

# Actuator

## IA5

IA5 is a high speed AC powered linear actuator designed with stainless steel extension tube, which is suitable for various outdoor industrial applications, such as construction machine, air bridge, mining transportation conveyor...etc. It also features its heavy load capability and low current deviation. Ball Screw or ACME spindle is available for users to choose.



### Features and Options

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**Main application:** Industrial, Agriculture

**Standard features:**

- Input voltage: 115V AC / 60Hz ; 230V AC / 50Hz
- Max. rated load: 3,500N (ACME) / 7,000N (Ball Screw)
- Max. static load: 4,500N (ACME) / 13,600N (Ball Screw)
- Max. speed at no load: 52.8mm/sec (Typical value)
- Stroke: 102 / 153 / 203 / 254 / 305 / 457 / 610mm
- IP level: IP54 (Static, non-action)
- Overload protection by clutch
- Extension tube material: Iron (for ACME) / stainless steel (for Ball Screw)
- Color: Black
- Power cord length: 600mm (with tinned wires)
- Duty cycle: 25%, max. 4 min. continuous operation in 16 min.
- Operating ambient temperature: -25°C ~ +65°C
- Certified: UL1004-1, CE Marking, EMC Directive 2014/30/EU

**Options:**

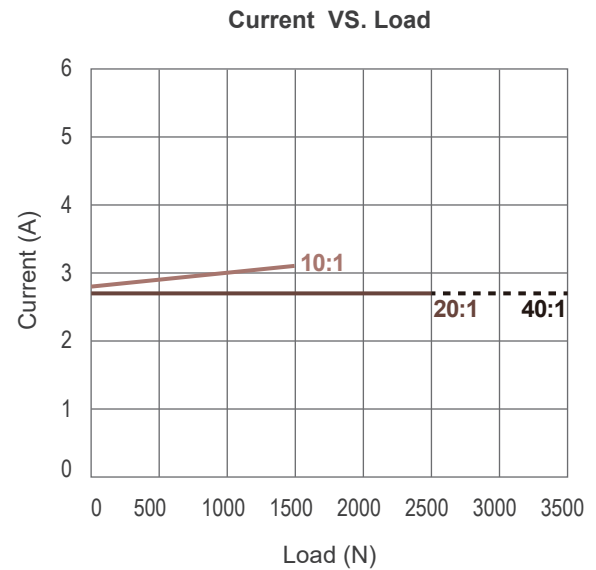
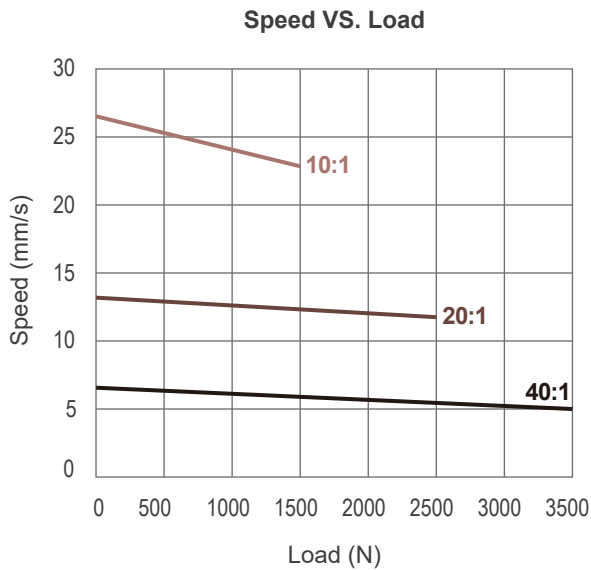
- Analog and absolute positioning feedback with Potentiometer (POT)
- Preset limit switches (LT)
- IP level: IP65

## Performance Data

### ACME type

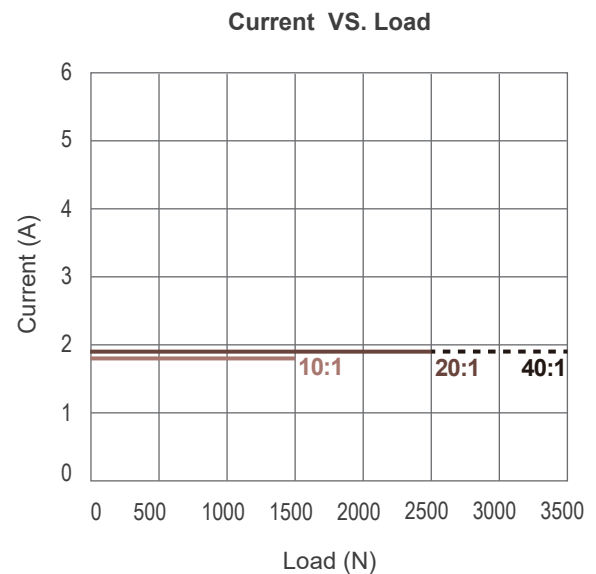
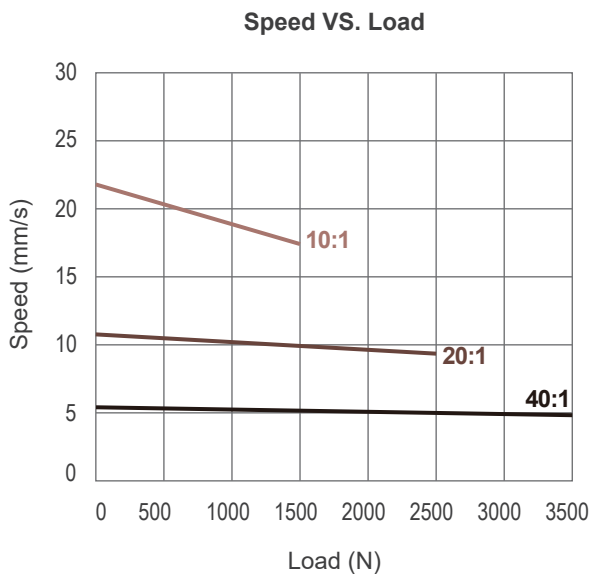
#### • 115V AC motor

| Model No.        | Gear ratio | Push / Pull Max. (N) | * Typical Speed (mm/s) |           | * Typical Current (A) |           |
|------------------|------------|----------------------|------------------------|-----------|-----------------------|-----------|
|                  |            |                      | No load                | Full load | No load               | Full load |
| IA5-115-10-A-XXX | 10:1       | 1500                 | 26.5                   | 22.9      | 2.8                   | 3.1       |
| IA5-115-20-A-XXX | 20:1       | 2500                 | 13.1                   | 11.8      | 2.7                   | 2.7       |
| IA5-115-40-A-XXX | 40:1       | 3500                 | 6.6                    | 6.0       | 2.7                   | 2.7       |



#### • 230V AC motor

| Model No.        | Gear ratio | Push / Pull Max. (N) | * Typical Speed (mm/s) |           | * Typical Current (A) |           |
|------------------|------------|----------------------|------------------------|-----------|-----------------------|-----------|
|                  |            |                      | No load                | Full load | No load               | Full load |
| IA5-230-10-A-XXX | 10:1       | 1500                 | 21.8                   | 17.5      | 1.8                   | 1.8       |
| IA5-230-20-A-XXX | 20:1       | 2500                 | 10.8                   | 9.3       | 1.9                   | 1.9       |
| IA5-230-40-A-XXX | 40:1       | 3500                 | 5.4                    | 4.9       | 1.9                   | 1.9       |



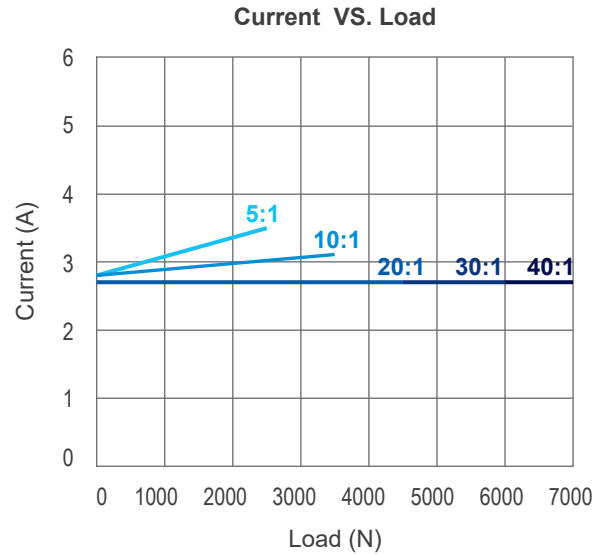
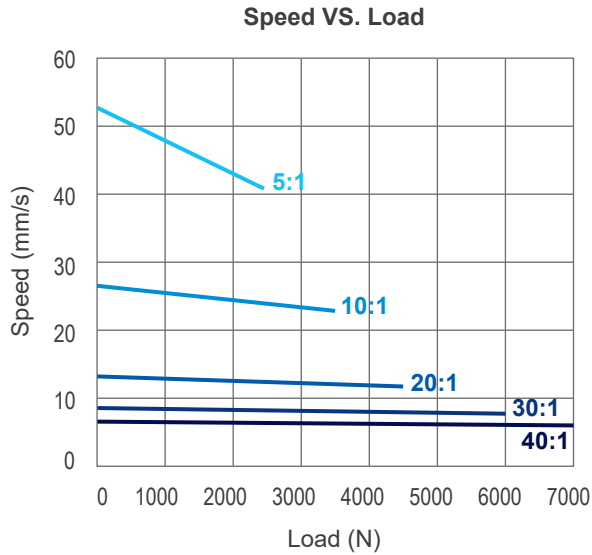
#### Remarks:

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

## Ball Screw type

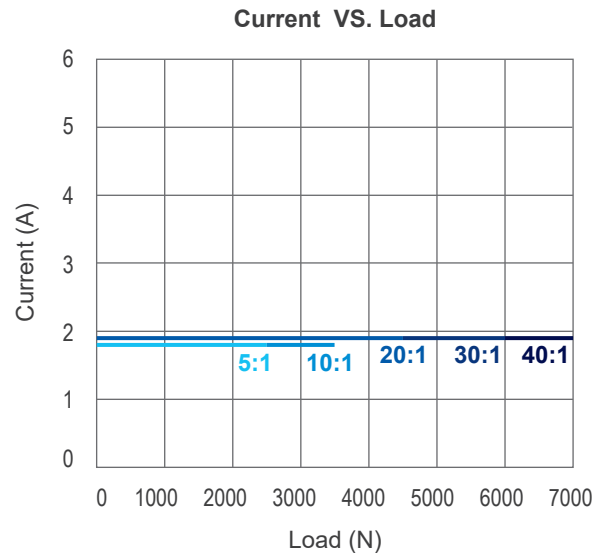
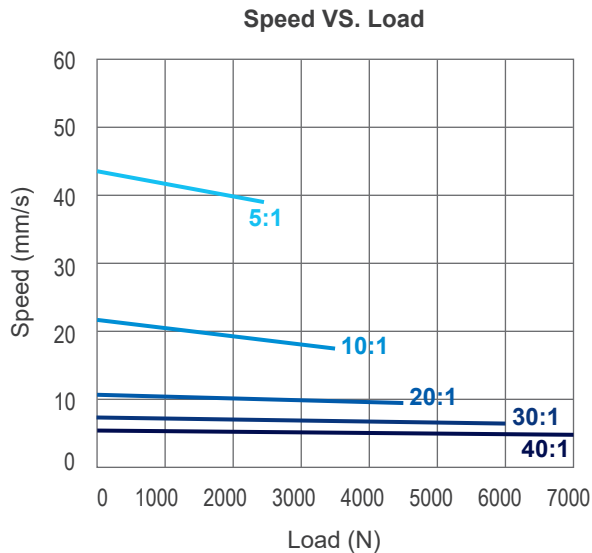
### • 115V AC motor

| Model No.        | Gear ratio | Push / Pull Max. (N) | * Typical Speed (mm/s) |           | * Typical Current (A) |           |
|------------------|------------|----------------------|------------------------|-----------|-----------------------|-----------|
|                  |            |                      | No load                | Full load | No load               | Full load |
| IA5-115-05-B-XXX | 5:1        | 2500                 | 52.8                   | 40.8      | 2.8                   | 3.5       |
| IA5-115-10-B-XXX | 10:1       | 3500                 | 26.5                   | 22.9      | 2.8                   | 3.1       |
| IA5-115-20-B-XXX | 20:1       | 4500                 | 13.1                   | 11.8      | 2.7                   | 2.7       |
| IA5-115-30-B-XXX | 30:1       | 6000                 | 8.7                    | 7.9       | 2.7                   | 2.7       |
| IA5-115-40-B-XXX | 40:1       | 7000                 | 6.6                    | 6.0       | 2.7                   | 2.7       |



### • 230V AC motor

| Model No.        | Gear ratio | Push / Pull Max. (N) | * Typical Speed (mm/s) |           | * Typical Current (A) |           |
|------------------|------------|----------------------|------------------------|-----------|-----------------------|-----------|
|                  |            |                      | No load                | Full load | No load               | Full load |
| IA5-230-05-B-XXX | 5:1        | 2500                 | 43.5                   | 29.0      | 1.8                   | 1.8       |
| IA5-230-10-B-XXX | 10:1       | 3500                 | 21.8                   | 17.5      | 1.8                   | 1.8       |
| IA5-230-20-B-XXX | 20:1       | 4500                 | 10.8                   | 9.3       | 1.9                   | 1.9       |
| IA5-230-30-B-XXX | 30:1       | 6000                 | 7.2                    | 6.3       | 1.9                   | 1.9       |
| IA5-230-40-B-XXX | 40:1       | 7000                 | 5.4                    | 4.9       | 1.9                   | 1.9       |



#### 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

## ACME type

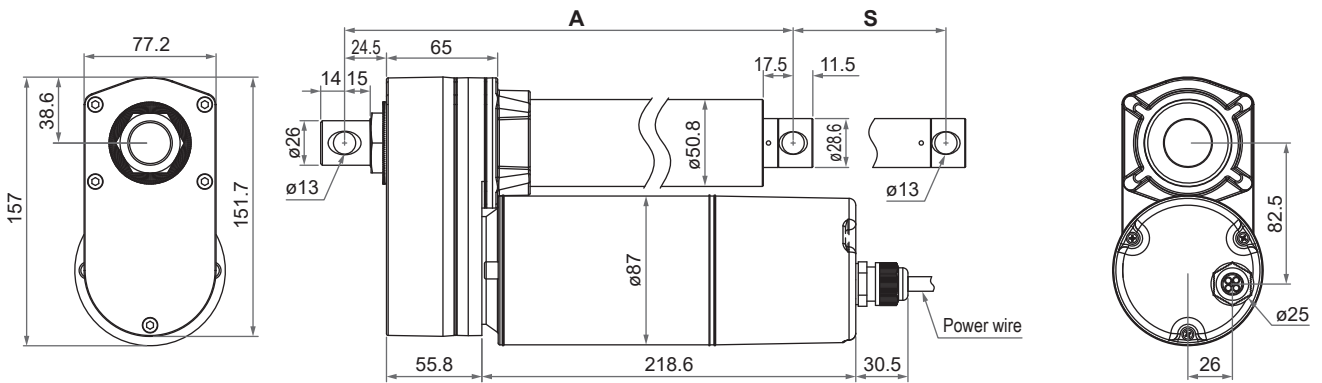
### • Retracted length (A)

| Option       | Stroke (S) |          |          |           |           |           |           |
|--------------|------------|----------|----------|-----------|-----------|-----------|-----------|
|              | 102 (4")   | 153 (6") | 203 (8") | 254 (10") | 305 (12") | 457 (18") | 610 (24") |
| Basic        | 262        | 313      | 364      | 414       | 465       | 668       | 821       |
| POT          | 302        | 353      | 404      | 454       | 505       | 708       | 861       |
| LT or LT+POT | 359        | 410      | 460      | 511       | 613       | 765       | 918       |

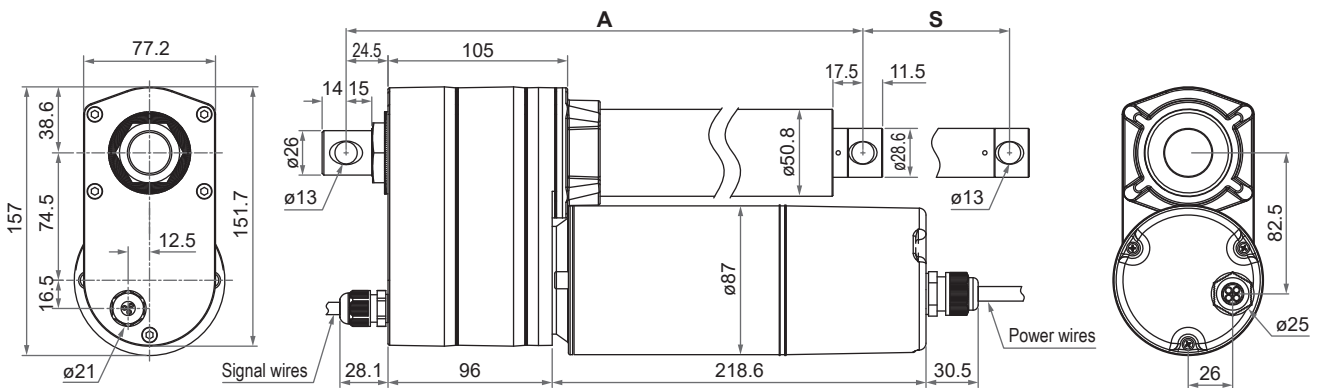
(Tolerance: ±5mm)

### • Drawing

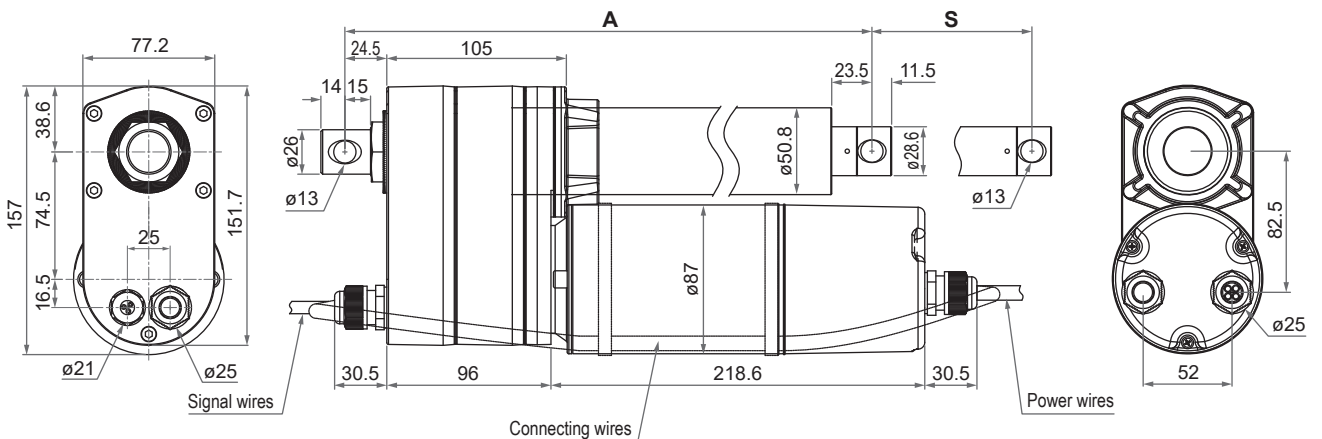
#### - Basic



#### - With Potentiometer (POT)



#### - With limit switches (LT) or with both limit switches (LT) and Potentiometer (POT)



Unit: mm

## Ball Screw type

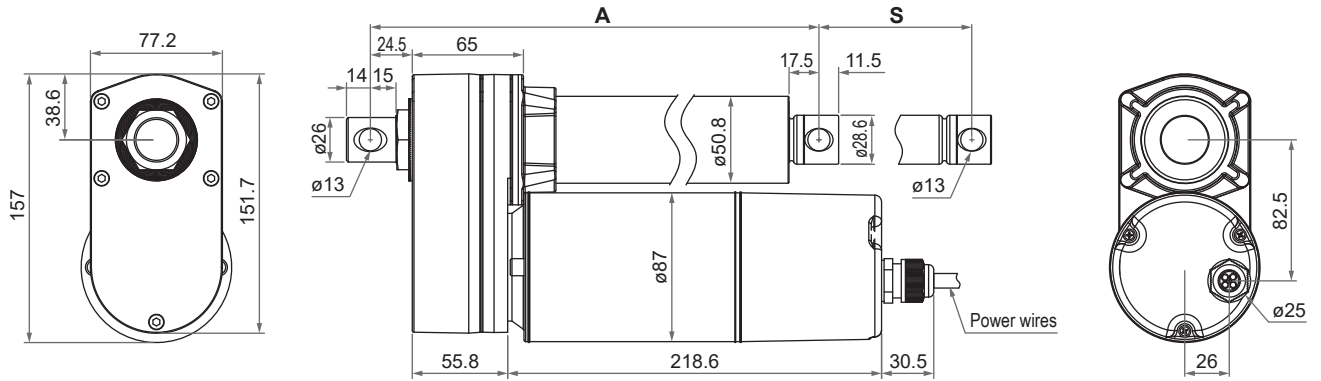
### • Retracted length (A)

| Option       | Stroke (S) |          |          |           |           |           |           |
|--------------|------------|----------|----------|-----------|-----------|-----------|-----------|
|              | 102 (4")   | 153 (6") | 203 (8") | 254 (10") | 305 (12") | 457 (18") | 610 (24") |
| Basic        | 302        | 353      | 404      | 455       | 506       | 735       | 888       |
| POT          | 342        | 393      | 444      | 495       | 546       | 775       | 928       |
| LT or LT+POT | 399        | 450      | 501      | 552       | 680       | 832       | 985       |

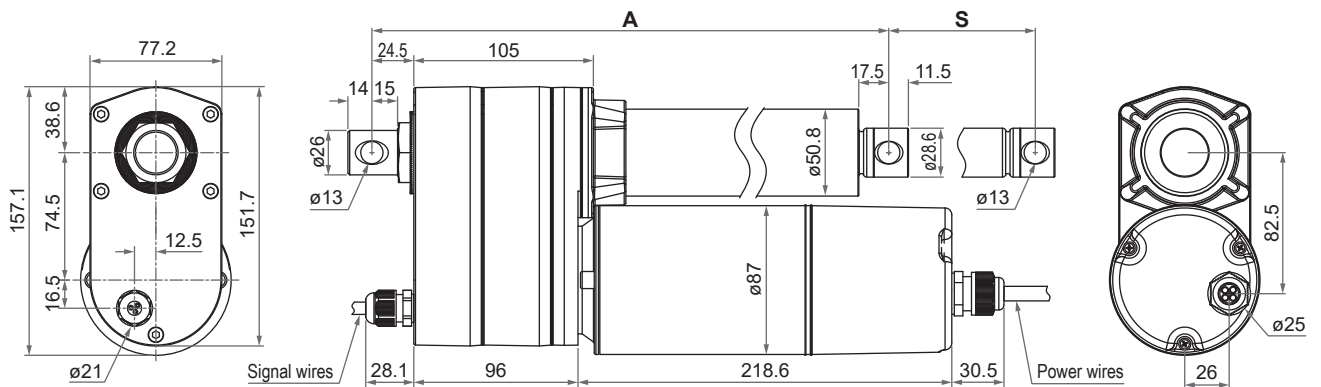
(Tolerance: ±5mm)

### • Drawing

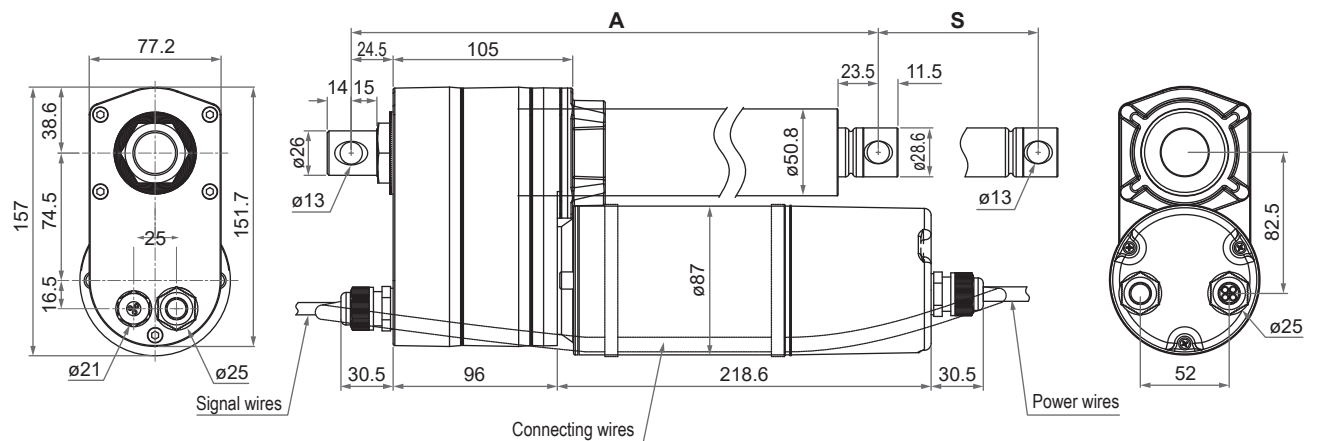
#### - Basic



#### - With Potentiometer (POT)



#### - With limit switches (LT) or with both limit switches (LT) and Potentiometer (POT)

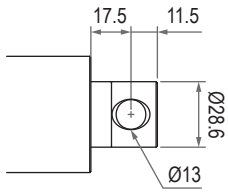


Unit: mm

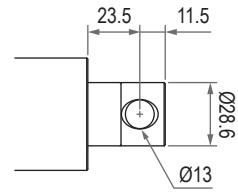
● **Front connector**

**ACME type**

- Basic or with Potentiometer (POT)

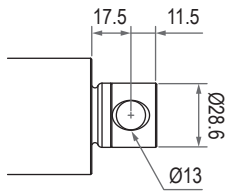


- With limit switches (LT) or  
with both limit switches (LT) and Potentiometer (POT)

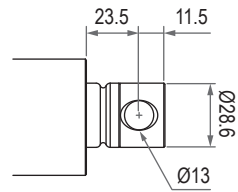


**Ball Screw type**

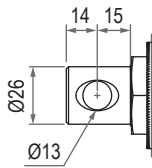
- Basic or with Potentiometer (POT)



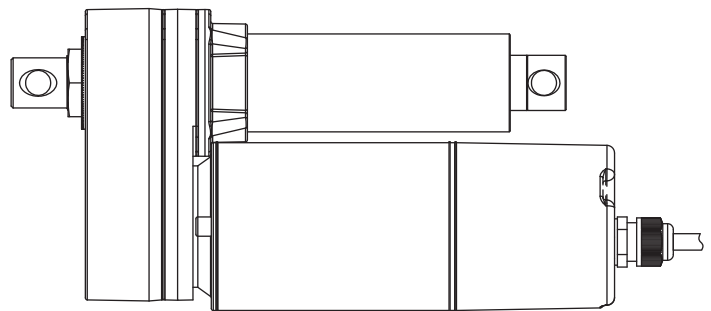
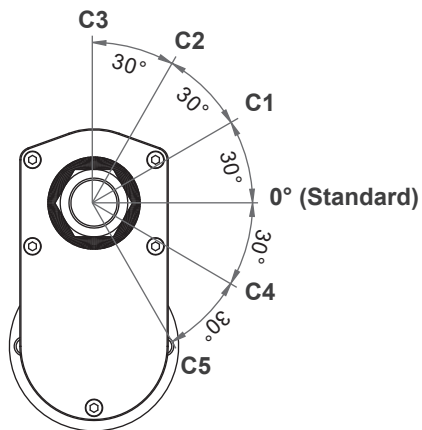
- With limit switches (LT) or  
with both limit switches (LT) and Potentiometer (POT)



● **Rear connector**



● **Pivot orientation of rear connector**



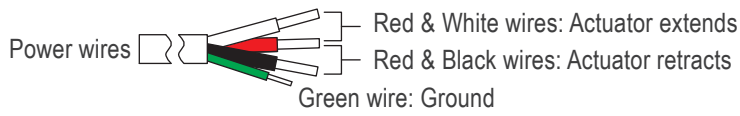
**Note:** As an example in 0° orientation.

# Cable with Flying Leads

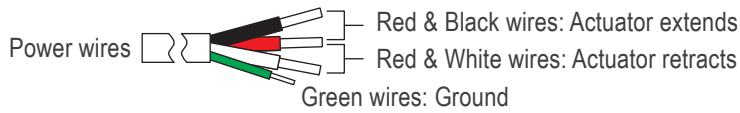
## Power wires

### 1. Basic or with Potentiometer type

- Gear ratio: 5:1 / 10:1 / 20:1

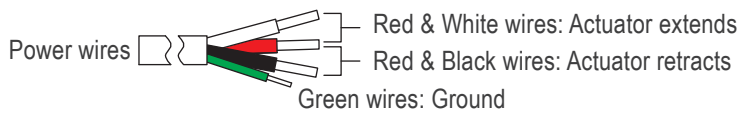


- Gear ratio: 30:1 / 40:1



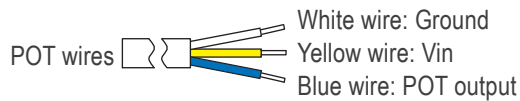
### 2. With limit switches or with both limit switches and Potentiometer type

- Gear ratio: 5:1 / 10:1 / 20:1 / 30:1 / 40:1

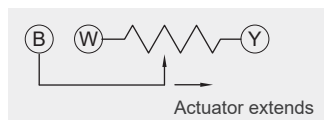


## Signal wires

With Potentiometer (POT) absolute positioning feedback



- Potentiometer specification: 10K ohm, 10 turns. Tolerance  $\pm 5\%$
- Output voltage: The voltage (resistance) between blue and white increases linearly from about 0 when the actuator extends, and decreases when it retracts.



- There are different resolutions according to the stroke length (as table below)

| Stroke (mm) | Resistance (tolerance: $\pm 0.3K\Omega$ ) |
|-------------|---|
| 102 (4")    | 0.3 ~ 8.1K                                |
| 153 (6")    | 0.3 ~ 8.7K                                |
| 203 (8")    | 0.3 ~ 9.2K                                |
| 254 (10")   | 0.3 ~ 7.4K                                |
| 305 (12")   | 0.3 ~ 8.8K                                |
| 457 (18")   | 0.3 ~ 9.4K                                |
| 610 (24")   | 0.1 ~ 9.9K                                |

## Compatibility

| Product   | Model                          | IA5 spec                                     |
|-----------|--------------------------------|--|
| Accessory | MB30 mounting bracket (Fig. 1) | • Standard, mounting hole $\varnothing$ 13mm |



Fig. 1

## Certifications

IA5 actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

| Emission                      | Immunity              |
|-------------------------------|-----------------------|
| EN IEC 61000-6-3:2021         | EN IEC 61000-6-1:2019 |
| EN IEC 61000-3-2:2019+A1:2021 | IEC 61000-4-2:2008    |
| EN 61000-3-3:2013+A1:2019     | IEC 61000-4-3:2020    |
|                               | IEC 61000-4-4:2012    |
|                               | IEC 61000-4-5:2017    |
|                               | IEC 61000-4-6:2013    |
|                               | IEC 61000-4-8:2009    |
|                               | IEC 61000-4-11:2020   |



## Ordering Key

| IA5 - 230 - 20 - B - 102 - POT - LT - - - 2                            |   |
|--|---|
| <b>Input voltage</b>   | <b>115:</b> 115V AC<br><b>230:</b> 230V AC  |
| <b>Gear ratio</b>  | <b>05:</b> 5:1 (Ball Screw only)<br><b>10:</b> 10:1<br><b>20:</b> 20:1<br><b>30:</b> 30:1 (Ball Screw only)<br><b>40:</b> 40:1  |
| <b>Spindle type</b>  | <b>A:</b> ACME<br><b>B:</b> Ball Screw  |
| <b>Stroke</b>  | <b>102:</b> 102 mm (4")<br><b>153:</b> 153 mm (6")<br><b>203:</b> 203 mm (8")<br><b>254:</b> 254 mm (10")<br><b>305:</b> 305 mm (12")<br><b>457:</b> 457 mm (18")<br><b>610:</b> 610 mm (24") |
| <b>Positioning feedback</b>  | <b>Blank:</b> None<br><b>POT:</b> Potentiometer   |
| <b>Limit switches</b>  | <b>Blank:</b> None<br><b>LT:</b> Limit switches   |
| <b>IP level</b>  | <b>Blank:</b> IP54 (Standard)<br><b>IP65:</b> IP65  |
| <b>Pivot orientation of Rear connector</b><br><i>(Refer to Page 6)</i> | <b>Blank:</b> 0° (Standard)<br><b>C1:</b> 30°<br><b>C2:</b> 60°<br><b>C3:</b> 90°<br><b>C5:</b> 120°<br><b>C4:</b> 150°   |
| <b>Cable length</b>  | <b>2:</b> 600mm straight  |



More information about installation and usage is provided in IA5 User Guide, which can be downloaded from Moteck website.

### Terms of Use

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