601-1-2:2015+A1:2021



Performance Data

1. 24V motor

Model No.	Push / Pull Max. (N)	Typical Speed (mm/s) ⁽¹⁾		Typical Current @ 24V DC ⁽¹⁾	
		No Load	Full Load	No Load	Full Load
MK32-24 N3 -XXX.XXX-XXXXXXXX	3500	6.5	5.0	2.5	5.0
MK32-24 N4 -XXX.XXX-XXXXXXXX	3000	9.0	6.0	2.5	5.2
MK32-24 N6 -XXX.XXX-XXXXXXXX	2500	13.0	9.0	2.5	6.0
MK32-24 N8 -XXX.XXX-XXXXXXXX	2000	17.0	11.5	2.5	5.5
MK32-24 NC -XXX.XXX-XXXXXXXX	1200	26.0	18.0	2.5	4.8
MK32-24 P4 -XXX.XXX-XXXXXXXX	3000	6.0	3.0	2.5	5.0
MK32-24 P6 -XXX.XXX-XXXXXXXX	2500	10.5	5.5	2.5	4.5
MK32-24 P8 -XXX.XXX-XXXXXXXX	2000	14.0	7.5	2.5	4.5



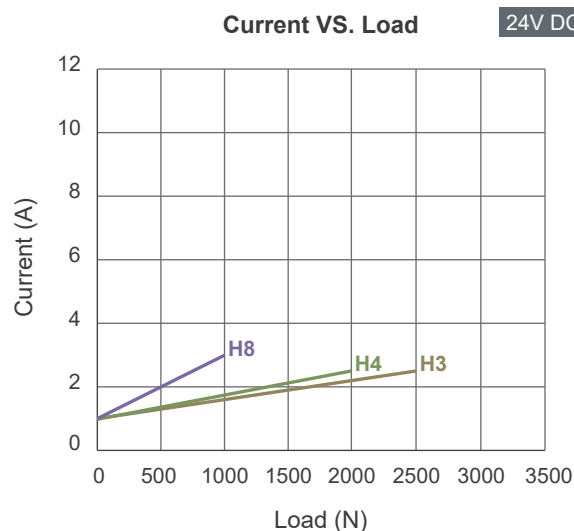
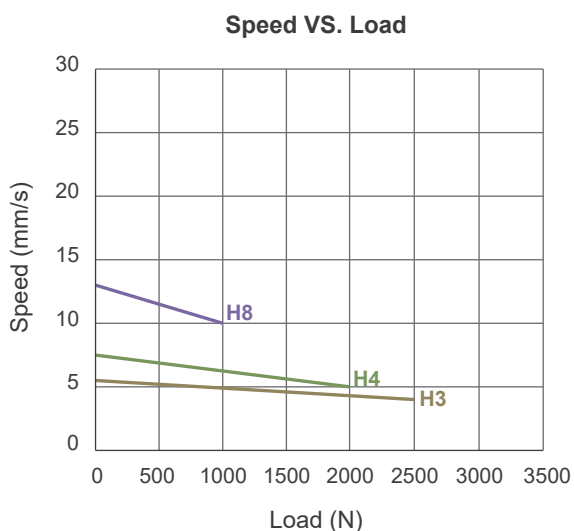
Note:

⁽¹⁾ 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.



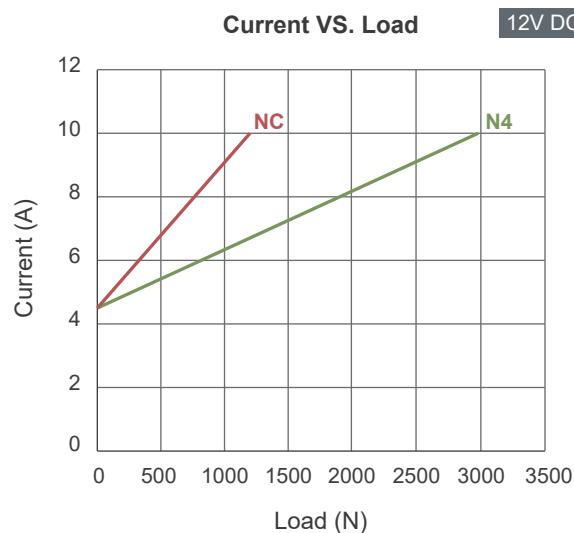
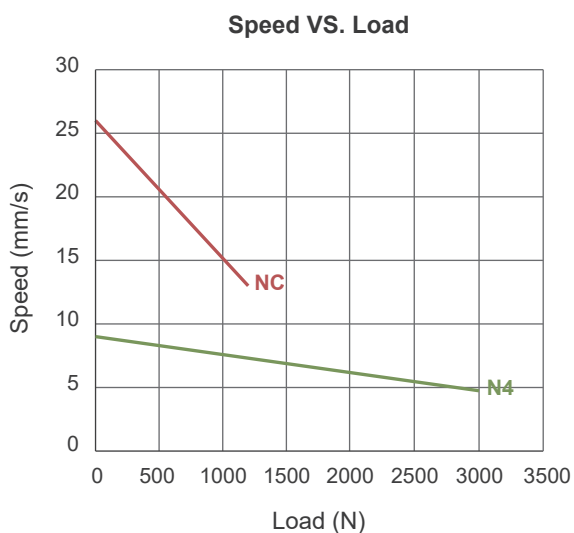
2. 24V low-power motor

Model No.	Push / Pull Max. (N)	Typical Speed (mm/s) ⁽¹⁾		Typical Current @ 24V DC ⁽¹⁾	
		No Load	Full Load	No Load	Full Load
MK32-24H3-XXX.XXX-XXXXXXXX	2500	5.5	4.0	1.0	2.5
MK32-24H4-XXX.XXX-XXXXXXXX	2000	7.7	5.0	1.0	2.5
MK32-24H8-XXX.XXX-XXXXXXXX	1000	13.0	10.0	1.0	2.5



3. 12V motor

Model No.	Push / Pull Max. (N)	Typical Speed (mm/s) ⁽¹⁾		Typical Current @ 12V DC ⁽¹⁾	
		No Load	Full Load	No Load	Full Load
MK32-12N4-XXX.XXX-XXXXXXXX	3000	9.0	4.8	4.5	10.0
MK32-12NC-XXX.XXX-XXXXXXXX	1200	26.0	13.0	4.5	10.0



Note:

⁽¹⁾ 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.



4. Inrush current



- When the actuator starts to operate, an inrush current of about 0.2 seconds will be generated. The starting inrush current of MK32 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 = 50~600mm (± 3 mm)
- Retracted length (A) $\geq S + 112\text{mm} + E + F + R + P + D$ (± 3 mm)

Stroke	E
$50 \leq S \leq 150\text{mm}$	0mm
$151 \leq S \leq 300\text{mm}$	10mm
$301 \leq S \leq 400\text{mm}$	20mm
$401 \leq S \leq 500\text{mm}$	30mm
$501 \leq S \leq 600\text{mm}$	40mm
Front connector code	F
1, 2	0mm
4	7mm
5	13mm
8	1mm
Rear connector code	R
0, 1	0mm
8	3mm
Positioning	P
0, H	0mm
P	38mm
Safety option	D
0, P	0mm
S, A	10mm

- Max load VS. Stroke rang

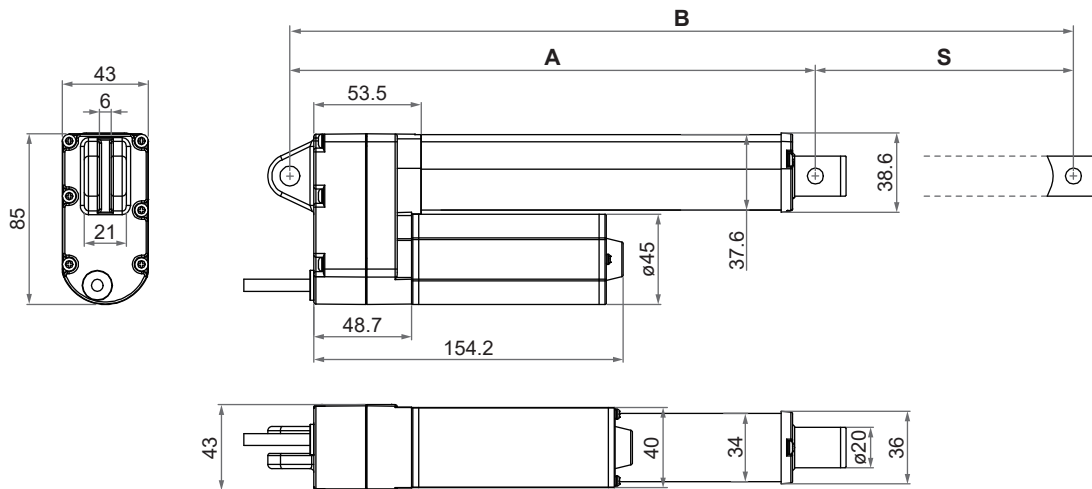
Max. load	Stroke range
$\leq 1,000\text{N}$	50~600mm
$1,001\text{N} \leq 1,500\text{N}$	50~500mm
$1,501\text{N} \leq 2,500\text{N}$	50~400mm
$2,501\text{N} \leq 3,500\text{N}$	50~300mm

- $S \geq 601\text{mm}$, please consult MOTECK sales representative for feasibility and the available.
- Extended length (B) = Retracted length (A) + Stroke (S)

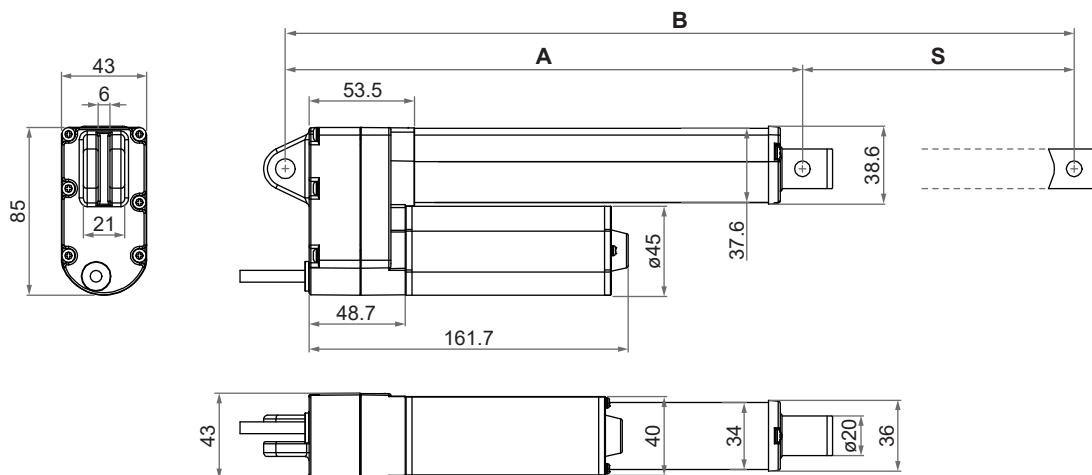


2. Drawing

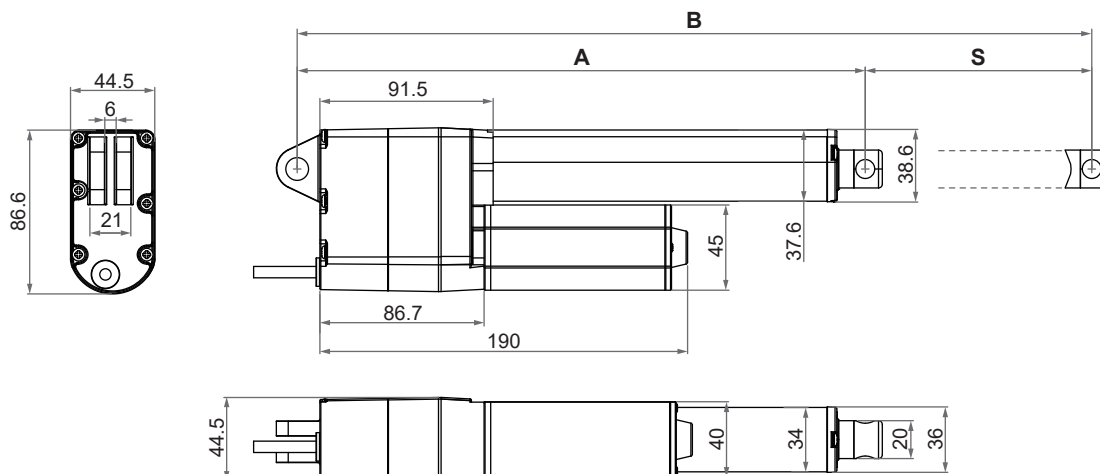
- Basic (Without positioning feedback)



- With dual Hall effect sensors for positioning



- With Potentiometer (POT) absolute positioning feedback

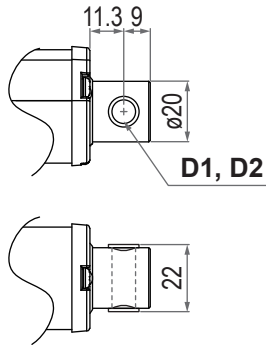
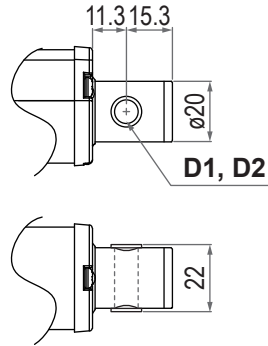
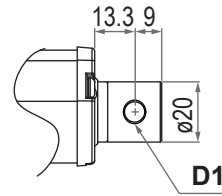


Unit: mm

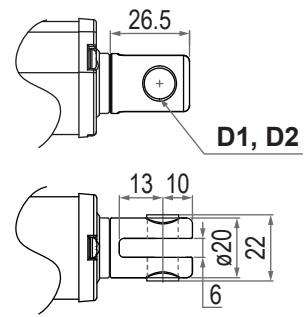


3. Front connector type

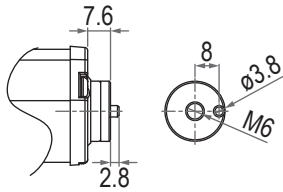
1: Metal solid

2: Drilled hole ⁽¹⁾4: Plastic solid, black ⁽²⁾

5: Metal slot



8: M6 screw



Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)
1	ø8, ø10	ø8
2 ⁽¹⁾	ø8, ø10	ø8
4 ⁽²⁾	ø8, ø10	N/A
5	ø8, ø10	ø8
8	N/A	N/A

Notes:

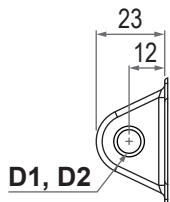
⁽¹⁾ Only for models with max. load $\leq 2000\text{N}$ and IP66 cannot be selected

⁽²⁾ Only for models with max. load $\leq 2000\text{N}$

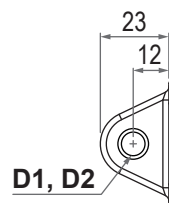
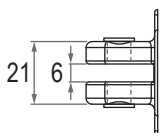
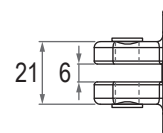
4. Rear connector type

0: Metal slot ⁽¹⁾

0°

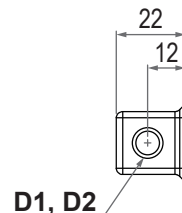


90°

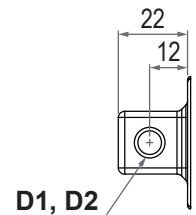
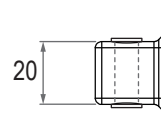
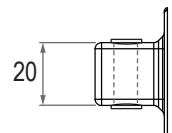


1: Metal solid

0°

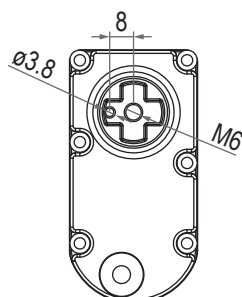
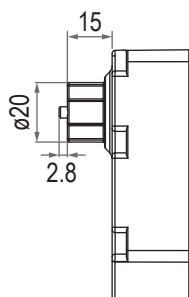


90°



8: M6 screw

0°



Rear connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)
0 ⁽¹⁾	ø8, ø10	ø8
1	ø8, ø10	ø8
8	N/A	N/A

Note :

⁽¹⁾ For Potentiometer positioning feedback option, only metal slot rear connector can be selected, with a pivot diameter of ø10 (without bushing) or ø8 (with bushing).

Unit: mm



Compatibility

Product	Model	Application condition	MK32 spec
Control box	CM45, MD6C	Max. 5A current per channel	• Without positioning feedback • With Moteck H-type DIN plug
	CB5P-M, CM41-M	Max. 5A current per channel	• With dual Hall effect sensors for positioning • With Moteck LR-type minifit plug
	CM41	Max. 5A current per channel	• Without positioning feedback • With Moteck LR-type minifit plug
	CM23	Max. $\leq 6A$ current 2 channels	• With dual Hall effect sensors for positioning • With Moteck H-type DIN plug
Controller	CI72		• Standard • Cable with flying leads
Accessory	MB22 mounting bracket 	Connect the front or rear connectors of the actuator	• Mounting hole $\varnothing 8mm$ or $\varnothing 10mm$ • Rear connector option 0 must not select bushing

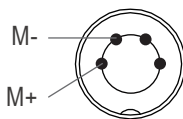
Note:

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.

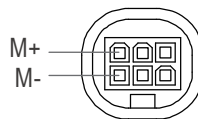
Cable Plug

Connecting control devices that provide power

1. Basic (Without positioning feedback)



With H-type 4-pin DIN plug

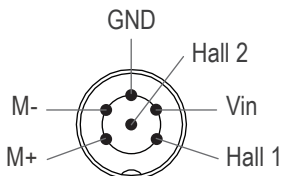


With LR-type 6-pin minifit plug

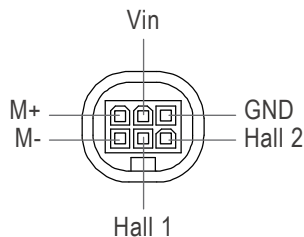


H-type plug

2. With dual Hall effect sensors for positioning



With H-type 6-pin DIN plug



With LR-type 6-pin minifit plug



LR-type 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.

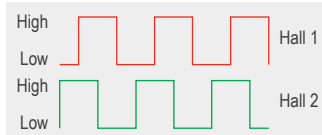
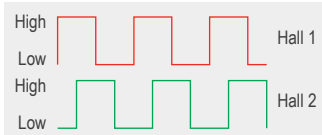


Cable with Flying Leads

1. Basic (Without positioning feedback)

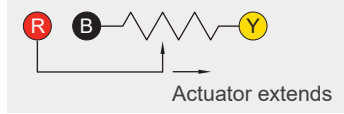
	Wire color	Definition	Descriptions
Power wires	Red	DC power	Connect red wire to "Vdc +" & black wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		

2. With dual Hall effect sensors for positioning

	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 (±0.6V) Low= GND Hall signal data:  Actuator extends Actuator retracts												
	Green	Hall 2 output	Hall effect sensor resolution: <table><tr><th>Spindle pitch</th><th>Resolution (Pulses/mm)</th></tr><tr><td>3mm</td><td>10.125</td></tr><tr><td>4mm</td><td>7.594</td></tr><tr><td>6mm</td><td>5.063</td></tr><tr><td>8mm</td><td>3.797</td></tr><tr><td>12mm</td><td>2.531</td></tr></table>	Spindle pitch	Resolution (Pulses/mm)	3mm	10.125	4mm	7.594	6mm	5.063	8mm	3.797	12mm	2.531
	Spindle pitch	Resolution (Pulses/mm)													
	3mm	10.125													
4mm	7.594														
6mm	5.063														
8mm	3.797														
12mm	2.531														
Black	GND														



3. With Potentiometer (POT) absolute 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: 5~32V																																								
	Red	POT output	1. Potentiometer specification: - 10K ohm, 10 turns. - Total resistance tolerance $\pm 5\%$ - Independent linearity $\pm 0.25\%$ 2. Output voltage: The voltage (resistance) between red and black increases linearly from about 0 when the actuator extends, and decreases when it retracts.  3. There are different resistance resolutions according to the pitch and stroke length (as table below) <table><thead><tr><th>Pitch</th><th>Stroke range (mm)</th><th>Resistance resolution (ohm/mm)</th></tr></thead><tbody><tr><td rowspan="4">3mm</td><td>50~100</td><td>93.75</td></tr><tr><td>101~200</td><td>46.30</td></tr><tr><td>201~300</td><td>29.76</td></tr><tr><td>301~400</td><td>21.16</td></tr><tr><td rowspan="4">4mm</td><td>50~100</td><td>70.31</td></tr><tr><td>101~200</td><td>41.67</td></tr><tr><td>201~300</td><td>26.79</td></tr><tr><td>301~400</td><td>22.32</td></tr><tr><td rowspan="3">6mm</td><td>50~200</td><td>46.88</td></tr><tr><td>201~400</td><td>23.15</td></tr><tr><td>401~500</td><td>14.88</td></tr><tr><td rowspan="3">8mm</td><td>50~200</td><td>35.16</td></tr><tr><td>201~400</td><td>20.83</td></tr><tr><td>401~600</td><td>13.39</td></tr><tr><td rowspan="2">12mm</td><td>50~400</td><td>23.44</td></tr><tr><td>401~600</td><td>13.89</td></tr></tbody></table> 4. Customers measure the Potential value through the POT output and GND wires. 5. When the actuator retracts the lower limit, the POT resistance value default is 0~0.3K ohm.	Pitch	Stroke range (mm)	Resistance resolution (ohm/mm)	3mm	50~100	93.75	101~200	46.30	201~300	29.76	301~400	21.16	4mm	50~100	70.31	101~200	41.67	201~300	26.79	301~400	22.32	6mm	50~200	46.88	201~400	23.15	401~500	14.88	8mm	50~200	35.16	201~400	20.83	401~600	13.39	12mm	50~400	23.44	401~600	13.89
	Pitch	Stroke range (mm)	Resistance resolution (ohm/mm)																																								
	3mm	50~100	93.75																																								
		101~200	46.30																																								
201~300		29.76																																									
301~400		21.16																																									
4mm	50~100	70.31																																									
	101~200	41.67																																									
	201~300	26.79																																									
	301~400	22.32																																									
6mm	50~200	46.88																																									
	201~400	23.15																																									
	401~500	14.88																																									
8mm	50~200	35.16																																									
	201~400	20.83																																									
	401~600	13.39																																									
12mm	50~400	23.44																																									
	401~600	13.89																																									
Green	Not used																																										
Black	GND																																										

Note: For Potentiometer positioning feedback option, only metal slot rear connector can be selected.



Ordering Key

	MK32- 24 N4 - 212 - 312 - 2 0 0 H 0 4 0
Input voltage	12: 12V DC ⁽¹⁾ 24: 24V DC
Motor and Spindle type	N3: 4500rpm / 3mm pitch N4: 4500rpm / 4mm pitch N6: 4500rpm / 6mm pitch N8: 4500rpm / 8mm pitch NC: 4500rpm / 12mm pitch P4: 3800rpm / 4mm pitch P6: 3800rpm / 6mm pitch P8: 3800rpm / 8mm pitch H3: 3300rpm / 3mm pitch H4: 3300rpm / 4mm pitch H8: 3300rpm / 8mm pitch
Retracted length (Refer to Page 6~7)	XXX
Extended length (Refer to Page 6~7)	XXX
Front connector (Refer to Page 8)	1: Metal solid 4: Plastic solid, black ⁽³⁾ 8: M6 screw 2: Drilled hole ⁽²⁾ 5: Metal slot
Rear connector (Refer to Page 8)	0: Metal slot ⁽⁴⁾ 8: M6 screw 1: Metal solid
Pivot orientation of rear connector (Refer to Page 8)	0: 0° 9: 90°
Positioning feedback	0: None H: Dual Hall effect sensors P: Potentiometer (POT) ⁽⁴⁾
Option	0: None P: Push only S: Safety nut A: Safety nut + Push only
IP level	0: No designation 4: IPX4 6: IP66
Cable length	0: 300mm straight 3: 1000mm straight A: 450mm with 300mm coiled

Notes:

⁽¹⁾ Only available for N4 and NC types

⁽²⁾ Front connector type "2" drilled hole, only for models with max. load $\leq 2000\text{N}$ and IP66 cannot be selected.

⁽³⁾ Front connector type "4" plastic solid, only for models with max. load $\leq 2000\text{N}$.

⁽⁴⁾ For Potentiometer positioning feedback option, only metal slot rear connector can be selected, with a pivot diameter of $\varnothing 10$ (without bushing) or $\varnothing 8$ (with bushing).



Certifications

MK32 actuator is compliant with the following regulations.

- N-type motor: Electromagnetic Compatibility Directive 2014/30/EU

Emission	Immunity
EN IEC 61000-6-3:2021	EN IEC 61000-6-1:2019

- H-type motor: EN 60601-1-2:2015+A1:2021

Emission	Immunity
CISPR 11:2015+A1:2016+A2:2019	IEC 61000-4-2:2008 IEC 61000-4-3:2020 IEC 61000-4-8:2009 EN 60601-1-2 Subclause 8.11

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