ELECYLINDER® Belt Driven Type

EC-B6/EC-B7

Simple & Wireless Operation

2 Position Actuator

www.intelligentactuator.com
If the stroke increases for the standard ball screw type, the maximum speed will decrease due to the resonance of the ball screw. EC-B6/7 uses a belt drive system so that the maximum speed does not decrease at a long stroke.

**Max. stroke:** 2600mm  
**Max. speed:** 1600mm/s
Select a battery-less absolute encoder as an option to eliminate the need to return home at a long stroke!

The motor installation direction can also be changed after purchase.

Can be bolted from the top, allowing for easy replacement.

Installation orientation can be installed in any of the following orientations:

- Horizontal on flat surface
- Horizontal side mounted
- Horizontal suspended

* Installing the product horizontal side mounted or horizontal suspended may cause slack or misalignment in the stainless steel sheet. Continued use in these orientations can cause the stainless steel sheet to break. Please inspect it daily and adjust the sheet if any slack or misalignment is found.
Model Specification Items

ELECYLINDER®

Series - Type

EC

<S>

Motor coupling method - Stroke

B6 Belt driven type 63mm wide
B7 Belt driven type 73mm wide

Cable length - Options

0 0m
1 1m
10 10m

300 300mm
3000mm
2600 2600mm
(100mm increments)

Lead 48mm equivalent

Motor top-mounted specification

Motor bottom-mounted specification

Incremental encoder specification
NPN specification, no options
Brake
Specified grease applied specification
Non-motor end specification
PNP specification
Twin power supply specification
Battery-less absolute encoder specification
Wireless communication specification
Wireless axis operation specification

Cable length
- 0: With power / I/O connector
- 1 - 10: Power / I/O cable included

U

3
Mounting method

- Use the through holes on top of the actuator

EC-B6/B7 can be operated at 100% of its duty cycle. (Ambient temperature 0 to 40°C.)

Precautions for Installation

- Mounting orientation

<table>
<thead>
<tr>
<th>Series</th>
<th>Type</th>
<th>Horizontal mounting on flat surface</th>
<th>Horizontal side mounting</th>
<th>Horizontal mounting suspended</th>
<th>Vertical mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC B6</td>
<td></td>
<td>○</td>
<td>○ (*)</td>
<td>○ (*)</td>
<td>×</td>
</tr>
<tr>
<td>B7</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
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</table>

* Installing the product horizontal side mount or horizontal suspended may cause slack or misalignment in the stainless steel sheet. Continued use in these orientations can cause the stainless steel sheet to break. Please inspect it daily and adjust the sheet if any slack or misalignment is found.

- Keep the body installation surface and workpiece mounting surface flatness within 0.05mm/m. Uneven flatness will increase the slider’s sliding resistance and may cause malfunction.

Duty Ratio

EC-B6/B7 can be operated at 100% of its duty cycle. (Ambient temperature 0 to 40°C.)

[Duty Cycle]

Duty cycle is the percentage of the actuator’s active operation time in each cycle.

\[
D = \frac{TM}{TM + TR} \times 100(\%)
\]

- D: Duty
- TM: Operating time (including push-motion operation)
- TR: Stopping time

- Time
  - Acceleration
  - Constant speed
  - Deceleration
  - Operating time Tm
  - Stopping time Ts

[Time of 1 cycle]
### Model Specification Items

<table>
<thead>
<tr>
<th>Series</th>
<th>Type</th>
<th>Lead</th>
<th>Specification</th>
<th>Stroke (mm)</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>48mm</td>
<td>Blank</td>
<td>Motor top-mounted</td>
<td>300 ~ 2600mm</td>
<td>Terminal type with connector</td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>U</td>
<td>Motor bottom-mounted</td>
<td></td>
<td>1m</td>
</tr>
</tbody>
</table>

### Stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>Stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>1500</td>
</tr>
<tr>
<td>400</td>
<td>1600</td>
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<tr>
<td>500</td>
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<tr>
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<tr>
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<td>2600</td>
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</table>

### Option

<table>
<thead>
<tr>
<th>Name</th>
<th>Option code</th>
<th>Reference page</th>
</tr>
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<tbody>
<tr>
<td>Brake</td>
<td>B</td>
<td>13</td>
</tr>
<tr>
<td>Specified grease applied specification*</td>
<td>G5</td>
<td>13</td>
</tr>
<tr>
<td>Non-motor end specification</td>
<td>NM</td>
<td>13</td>
</tr>
<tr>
<td>PNP specification</td>
<td>PN</td>
<td>13</td>
</tr>
<tr>
<td>Twin power supply specification</td>
<td>TMD2</td>
<td>13</td>
</tr>
<tr>
<td>Battery-less absolute encoder specification</td>
<td>WA</td>
<td>13</td>
</tr>
<tr>
<td>Wireless communication specification</td>
<td>WL</td>
<td>13</td>
</tr>
<tr>
<td>Wireless axis operation specification</td>
<td>WL2</td>
<td>13</td>
</tr>
</tbody>
</table>

*Change grease to food grade.

### Cable Length

<table>
<thead>
<tr>
<th>Cable code</th>
<th>Cable length</th>
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<tbody>
<tr>
<td>0</td>
<td>Without cable (with connector)</td>
</tr>
<tr>
<td>1 ~ 3</td>
<td>1 ~ 3m</td>
</tr>
<tr>
<td>4 ~ 5</td>
<td>4 ~ 5m</td>
</tr>
<tr>
<td>6 ~ 10</td>
<td>6 ~ 10m</td>
</tr>
</tbody>
</table>

---

(1) The belt type may cause vibration or noise during low-speed operation, so set the moving speed to 100mm/s or more.

(2) The actuator specifications display the payload's maximum value. Please refer to "Table of Payload by Speed/ Acceleration" for more details.

(3) Push-motion operation cannot be performed.

(4) Special attention needs to be paid to the mounting orientation.

(5) Reference value of the overhang load length is under 220mm in the Ma, Mb and Mc directions.

(6) The center of gravity of the attached object should be less than 1/2 of the overhand distance. Even when the overhang distance and load moment are within the allowable range, the operating conditions should be moderated if some abnormal vibration or noise is observed.
### Main Specification

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Payload</strong></td>
<td>Maximum payload (energy-saving disabled) (kg) 11</td>
</tr>
<tr>
<td></td>
<td>Maximum payload (energy-saving enabled) (kg) 3</td>
</tr>
<tr>
<td><strong>Horizontal</strong></td>
<td>Max. speed (mm/s) 1500</td>
</tr>
<tr>
<td></td>
<td>Min. speed (mm/s) 100</td>
</tr>
<tr>
<td></td>
<td>Rated acceleration/deceleration (G) 0.3</td>
</tr>
<tr>
<td></td>
<td>Max. acceleration/deceleration (G) 1.0</td>
</tr>
<tr>
<td><strong>Brake</strong></td>
<td>Brake holding specification Non-excitation actuating solenoid brake</td>
</tr>
<tr>
<td></td>
<td>Brake holding force (N) 1.3</td>
</tr>
<tr>
<td><strong>Stroke</strong></td>
<td>Min. stroke (mm) 300</td>
</tr>
<tr>
<td></td>
<td>Max. stroke (mm) 2600</td>
</tr>
<tr>
<td></td>
<td>Stroke pitch (mm) 100</td>
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</tbody>
</table>

#### Table of Payload by Speed and Acceleration/Deceleration

**Energy-saving disabled**  The unit for payload is kg.

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Horizontal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (mm/s)</td>
<td>Acceleration (G)</td>
</tr>
<tr>
<td>0</td>
<td>0.3 0.5 0.7 1</td>
</tr>
<tr>
<td>200</td>
<td>11 10 8 7</td>
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<tr>
<td>300</td>
<td>11 8.5 7 6</td>
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<tr>
<td>600</td>
<td>7 5 4 3</td>
</tr>
<tr>
<td>1000</td>
<td>4 3 2 1</td>
</tr>
<tr>
<td>1200</td>
<td>3 2 1 0.5</td>
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<td>1400</td>
<td>2 1 1 0.5</td>
</tr>
<tr>
<td>1500</td>
<td>2 1 1 0.5</td>
</tr>
</tbody>
</table>

**Energy-saving enabled**  The unit for payload is kg.

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Horizontal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (mm/s)</td>
<td>Acceleration (G)</td>
</tr>
<tr>
<td>0</td>
<td>0.3 0.7</td>
</tr>
<tr>
<td>800</td>
<td>3</td>
</tr>
<tr>
<td>1400</td>
<td>0.5</td>
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</table>

#### Stroke and maximum speed

<table>
<thead>
<tr>
<th>Energy saving</th>
<th>300 (mm)</th>
<th>400 (mm)</th>
<th>500 (mm)</th>
<th>600 (mm)</th>
<th>700 (mm)</th>
<th>800 (mm)</th>
<th>900-2600 (per 100mm)</th>
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<tbody>
<tr>
<td>disabled</td>
<td>890</td>
<td>1070</td>
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<td>1340</td>
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<td>1300</td>
<td>1350</td>
<td>1400</td>
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(Unit is mm/s)
### Dimensions by stroke

<table>
<thead>
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<th>Stroke</th>
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<th>500</th>
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<th>2400</th>
<th>2500</th>
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<tbody>
<tr>
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### Mass by stroke

<table>
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<tbody>
<tr>
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<td>9.5</td>
<td>9.8</td>
<td>10.2</td>
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<tr>
<td>With Brake</td>
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<td>3.3</td>
<td>3.7</td>
<td>4.0</td>
<td>4.3</td>
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<td>9.5</td>
<td>9.8</td>
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<td>10.5</td>
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</table>

Note: B6SU also has the same mass.

**Applicable controller**

(Note) The EC series is equipped with a built-in controller.
### Model Specification Items

<table>
<thead>
<tr>
<th>Series</th>
<th>Type</th>
<th>Lead</th>
<th>Specification</th>
<th>Stroke</th>
<th>Cable Length</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC B7 S</td>
<td>48mm</td>
<td>Blank</td>
<td>Motor top-mounted</td>
<td>300 / 2600</td>
<td>0 Terminal type with connector</td>
<td>Refer to option below</td>
</tr>
</tbody>
</table>

### Notes

1. The belt type may cause vibration or noise during low-speed operation, so set the moving speed to 100mm/s or more.
2. The actuator specifications display the payload’s maximum value. Please refer to "Table of Payload by Speed/ Acceleration" for more details.
3. Push-motion operation cannot be performed.
4. Special attention needs to be paid to the mounting orientation.
5. Reference value of the overhang load length is under 280mm in the Ma, Mb and Mc directions.
6. The center of gravity of the attached object should be less than 1/2 of the overhang distance. Even when the overhang distance and load moment are within the allowable range, the operating conditions should be moderated if some abnormal vibration or noise is observed.

### Stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>1500</td>
</tr>
<tr>
<td>400</td>
<td>1600</td>
</tr>
<tr>
<td>500</td>
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<tr>
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<tr>
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<td>2600</td>
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### Option

<table>
<thead>
<tr>
<th>Name</th>
<th>Option code</th>
<th>Reference page</th>
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</thead>
<tbody>
<tr>
<td>Brake</td>
<td>B</td>
<td>13</td>
</tr>
<tr>
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<tr>
<td>Non-motor end specification</td>
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<tr>
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<tr>
<td>Twin power supply specification</td>
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<td>Battery-less absolute encoder specification</td>
<td>WA</td>
<td>13</td>
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<tr>
<td>Wireless communication specification</td>
<td>WL</td>
<td>13</td>
</tr>
<tr>
<td>Wireless axis operation specification</td>
<td>WL2</td>
<td>13</td>
</tr>
</tbody>
</table>

*Change grease to food grade.

### Cable Length

<table>
<thead>
<tr>
<th>Cable code</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Without cable (with connector)</td>
</tr>
<tr>
<td>1 ~ 3</td>
<td>1 ~ 3m</td>
</tr>
<tr>
<td>4 ~ 5</td>
<td>4 ~ 5m</td>
</tr>
<tr>
<td>6 ~ 10</td>
<td>6 ~ 10m</td>
</tr>
</tbody>
</table>
### Main Specification

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload (Pitching)</td>
<td>Maximum payload (energy-saving disabled) (kg)</td>
</tr>
<tr>
<td></td>
<td>Maximum payload (energy-saving enabled) (kg)</td>
</tr>
<tr>
<td></td>
<td>Max. speed (mm/s)</td>
</tr>
<tr>
<td></td>
<td>Min. speed (mm/s)</td>
</tr>
<tr>
<td></td>
<td>Rated acceleration/deceleration (G)</td>
</tr>
<tr>
<td></td>
<td>Max. acceleration/deceleration (G)</td>
</tr>
<tr>
<td>Brake</td>
<td>Brake holding specification</td>
</tr>
<tr>
<td></td>
<td>Brake holding force (N)</td>
</tr>
<tr>
<td>Stroke</td>
<td>Min. stroke (mm)</td>
</tr>
<tr>
<td></td>
<td>Max. stroke (mm)</td>
</tr>
<tr>
<td></td>
<td>Stroke pitch (mm)</td>
</tr>
<tr>
<td>Direction of moment for the Slider type</td>
<td>Ma: 0 Nm, Mb: 0 Nm, Mc: 0 Nm</td>
</tr>
<tr>
<td>Table of Payload by Speed and Acceleration/Deceleration</td>
<td></td>
</tr>
<tr>
<td><strong>Energy-saving disabled</strong></td>
<td>The unit for payload is kg.</td>
</tr>
<tr>
<td><strong>Orientation</strong></td>
<td><strong>Horizontal</strong></td>
</tr>
<tr>
<td>Speed (mm/s)</td>
<td>0.3</td>
</tr>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>100</td>
<td>20</td>
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<tr>
<td>200</td>
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<td>300</td>
<td>19</td>
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<td>600</td>
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<td>1000</td>
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<td>1400</td>
<td>3</td>
</tr>
<tr>
<td>1600</td>
<td>3</td>
</tr>
<tr>
<td><strong>Energy-saving enabled</strong></td>
<td>The unit for payload is kg.</td>
</tr>
<tr>
<td><strong>Orientation</strong></td>
<td><strong>Horizontal</strong></td>
</tr>
<tr>
<td>Speed (mm/s)</td>
<td>0.3</td>
</tr>
<tr>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>100</td>
<td>14</td>
</tr>
<tr>
<td>400</td>
<td>10</td>
</tr>
<tr>
<td>800</td>
<td>5</td>
</tr>
<tr>
<td>1200</td>
<td>1</td>
</tr>
<tr>
<td><strong>Stroke and Maximum Speed</strong></td>
<td></td>
</tr>
<tr>
<td>Energy saving</td>
<td>300 (mm)</td>
</tr>
<tr>
<td>disabled</td>
<td>890</td>
</tr>
<tr>
<td>enabled</td>
<td>890</td>
</tr>
</tbody>
</table>

(UNIT is mm/s)

(Note 1) Based on the standard rated operation life of 5,000 km. Operation life varies according to operating and mounting conditions.
Dimensions

**EC ELECYLINDER®**

- **ST**: Stroke
- **M.E.**: Mechanical end
- **S.E.**: Stroke end

**2D CAD**

- Grease nipple for guide
- Allowable moment offset reference position
- Base seating surface

**3D CAD**

- Detailed drawing P
- Base long hole detail
- Sectional view Z-Z
- Detail of through hole for attaching the base
- Base mounting hole
- Details of T slot

**Dimensions**

- 61 (Reamed hole tolerance±0.02)
- 2-φ5H7 reamed, depth 5
- 4-M5 depth 10

**Secure 100 or more**

- 204.5 (Without brake)
- 254.5 (With brake)
- 219.5 (Without brake)
- 269.5 (With brake)

**Base seating surface**

- 15.5
- 85.2

**Grease port**

- φ3.5 Nipple diameter

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- 61 (Reamed hole tolerance±0.02)

**Dimensions**

- 2-φ5H7 reamed, depth 5
- 4-M5 depth 10

**Dimensions**

- J (φ4 hole - long hole)
- D×400P

**Dimensions**

- P/I
- B/C
- P/C

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3

**Dimensions**

- φ4H7 reamed, depth 4
- φ5.5 through

**Dimensions**

- Base seating surface
- Allowable moment offset

**Dimensions**

- φ3.5 Nipple diameter

**Dimensions**

- Grease nipple for guide

**Dimensions**

- Secure 100 or more
- 1.3
### Dimensions by stroke

<table>
<thead>
<tr>
<th>Stroke</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
<th>1000</th>
<th>1100</th>
<th>1200</th>
<th>1300</th>
<th>1400</th>
<th>1500</th>
<th>1600</th>
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<th>1800</th>
<th>1900</th>
<th>2000</th>
<th>2100</th>
<th>2200</th>
<th>2300</th>
<th>2400</th>
<th>2500</th>
<th>2600</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>587.5</td>
<td>597.5</td>
<td>607.5</td>
<td>617.5</td>
<td>627.5</td>
<td>637.5</td>
<td>647.5</td>
<td>657.5</td>
<td>667.5</td>
<td>677.5</td>
<td>687.5</td>
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<td>707.5</td>
<td>717.5</td>
<td>727.5</td>
<td>737.5</td>
<td>747.5</td>
<td>757.5</td>
<td>767.5</td>
<td>777.5</td>
<td>787.5</td>
<td>797.5</td>
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<td></td>
</tr>
<tr>
<td>A</td>
<td>502.3</td>
<td>502.3</td>
<td>502.3</td>
<td>502.3</td>
<td>502.3</td>
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<tr>
<td>B</td>
<td>485</td>
<td>585</td>
<td>685</td>
<td>785</td>
<td>885</td>
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<tr>
<td>E</td>
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<td>12</td>
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</tr>
<tr>
<td>J</td>
<td>330</td>
<td>430</td>
<td>530</td>
<td>630</td>
<td>730</td>
<td>830</td>
<td>930</td>
<td>1030</td>
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<td>1630</td>
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<td>2230</td>
<td>2330</td>
<td>2430</td>
<td>2530</td>
<td>2630</td>
</tr>
</tbody>
</table>

**Note:** B7SU also has the same mass.

### Mass by stroke

<table>
<thead>
<tr>
<th>Stroke</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
<th>1000</th>
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<th>2000</th>
<th>2100</th>
<th>2200</th>
<th>2300</th>
<th>2400</th>
<th>2500</th>
<th>2600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>W/o Brake</td>
<td>4.6</td>
<td>4.9</td>
<td>5.2</td>
<td>5.6</td>
<td>5.9</td>
<td>6.2</td>
<td>6.5</td>
<td>6.8</td>
<td>7.1</td>
<td>7.5</td>
<td>7.8</td>
<td>8.1</td>
<td>8.4</td>
<td>8.7</td>
<td>9.1</td>
<td>9.4</td>
<td>9.7</td>
<td>10.0</td>
<td>10.3</td>
<td>10.7</td>
<td>11.0</td>
<td>11.3</td>
<td>11.6</td>
</tr>
<tr>
<td></td>
<td>With Brake</td>
<td>5.1</td>
<td>5.4</td>
<td>5.7</td>
<td>6.1</td>
<td>6.4</td>
<td>6.7</td>
<td>7.0</td>
<td>7.3</td>
<td>7.6</td>
<td>8.0</td>
<td>8.3</td>
<td>8.6</td>
<td>8.9</td>
<td>9.2</td>
<td>9.6</td>
<td>9.9</td>
<td>10.2</td>
<td>10.5</td>
<td>10.8</td>
<td>11.2</td>
<td>11.5</td>
<td>11.8</td>
<td>12.1</td>
</tr>
</tbody>
</table>

**Note:** B7SU also has the same mass.

### Applicable controller

(Nota) The EC series is equipped with a built-in controller.
## Options for the ELECYLINDER® series

### Brake
- **Model**: B
- **Description**: This works as a holding mechanism that prevents the slider moving when the power or servo is turned off.

### Specified grease applied specification
- **Model**: G5
- **Description**: The grease put on the ballscrew, linear guide, and rod, is changed to food grade grease (White Alcom).

### Non-motor end specification
- **Model**: NM
- **Description**: Although the home position is usually located on the motor side, it can be reversed as an option according to the requirement of the facility layout.

### PNP specification
- **Model**: PN
- **Description**: The EC series offers NPN specification input/output for connecting external devices as standard. Specifying this option changes input/output to PNP specification.

### Split motor and controller power supply specification
- **Model**: TMD2
- **Description**: Optional item to supply motor power and control power separately. Please refer to P. 16 for wiring details.

### Battery-less Absolute Encoder specification
- **Model**: WA
- **Description**: The EC series offers incremental encoder specification as standard. Specifying this option installs a built-in battery-less absolute encoder.

### Wireless communication specification
- **Model**: WL
- **Description**: Optional item for wireless communications. By specifying this option, wireless communications with the teaching pendant TB-03 become available.

### Wireless axis-operation specifications
- **Model**: WL2
- **Description**: By specifying WL2, all the wireless operations of WL (adjusting the starting point, the end point, and the AVD) are available, and test operation of axis movements (moving to forward/backward ends, jogging, and inching) are also possible. However, using this function for automated operations is not possible. Alterations from WL to WL2, or vice versa cannot be made by customer. Please contact IAI for more details.
## System Configuration

### PLC  
![PLC Diagram]

**Options**
- **24VDC power supply**  
  <Model: PSA-24>

**Accessories**
- **Power / I/O connector**  
  Connector for connecting customer-side power wiring.  
  <Model: 1-1871940-6>

**Accessories**
- **Power / I/O cable**  
  (See P. 18)  
  <Model: CB-EC-PWBIO□□□-RB>  
  Cable for connecting power and PLC I/O signals.

**Options**
- **Touch Panel**  
  Teaching Pendant  
  <Model: TB-02-□>

**Options**
- **Touch Panel**  
  Teaching Pendant  
  <Model: TB-03-□>

**Options**
- **Teaching software for PC**  
  (5m cable included)  
  (See P. 18)  
  RS232 connection version  
  <Model: RCM-101-MW>  
  USB connection version  
  <Model: RCM-101-USB>

---

## List of accessories

<table>
<thead>
<tr>
<th>Product category</th>
<th>Accessories</th>
</tr>
</thead>
</table>
| EC power / without I/O cable  
 (when "0" is selected for the cable length for an actuator model) | Power / I/O connector (1-1871940-6) |
| EC power / with I/O cable  
 (when "1" ~ "10" is selected for the cable length for an actuator model) | Power / I/O cable (CB-EC-PWBIO□□□-RB) |

---

*Wires*
For "24V" and "0V", the thickness should be AWG18.  
For others, it should be AWG26 or higher.  
* All cables should be 10m or shorter.
# Basic Controller Specifications

<table>
<thead>
<tr>
<th>Specification item</th>
<th>Specification content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of controlled axes</td>
<td>1 axis</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>24VDC ±10%</td>
</tr>
<tr>
<td>Power capacity</td>
<td>Standard</td>
</tr>
<tr>
<td></td>
<td>With energy-saving setting disabled: Rated 3.5A, Max. 4.2A</td>
</tr>
<tr>
<td></td>
<td>With energy-saving setting enabled: Max. 2.2A</td>
</tr>
<tr>
<td>Brake release power supply</td>
<td>24VDC ±10%, 200mA (only for external brake release)</td>
</tr>
<tr>
<td>Generated heat</td>
<td>8W (at 100% duty)</td>
</tr>
<tr>
<td>Inrush current (Note 1)</td>
<td>Standard</td>
</tr>
<tr>
<td></td>
<td>8.3A (with inrush current limit circuit)</td>
</tr>
<tr>
<td>Momentary power failure resistance</td>
<td>Max. 500µs</td>
</tr>
<tr>
<td>Motor size</td>
<td>42, 56</td>
</tr>
<tr>
<td>Motor rated current</td>
<td>1.2A</td>
</tr>
<tr>
<td>Motor control system</td>
<td>Weak field-magnet vector control</td>
</tr>
<tr>
<td>Supported encoders</td>
<td>Incremental (800 pulse/rev), battery-less absolute encoder (800 pulse/rev)</td>
</tr>
<tr>
<td>SIO</td>
<td>RS485 1ch (Modbus protocol compliant)</td>
</tr>
</tbody>
</table>

**PIO**

<table>
<thead>
<tr>
<th>Input specification No. of input</th>
<th>3 points (forward, backward, alarm clear)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>24VDC ±10%</td>
</tr>
<tr>
<td>Input current</td>
<td>5mA per circuit</td>
</tr>
<tr>
<td>Leakage current</td>
<td>Max. 1mA/1 point</td>
</tr>
<tr>
<td>Isolation method</td>
<td>Non-isolated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output specification No. of output</th>
<th>3 points (forward complete, backward complete, alarm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>24VDC ±10%</td>
</tr>
<tr>
<td>Output current</td>
<td>50mA/1 point</td>
</tr>
<tr>
<td>Residual voltage</td>
<td>2V or less</td>
</tr>
<tr>
<td>Isolation method</td>
<td>Non-isolated</td>
</tr>
</tbody>
</table>

**Data setting and input methods**

- Teaching software for PC, touch panel teaching pendant

**Data retention memory**

- Position and parameters are saved in non-volatile memory. (No limit to rewrite)

**LED display**

**Controller status display**

- Servo ON (green light ON) / Alarm (red light ON) / Initializing when power comes ON (orange light ON) / Minor failure alarm (green/red alternately blinking) / Operation from teaching: Stop from teaching (red light ON) / Servo OFF (Light OFF)

**Wireless status display**

- Initializing wireless hardware, without wireless connection, or connecting from TP board (light OFF) / Connecting through wireless (green blinking) / Wireless hardware error (red blinking) / Initializing when power comes ON (orange light ON)

**Predictive maintenance/Preventative maintenance**

- When the number of movements or operation distance has exceeded the set value and when the LED (right side) blinks alternately green and red at overload warning * Only when configured in advance

**Ambient operating temperature**

- 0 to 40°C

**Ambient operating humidity**

- 85% RH or less (no condensation or freezing)

**Operating ambience**

- Avoid corrosive gas and excessive dust

**Insulation resistance**

- 500VDC 10MΩ

**Electric shock protection mechanism**

- Class 1 basic insulation

**Cooling method**

- Natural air cooling

(Note 1) Inrush current flows for approximately 5ms after the power is input (At 40°C). Inrush current value differs depending on the impedance on the power supply line.)
### I/O (Input/Output) Specifications

<table>
<thead>
<tr>
<th>I/O</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input voltage</strong></td>
<td>24VDC ± 10%</td>
<td>Load voltage: 24VDC ± 10%</td>
</tr>
<tr>
<td><strong>Input current</strong></td>
<td>5mA per circuit</td>
<td>Maximum load current: 50mA/1 point</td>
</tr>
<tr>
<td><strong>ON/OFF voltage</strong></td>
<td>ON voltage: Min. 18VDC</td>
<td>Residual voltage: 2V or less</td>
</tr>
<tr>
<td><strong>OFF voltage</strong></td>
<td>OFF voltage: Max. 6VDC</td>
<td></td>
</tr>
<tr>
<td><strong>Leakage current</strong></td>
<td>Max. 1mA/1 point</td>
<td>Leakage current: Max. 0.1mA/1 point</td>
</tr>
</tbody>
</table>

#### Isolation method
- Non-isolated from external circuit

#### I/O logic

**NPN**

- **I/O connector**
  - 0V A1 (Reserved) A2
  - Backward complete A3
  - Forward complete A4
  - Alarm output A5 (Reserved) A6

- **Power/Control I/O connector**
  - 0V A1 (Reserved) A2
  - B1 24V
  - B2 Brake release
  - B3 Backward command
  - B4 Forward command
  - B5 Alarm cancel
  - B6 (Reserved)

**PNP**

- **I/O connector**
  - 24V 0V
  - Brake release
  - Backward command
  - Forward command
  - Alarm cancel
  - A1 A2 A3 A4 A5

- **Power/Control I/O connector**
  - 24V (drive) 0V
  - Brake release
  - Backward command
  - Forward command
  - Alarm cancel
  - A1 A2 A3 A4 A5

(Note) Isolation method is non-isolated. When connecting an external device (such as a PLC) to ELECYLINDER, use the same ground as ELECYLINDER.

### I/O Signal Wiring Diagram

#### Power / I/O connector

- **NPN**
  - 0V A1 (Reserved) A2
  - B1 24V
  - B2 Brake release
  - B3 Backward command
  - B4 Forward command
  - B5 Alarm cancel
  - B6 (Reserved)

- **PNP**
  - 24V 0V
  - Brake release
  - Backward command
  - Forward command
  - Alarm cancel
  - A1 A2 A3 A4 A5

Drive power and control power are separate for the TMD2 specification.

#### Twin power supply specification (option model: TMD2)

- **NPN**
  - 0V A1 (Reserved) A2
  - B1 24V
  - B2 Brake release
  - B3 Backward command
  - B4 Forward command
  - B5 Alarm cancel
  - B6 (Reserved)

- **PNP**
  - 24V 0V
  - Brake release
  - Backward command
  - Forward command
  - Alarm cancel
  - A1 A2 A3 A4 A5
**Features** A teaching device equipped with functions such as position teaching, trial operation, and monitoring.

**Model** TB-02-

**Configuration** Wired connection

---

**Features** A teaching device that supports wireless connection. Start point/end point/AVD input and axis operation can be performed with wireless connection for WL option. Manual operation is wirelessly possible for WL2 option.

**Model** TB-03-

**Configuration** Wireless or wired connection

---

**I/O Signal Table**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Connector nameplate name</th>
<th>Signal abbreviation</th>
<th>Function overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3</td>
<td>Backward</td>
<td>ST0</td>
<td>Backward command</td>
</tr>
<tr>
<td>B4</td>
<td>Forward</td>
<td>ST1</td>
<td>Forward command</td>
</tr>
<tr>
<td>B5</td>
<td>Alarm cancel</td>
<td>RES</td>
<td>Alarm cancel</td>
</tr>
<tr>
<td>A3</td>
<td>Backward complete</td>
<td>LS0/PE0</td>
<td>Backward complete/push complete</td>
</tr>
<tr>
<td>A4</td>
<td>Forward complete</td>
<td>LS1/PE1</td>
<td>Forward complete/push complete</td>
</tr>
<tr>
<td>A5</td>
<td>Alarm</td>
<td>ALM</td>
<td>Alarm detection (b-contact)</td>
</tr>
<tr>
<td>B2</td>
<td>Brake release</td>
<td>BKRLS</td>
<td>Brake forced release (for brake equipped specification)</td>
</tr>
<tr>
<td>B1 (Note)</td>
<td>24V</td>
<td>24V</td>
<td>24V input</td>
</tr>
<tr>
<td>A1</td>
<td>0V</td>
<td>0V</td>
<td>0V input</td>
</tr>
<tr>
<td>A2 (Note)</td>
<td>(24V)</td>
<td>(24V)</td>
<td>24V input</td>
</tr>
</tbody>
</table>

(Note) For the twin power supply specification (TMD2), B1 is 24V (drive) and A2 is 24V (control).

---

**Options**

**Touch Panel Teaching Pendant**

**Specifications**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>3.6W or less (150mA or less)</td>
</tr>
<tr>
<td>Ambient operating temperature</td>
<td>0 to 40°C</td>
</tr>
<tr>
<td>Ambient operating humidity</td>
<td>20 to 85% RH (Non-condensing)</td>
</tr>
<tr>
<td>Environmental resistance</td>
<td>IP20</td>
</tr>
<tr>
<td>Mass</td>
<td>470g (TB-02 unit only)</td>
</tr>
</tbody>
</table>

**Specifications**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>24VDC</th>
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</tr>
<tr>
<td>Ambient operating humidity</td>
<td>20 to 85% RH (Non-condensing)</td>
</tr>
<tr>
<td>Environmental resistance</td>
<td>IPX0</td>
</tr>
<tr>
<td>Mass</td>
<td>Approx. 485g (body) + approx. 175g (battery)</td>
</tr>
<tr>
<td>Charging method</td>
<td>Wired connection with dedicated adapter/controller</td>
</tr>
<tr>
<td>Wireless connection</td>
<td>Bluetooth 4.2 class2</td>
</tr>
</tbody>
</table>
**Teaching software for PC (Windows only)**

- **Features** The start-up support software comes equipped with functions such as position teaching, trial operation, and monitoring. A complete range of functions needed for making adjustments contributes to shortened start-up time.

- **Model** **RCM-101-MW** (with an external device communication cable + RS232 conversion unit)  

  - **Configuration**
    - RS232 conversion adapter  
    - External device communication cable

- **Model** **RCM-101-USB** (with an external device communication cable + USB conversion adapter + USB cable)  

  - **Configuration**
    - USB conversion adapter
    - External device communication cable

---

**Maintenance Parts**

When placing an order for a replacement cable, please use the model name shown below.

- **Table of compatible cables**

<table>
<thead>
<tr>
<th>Model name</th>
<th>Power / I/O cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC</td>
<td>CB-EC-PWBIO□□□□-RB</td>
</tr>
</tbody>
</table>

- **Model** **CB-EC-PWBIO□□□□-RB**

  - Minimum bending radius $r = 58\text{mm}$ or more (Dynamic bending condition)
  - Only the robot cable is available for this model.

---

**Color** | **Signal name** | **Pin No.**
---|---|---
Black (AWG18) | 0V | A1
Red (AWG18) | 24V | B1
Light blue (AWG22) (reserved) | | A2
Orange (AWG26) | IN0 | B3
Yellow (AWG26) | IN1 | B4
Green (AWG26) (reserved) | | B5
Pink (AWG26) | IN2 | B6
Blue (AWG26) | OUT0 | A3
Purple (AWG26) | OUT1 | A4
Gray (AWG26) | OUT2 | A5
White (AWG26) (reserved) | | A6
Brown (AWG26) | | B7

(Note 1: 24V (control) when twin power supply specification (TMD2) selected.)