Actuator
ID18

ID18 is a robust and powerful actuator up to 18,000N thrust, which is designed for outdoor applications, such as solar tracker. There are several options available, including Ball screw spindle, ACME screw spindle, and different kinds of sensors for positioning feedback. The motor can be replaced directly without disassembling the actuator, which is convenient for maintenance.

Features and Options

Main application: Industry, Solar tracker

Standard features:

- Input voltage: 24V DC / 36V DC
- Rated load: 9,000N (ACME screw) / 12,000N (Ball screw)
- Max. static load: 36,000N
- Max. dynamic load: 12,000N (ACME screw) / 18,000N (Ball screw) in push and pull direction
- Max. speed at no load: 3.3mm/sec (Typical value)
- Stroke: 610mm (24”) / 914mm (36”) / 1219mm (48”) (other strokes are available)
- IP level: IP65 (Static; non-action)
- Preset limit switches
- Steel extension tube
- Color: Black
- Power cord length: 250mm
- Side cable outlet
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -25°C ~ +65°C
- Compliant with CE Marking, EMC Directive 2014/30/EU

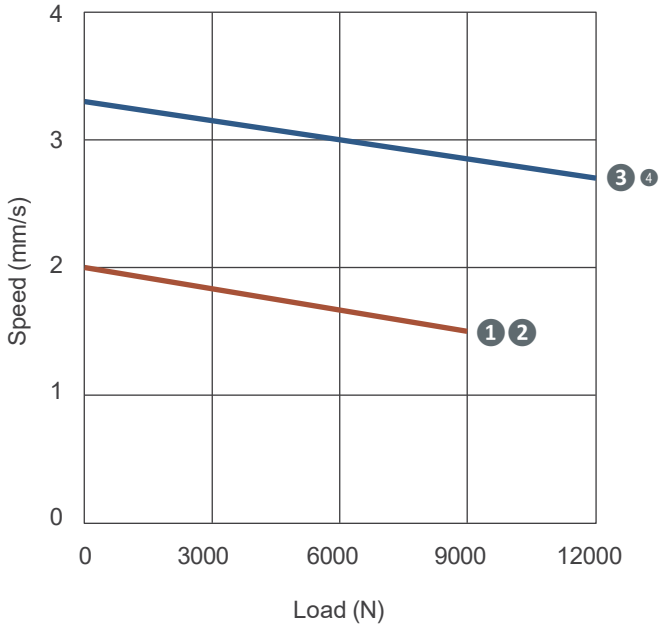
Options:

- Relative positioning signal feedback with single Hall effect sensor
- Positioning signal feedback with Reed sensor
- Analog positioning feedback with Potentiometer (POT)
- Bottom cable outlet

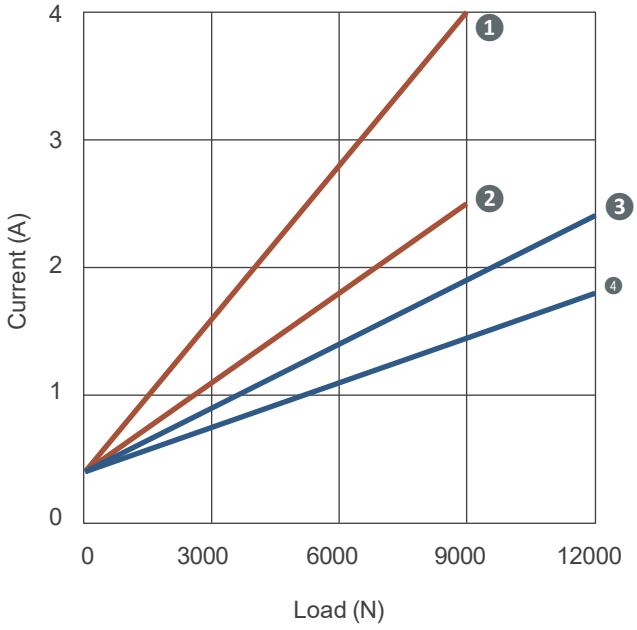
Performance Data

No.	Model No.	Input voltage (V)	Gear ratio	Motor code	Spindle type	Max. load (N)	Typical speed (mm/s)*		Typical current (A)*	
							No load	Full load	No load	Full load
1	ID18-2458S3A	24	58:1	S	ACME screw	9000	2.0	1.5	0.4	4.0
2	ID18-3658S3A	36	58:1	S	ACME screw	9000	2.0	1.5	0.4	2.5
3	ID18-2458S5B	24	58:1	S	Ball screw	12000	3.3	2.7	0.4	2.4
4	ID18-3658S5B	36	58:1	S	Ball screw	12000	3.3	2.7	0.4	1.8

Speed VS. Load



Current VS. Load



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

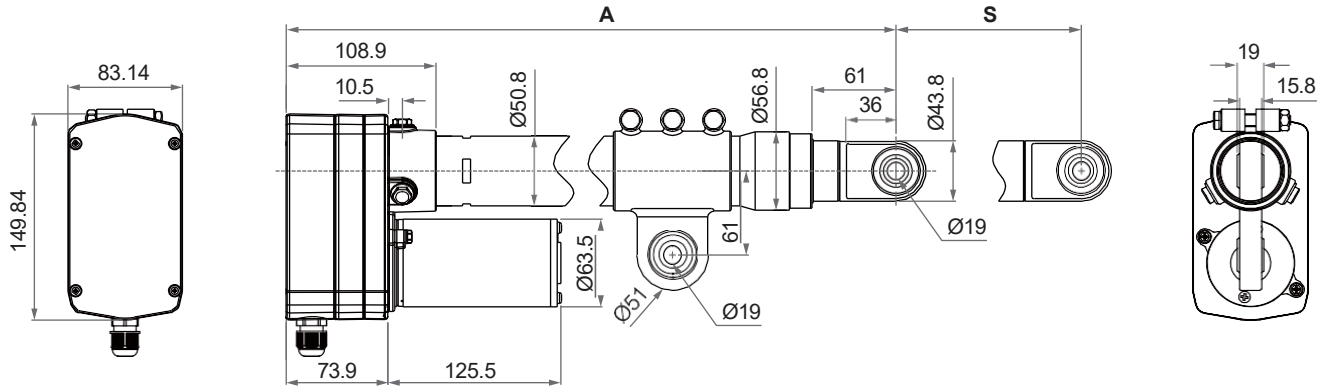
Retracted length (A)

Model No.	Spindle type	Stroke (S)	Retracted length (A)
ID18-XXXXX**5B610**-XXXXXXX	Ball screw	610	1116
ID18-XXXXX**5B914**-XXXXXXX	Ball screw	914	1420
ID18-XXXXX**5BC19**-XXXXXXX	Ball screw	1219	1725
ID18-XXXXX**3A610**-XXXXXXX	ACME screw	610	1063
ID18-XXXXX**3A914**-XXXXXXX	ACME screw	914	1367
ID18-XXXXX**3AC19**-XXXXXXX	ACME screw	1219	1672

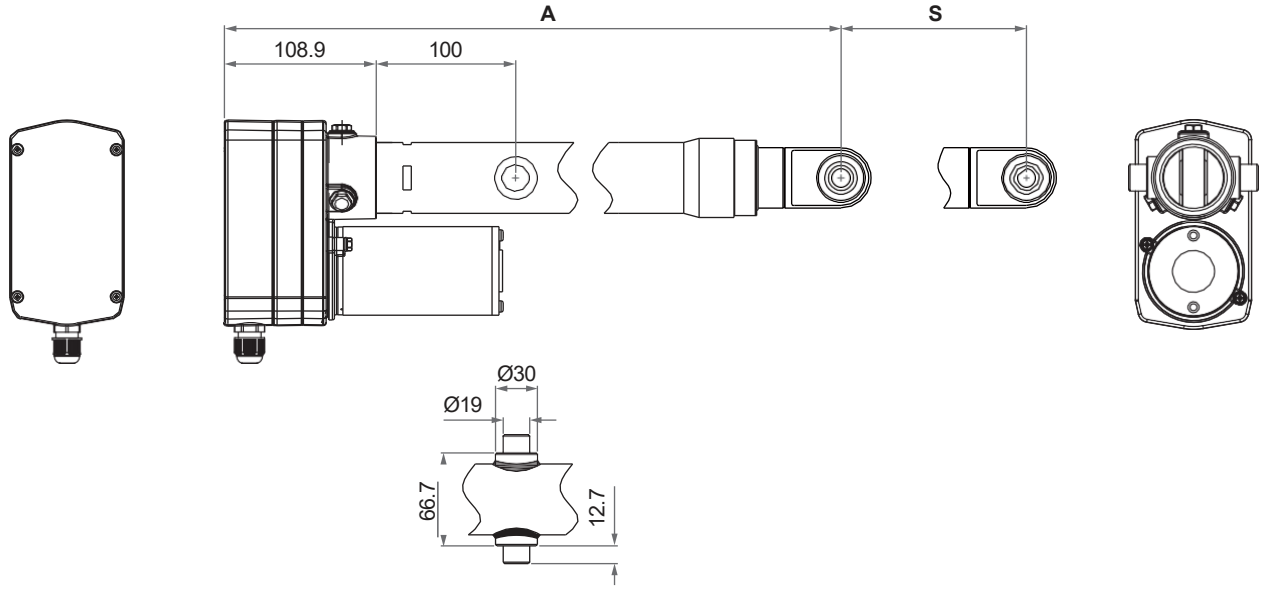
Remarks: Stroke tolerance is -0~+15mm, retracted length tolerance is ±5mm.

Drawing

- Standard



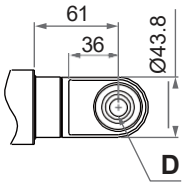
- With trunnion mount



Unit: mm

Front connector

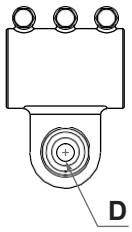
- Spherical rod eye



Diameter code	Diameter of pivot (D)
1	Ø19mm (standard)
0	Ø12.7mm

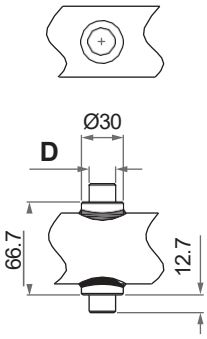
Rear connector

- Tube clamp with spherical rod eye (standard)



Diameter code	Diameter of pivot (D)
1	Ø19mm (standard)
0	Ø12.7mm

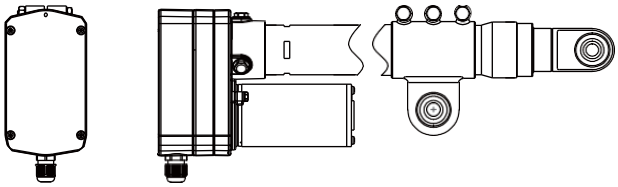
- With trunnion mount



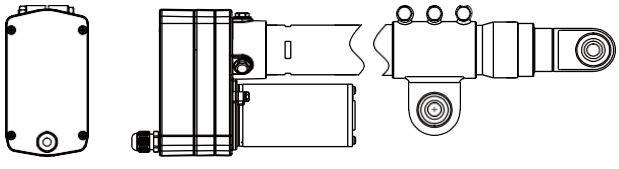
Diameter code	Diameter of pivot (D)
T	Ø19mm

Location of cable outlet

1: Side cable outlet (standard)



0: Botton cable outlet



Cable with Flying Leads

- **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		

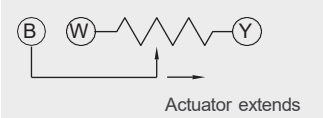
- **With single Hall effect sensor positioning feedback**

	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		
Signal wires	White	Vin	Voltage input range: 5 ~ 20V
	Yellow	Hall output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data:  Resolution: Ball screw 20 PPI, ACME screw 32 PPI
	Blue	GND	

- **With reed sensor positioning feedback**

	Wire color	Definition	Descriptions
Power wires	Red	DC output	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	Data	Resolution: Ball screw 30 PPI, ACME screw 48 PPI
	White	GND	

- **With Potentiometer (POT) absolute 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>Red</td><td rowspan="2">DC power</td><td rowspan="2">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.</td></tr>
<tr><td>Black</td></tr>
<tr><td rowspan="3">Signal wires</td><td>Yellow</td><td>Vin</td><td>Input voltage 70V max.</td></tr>
<tr><td>Blue</td><td>POT output</td><td>1. Potentiometer specification:
- 10K ohm, 10 turns.
- Tolerance ±5%
2. Output voltage: The voltage (resistance) between blue and white increases linearly from about 0 when the actuator extends, and decreases when it retracts.
 

3. There are different resolutions according to the stroke length (as table below)
<table><tr><td rowspan="3">Ballscrew</td><td>610</td><td>0.3~8.6</td></tr><tr><td>914</td><td>0.3~7.7</td></tr><tr><td>1219</td><td>0.3~8.4</td></tr><tr><td rowspan="3">ACMEscrew</td><td>610</td><td>0.3~8.1</td></tr><tr><td>914</td><td>0.3~7.9</td></tr><tr><td>1219</td><td>0.3~8.1</td></tr></table></td></tr>
<tr><td>White</td><td>GND</td><td></td></tr>
</table>

Ordering Key

ID18 -	24	58	S	3A	C19	-	1	1	H	1	B	5	1

Input voltage	**24**: 24V DC **36**: 36V DC
Gear ratio	**58**: 58:1
Motor code	**S**: Standard motor (2300rpm)
Spindle type	**3A**: ACME screw, 3.175mm pitch **5B**: Ball screw, 5.08mm pitch
Stroke	**610**: 610mm (24") **914**: 914mm (36") **C19**: 1219mm (48")
Front connector (Refer to Page4)	**1**: Spherical rod eye, Ø19mm (3/4") (standard) **0**: Spherical rod eye, Ø12.7mm (1/2")
Rear connector (Refer to Page4)	**1**: Tube clamp with spherical bearing, Ø19mm (3/4") (standard) **0**: Tube clamp with spherical bearing, Ø12.7mm (1/2") **T**: With trunnion mount, Ø19mm (3/4")
Positioning feedback	**H**: Single Hall effect sensor **R**: Reed sensor **P**: Potentiometer **0**: None
Cable	**1**: Bare wires / 250mm / Black
Color	**B**: Black
IP level	**5**: IP65
Location of cable outlet (Refer to Page4)	**1**: Cable outlet at body side (standard) **0**: Cable outlet at body bottom

Actuator
ID10S

ID10S is a robust and powerful actuator with up to 9,000N thrust, which is designed for solar tracker application. It features high load capability, long lifetime, and low power consumption. There are several options available, including Ball screw or ACME screw spindle, and different sensors for positioning feedback.

Content

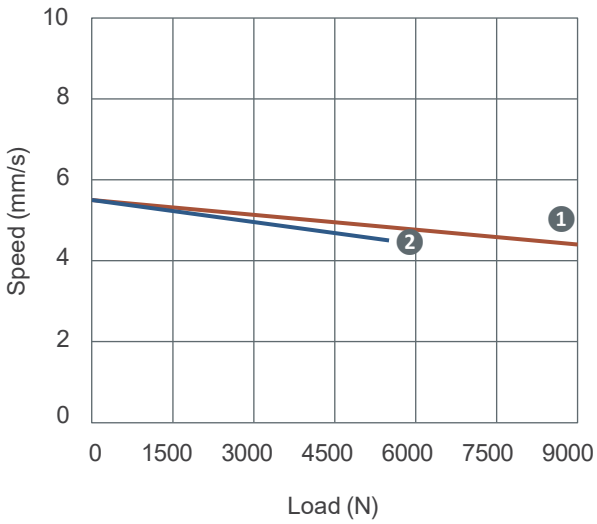
Features and Options

- Main applications: Industry / Solar tracker
- Input voltage: 12V DC / 24V DC
- Max. static load: 13,600N (ACME screw) / 17,100N (Ball screw)
- Max. dynamic load: 5,500N (ACME screw) / 9,000N (Ball screw) in push and pull direction
- Max. speed at no load: 5.5mm/sec (Typical value)
- Stroke: 450 / 600 / 900 mm
- IP level: IP65 (Static; non-action)
- Overload protection by clutch
- Built-in limit switches
- Positioning: Optional single Hall effect sensor / Reed sensor / Potentiometer (POT)
- Extension tube: Galvanized steel (Standard) / Stainless steel
- Color: Silver
- Power cord length: 250mm
- Duty cycle: 25%, max. 4 min. continuous operation in 16 min.
- Operating ambient temperature: -25°C~+65°C
- Storage ambient temperature: -25°C~+65°C
- Certified: CE Marking, EMC Directive 2014/30/EU, UKCA.

Performance Data

No.	Model No.	Spindle type	Max. load (N)	* Typical speed (mm/s)		* Typical current (A)			
				No load	Full load	No load		Full load	
						12V	24V	12V	24V
1	ID10S-XX40-E5B	Ball screw	9,000	5.5	4.4	1.8	0.9	7.2	3.6
2	ID10S-XX40-E5A	ACME screw	5,500	5.5	4.5	1.8	0.9	7.8	3.9

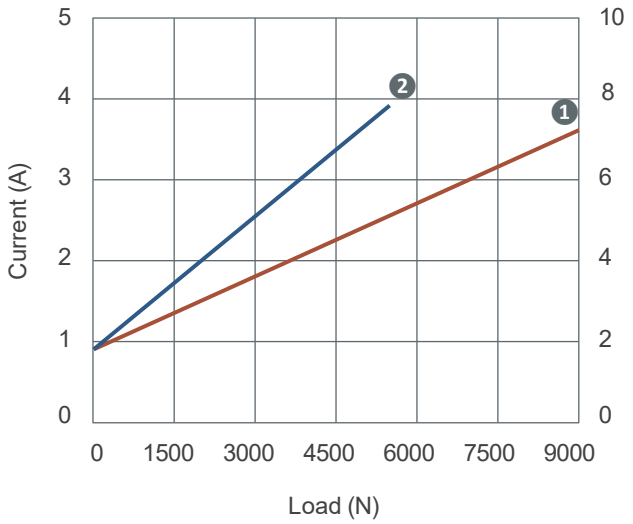
Speed VS. Load



24V DC

Current VS. Load

12V 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 ID10S can reach about 3 times of the typical current under the actuator maximum 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

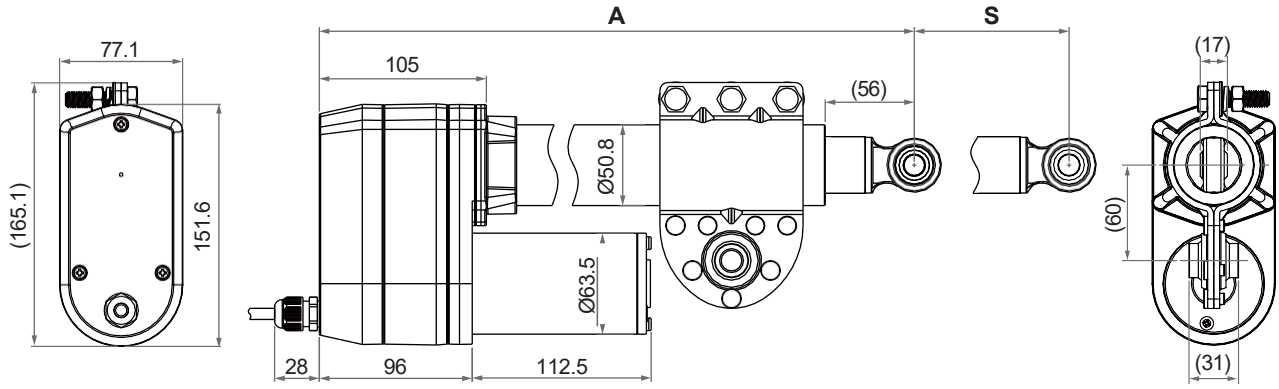
- Retracted length (A)

Model No.	Spindle type	Stroke (S)	Retracted length (A)
ID10S-XX40-E5B-**450**-XXX1S5X	Ball screw	450mm	810mm
ID10S-XX40-E5B-**600**-XXX1S5X	Ball screw	600mm	963mm
ID10S-XX40-E5B-**900**-XXX1S5X	Ball screw	900mm	1315mm
ID10S-XX40-E5A-**450**-XXX1S5X	ACME screw	450mm	764mm
ID10S-XX40-E5A-**600**-XXX1S5X	ACME screw	600mm	917mm
ID10S-XX40-E5A-**900**-XXX1S5X	ACME screw	900mm	1269mm

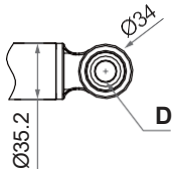
Note: The tolerance for stroke length is -0~+15mm, fully retracted length is ±5mm.

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

2. Drawing



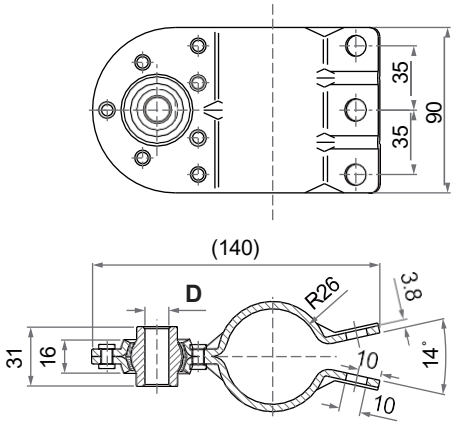
3. Front connector type



Spherical rod eye

Diameter code	Diameter of pivot (D)
0	Ø13mm (standard)
1	Ø12mm
2	Ø12.7mm (1/2")
3	Ø16mm

4. Rear connector type



Tube clamp with spherical rod eye

Diameter code	Diameter of pivot (D)
0	Ø13mm (standard)
3	Ø16mm

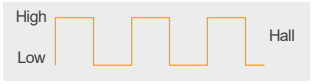
Unit: mm

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		

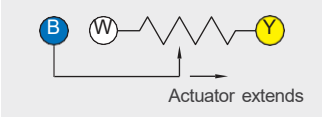
2. With single Hall effect sensor positioning feedback

	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		
Signal wires	White	Vin	Voltage input range: 5 ~ 20V
	Yellow	Hall output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data:  Resolution: 0.787pulses/mm (20PPI, 1.27mm/pulse)
	Blue	GND	

3. With reed sensor 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		
Signal wires	Yellow	Data	Resolution: 1.18pulses/mm (30PPI, 0.847mm/pulse)
	White	GND	

4. With Potentiometer (POT) absolute 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>Red</td><td rowspan="2">DC power</td><td rowspan="2">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.</td></tr>
<tr><td>Black</td></tr>
<tr><td rowspan="3">Signal wires</td><td>Yellow</td><td>Vin</td><td>Input voltage 70V max.</td></tr>
<tr><td>Blue</td><td>POT output</td><td>1. Potentiometer specification:
- 10K ohm, 10 turns.
- Total resistance tolerance ±5%
- Independent linearity ±0.25%
2. Output voltage: The voltage (resistance) between blue and white increases linearly from about 0 when the actuator extends, and decreases when it retracts.
 

3. There are different resolutions according to the stroke length (as table below)
<table><tr><th>Stroke (mm)</th><th>Resistance (tolerance: ±0.3KΩ)</th></tr><tr><td>450</td><td>0.3 ~ 8.8K</td></tr><tr><td>600</td><td>0.3 ~ 9.4K</td></tr><tr><td>900</td><td>0.3 ~ 9.2K</td></tr></table>
4. The potential value can be measured through the POT output and GND wires.</td></tr>
<tr><td>White</td><td>GND</td><td></td></tr>
</table>

Certifications

ID10S actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

Emission	Immunity
EN 61000-6-3:2007+A1:2011	EN 61000-6-1:2007 EN 61000-4-2:2009 EN 61000-4-3:2006+A1:2008+A2:2010 EN 61000-4-8:2010

Ordering Key

ID10S- 24 40 - E 5A - 450 - 0 0 H 1 S 5 0

Input voltage	**12**: 12V DC **24**: 24V DC
Gear ratio	**40**: 40:1
Motor code	**E**: Standard motor (2900rpm)
Spindle type	**5A**: ACME screw / 5.08mm pitch **5B**: Ball screw / 5.08mm pitch
Stroke	**450**: 450mm **600**: 600mm **900**: 900mm
Front connector type (Refer to Page 5)	Diameter of pivot spherical rod eye **0**: Ø13mm (Standard) **1**: Ø12mm **2**: Ø12.7mm (1/2") **3**: Ø16mm
Rear connector type (Refer to Page 5)	Diameter of pivot tube clamp with spherical rod eye **0**: Ø13mm (Standard) **3**: Ø16mm
Positioning feedback	**H**: Hall effect sensor x 1 **R**: Reed sensor **P**: Potentiometer **0**: None
Cable	**1**: Bare wires / 250mm / Black
Color	**S**: Silver
IP level	**5**: IP65
Extension tube	**0**: Galvanized steel (Standard) **2**: Stainless steel

More information about installation and usage is provided in ID10S User Guide, which can be downloaded from Moteck website.

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