INDUSTRIAL ROBOTS

SCARA ROBOTS

General catalog for SCARA robots

THE Series
THL Series
TH/THP Series
Wide-ranging and diverse industrial robots contribute to automation, labor saving and increased efficiency.

Since it was founded in 1938 the Shibaura Machine group has played a role in helping Japan and the development of manufacturing worldwide by supplying the machines that were required by industry. The brand name "Shibaura" is widely recognized in the machine tool industry. The expertise in advanced machine design, manufacturing and control technology, which has been developed by our machine tool division, has been applied to our SCARA robot. Shibaura Machine started selling SCARA robots in the 1980s, and the customer benefits from our extensive development experience.

Shibaura Machine continues to offer increasing value for the customer with our industrial machine manufacturing, including the SCARA robot, epitomizing our corporate message: "View the future with you."
HISTORY

- **SR-606V** (Vertical articulated robot)
- **SR-2006V** (Vertical articulated robot)
- **SR-1806V, SR-2206V** (Vertical articulated robot)
- **THP Series** (Cartesian coordinate system)
- **SR-HS Series**
- **SR-2604V** (Palletizer)
- **Valibo** (Robot for final manufacturing process)
- **SR-HSP Series**
- **SR-1054HZ** (Heavy payload SCARA robot)
- **Development of the SCARA robot**
- **SR-H Series**
- **SR-1504HZ** (Heavy payload SCARA robot)
- **DTO-800** (Die-cast)
- **TH650**
- **TH250**
- **SR-424HSP**
- **SR-554HSP**
- **Coating robot**
- **SR-875VP**
- **FPD**
- **SR-624HC** (Cassette Transfer)
- **SR-F9GL3** (FOUP TRANSFER)
- **SR-404HC** (Cassette Transfer)
- **SR-354VH** (Cassette Transfer)
- **SR-875VPN**
- **TVP1100**
- **THC700** (SCARA Painting)
- **TH180**
- **TH250A**
- **TH350A**
- **TCR20V**
- **TCR5L**
- **TCR20V2**
- **TCR10L**
- **TCR12C**
- **TCR20C**
- **TH650A**
- **TH350**
- **TH850**
- **TH1050**
- **TH450A**
- **TH550A**
- **THP550**
- **TH450A**
- **TH550A**
- **THP550**
- **THE400**
- **THE600**
- **TH1200A**
- **THL1200**
- **THEL1200**
- **THL800**
- **THL900**
- **THL1000**
- **THL500**
- **THL700**
- **TVL500**
- **TVL700**
- **TV600**
- **TVL300**
- **TV1000H-WP**
- **THEL300**
- **THEL400**
- **THEL1000**
- **THEL800**
- **THEL900**
- **THEL1000**
- **THEL500**
- **THEL600**
- **THEL700**
- **TLD1100** (Line Dancer)
- **TV1000H-WP**
- **TVL500**
- **TVL700**
- **TV1000H-WP**
- **SWAN**
- **CoSWAN**
- **THE400**
- **THE600**
- **THE1000**

**Vertical articulated robot**

- **TV800/TV1000**
- **TV1000H-WP**
- **TV600**
- **TVL300**
- **TVL700**
- **TVM900**
- **TVM1200**
- **TVM1500**

**Model change**

- **TH850A**
- **TH1050A**
- **THP550**
- **SR-405HC**
- **THE400**
- **THE600**
- **THE1000**
- **THE1200**
- **THE1500**

Contributes to productivity improvement in line work by high speed operation

Various options
(Main robot options)

- Z-Axis long stroke
- Protective bellows for Z-Axis
- Z-Axis cap
- Cleanroom specification
- Dust-proof and splash-proof specification
- Ceiling-mount type
- Tool flange for end effector mounting
- Support of Safety Category 3
- Additional Axis (Traverse axis, Wrist axis, etc.)

Details:

THE Series: P11
THL Series: P23
TH Series: P36
**TH/THP Series Controller/Teach pendant**

**THE Series**

**THL Series**

- **THL500 [10 kg]**
- **THL600 [10 kg]**
- **THL700 [10 kg]**
- **THL800 [10 kg]**
- **THL900 [10 kg]**
- **THL1000 [10 kg]**
- **THL1050A [20 kg]**
- **THL1200 [20 kg]**
- **THL1200A [20 kg]**
- **THL300 [10 kg]**
- **THL400 [10 kg]**
- **THL600 [10 kg]**
- **THL700 [10 kg]**
- **THL900 [10 kg]**
- **THL1000 [10 kg]**
- **THL1050A [20 kg]**
- **THL1200 [20 kg]**
- **THL1200A [20 kg]**

**THP Series**

- **THP550 [2 kg]**
- **THP650 [2 kg]**
- **THP700 [10 kg]**
- **THP800 [10 kg]**
- **THP900 [10 kg]**
- **THP1000 [10 kg]**
- **THP1050A [20 kg]**
- **THP1200 [20 kg]**
- **THP1200A [20 kg]**

**Price range**

- **High speed * High accuracy**
- **High speed * High payload mass**
- **Lightweight**
- **Small size**
- **High speed * High cycle time**

**Standard cycle time**

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. payload mass</th>
<th>Standard cycle time</th>
</tr>
</thead>
<tbody>
<tr>
<td>THL500</td>
<td>10 kg</td>
<td>0.5 s</td>
</tr>
<tr>
<td>THL600</td>
<td>10 kg</td>
<td>0.48 s</td>
</tr>
<tr>
<td>THL700</td>
<td>10 kg</td>
<td>0.48 s</td>
</tr>
<tr>
<td>THL800</td>
<td>10 kg</td>
<td>0.48 s</td>
</tr>
<tr>
<td>THL900</td>
<td>10 kg</td>
<td>0.48 s</td>
</tr>
<tr>
<td>THL1000</td>
<td>10 kg</td>
<td>0.48 s</td>
</tr>
<tr>
<td>THL1050A</td>
<td>20 kg</td>
<td>0.39 s</td>
</tr>
<tr>
<td>THL1200</td>
<td>20 kg</td>
<td>0.39 s</td>
</tr>
<tr>
<td>THL300</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL400</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL600</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL700</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL800</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL900</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL1000</td>
<td>10 kg</td>
<td>0.47 s</td>
</tr>
<tr>
<td>THL1050A</td>
<td>20 kg</td>
<td>0.39 s</td>
</tr>
<tr>
<td>THL1200</td>
<td>20 kg</td>
<td>0.39 s</td>
</tr>
</tbody>
</table>

**Contributes to productivity improvement in line work by high speed operation and high performance handling. Selection can be made according to the application.**

**Please watch the videos of our SCARA robot**

To see this application video use this QR code or see the details below

https://www.youtube.com/watch?v=f7o5qgcE7I

To download the catalog and CAD data use this QR code or see the details below

Example of applications using SCARA robots

**Type: THL**

**Conveyance and inspection of boards**
Assessment of boards by an inspection machine and packing of an accepted product into a box.

![Image](https://youtu.be/6vXwr-CG930)

**Type: THE**

**Conveyance of cosmetic items with conveyor tracking**
Synchronization with the conveyor enables robots to sort and convey efficiently.

![Image](https://youtu.be/f7o5qgcE7I)

**Type: THL**

**Bolt fastening and conveyance of small parts**
Assembly of small parts, fastening of bolts and conveying of completed parts.

![Image](https://youtu.be/N4tbGTLEBcI)

**Type: THL**

**Robot system for high torque fastening**
Implementing automation of screw and nut fastening, which requires high torque fastening. It can also be used for socket changes.

![Image](https://www.youtube.com/watch?v=0wcveuJxEGI)
THE Series

High speed
Fastest cycle time: 0.31 sec
Support of mass production for precision parts

High accuracy
Suitable for the assembly and the inspection process of electronics equipment and automobile components, where precision is required

Accurate movement trajectory
Suitable for coating process for grease and adhesive
### Model THE400

- **Arm length (1st Arm + 2nd Arm):** 400 mm (225 mm+175 mm)
- **Maximum speed (Axis 1 and 2 composite):** 7.0 m/sec
- **Standard cycle time (with 2 kg load):** 0.39 sec
- **Maximum payload mass:** 5 kg (rated 1 kg)
- **Positioning repeatability:**
  - X-Y: ±0.01 mm
  - Axis Z (Axis 3): ±0.01 mm
  - Axis C (Axis 4): ±0.007 deg
- **Mass:** 15 kg
- **Connectable controller:** TSL3000, TSL3000E

### Model THE600

- **Arm length (1st Arm + 2nd Arm):** 600 mm (325 mm+275 mm)
- **Maximum speed (Axis 1 and 2 composite):** 8.0 m/sec
- **Standard cycle time (with 2 kg load):** 0.31 sec
- **Maximum payload mass:** 12 kg (rated 2 kg)
- **Positioning repeatability:**
  - X-Y: ±0.01 mm
  - Axis Z (Axis 3): ±0.01 mm
  - Axis C (Axis 4): ±0.005 deg
- **Mass:** 31 kg
- **Connectable controller:** TS5000

---

1. Continuous operation is not possible beyond the effective load ratio. Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning.
2. Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.
3. Positioning repeatable accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount. Positioning repeatability for X-Y and C are for when Z-axis is at the uppermost position. Trajectory accuracy is not ensured.
**Model:** THE400

**Arm length (1st Arm + 2nd Arm):** 400 mm (225 mm + 175 mm)

**Working envelope:**
- Axis 1: ±130 deg
- Axis 2: ±145 deg
- Axis 3 (Axis Z): 0~160 mm
- Axis 4 (Axis C): ±360 deg

**Maximum speed:**
- Axis 1: 672 deg/sec
- Axis 2: 780 deg/sec
- Axis 3 (Axis Z): 1120 mm/sec
- Axis 4 (Axis C): 1800 deg/sec
- Composite (Axis 1 and 2 composite): 7.0 m/sec

**Standard cycle time:** 0.39 sec (with 2 kg load)

**Maximum payload mass:** 5 kg (rated 1 kg)

**Allowable moment of inertia:** 0.06 kg·m²

**Positioning repeatability:**
- X-Y: ±0.01 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.007 deg

**Hand wiring:** 8 inputs and 8 outputs

**Hand pneumatic joint:** Provided by user

**Robot controller cable:** 3.5 m

**Power supply:** 2.6 kVA

**Mass:** 15 kg

**Connectable controller:** TSL3000, TSL3000E

For *1 to *3, please see page 8.

---

**External View**

**Model THE400**

**Arm length (1st Arm + 2nd Arm):** 400 mm (225 mm + 175 mm)

**Working envelope**
- Axis 1: ±130 deg
- Axis 2: ±145 deg
- Axis 3 (Axis Z): 0~160 mm
- Axis 4 (Axis C): ±360 deg

**Maximum speed**
- Axis 1: 672 deg/sec
- Axis 2: 780 deg/sec
- Axis 3 (Axis Z): 1120 mm/sec
- Axis 4 (Axis C): 1800 deg/sec
- Composite (Axis 1 and 2 composite): 7.0 m/sec

**Standard cycle time**: 0.39 sec (with 2 kg load)

**Maximum payload mass**: 5 kg (rated 1 kg)

**Allowable moment of inertia**: 0.06 kg·m²

**Positioning repeatability**
- X-Y: ±0.01 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.007 deg

**Hand wiring**: 8 inputs and 8 outputs

**Hand pneumatic joint**: Provided by user

**Robot controller cable**: 3.5 m

**Power supply**: 2.6 kVA

**Mass**: 15 kg

**Connectable controller**: TSL3000, TSL3000E

For *1 to *3, please see page 8.

---

### Model THE600

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>600 mm (325 mm+275 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±140 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±152 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0–210 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>457 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>672 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>2359 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>8.0 m/sec</td>
</tr>
<tr>
<td>Standard cycle time</td>
<td>0.31 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>12 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>0.25 kg·m²</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.005 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>φ6 x 4 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>4.3 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>31 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS5000</td>
</tr>
</tbody>
</table>

For *1 to *3, please see page 8.

---

### External View

- **Working envelope for Axis 1**: ±140 deg
- **Working envelope for Axis 2**: ±152 deg
- **Working envelope for Axis 3 (Axis Z)**: 0–210 mm
- **Working envelope for Axis 4 (Axis C)**: ±360 deg

---

### CAD Download URL


---

**Note:** For detailed specifications and additional information, refer to the provided URL.
There are various options so that robots can be used in a variety of applications, environment, and layouts.

**Z-Axis long stroke (Z)**
The Z-axis stroke range is extended. Useful when handling long work pieces and when height or depth is required.

**Protective bellows for Z-Axis (B)**
Bellows protect the lower part of the ball screw when liquid or particles could become attached.

*Cycle time and working envelope of Z-axis (axis 3) is different from standard specification. Please contact us for more details.

**Z-axis upper cap (C)**
Cap protects the upper part of the ball screw when liquid or particles could become attached.

**Cleanroom specification (CRB)**
Cleanroom design equivalent to ISO clean Class 3. Effective for dust-averse applications such as semiconductor and electronics manufacturing.

**Z-axis shaft for wire routing (WS)**
Adds shaft for hand wire routing. Prevents wire from scraping when the robot hand wiring is put through the hollow part of ball screw.

**Dust-proof and splash-proof specification (IP)**
Dust-proof and splash-proof specification equivalent to IP65. (Does not allow dust intrusion and prevents the robot from the harmful effects of splashing water.)

**Battery-less motor (BL)**
Motor does not require battery back-up. Periodic replacement of battery is not required.

**Ceiling-mount type (T)**
Space can be saved by installing ceiling mounted robots above the work area.

*Working envelope is different from standard specification. Please contact us for more details.

**Change of cable length**
Length of the cable between the robot and controller can be changed. Useful when the control panel is far away from the robot.

*Maximum length of cable between robot and controller depends on controller type. Please contact us for more details.

**Tool flange for end effector mounting (TF)**
Flange helps to attach a tool, such as a gripper, at the end of the ball screw.

*Please refer to dimensions of each robot for mounting method.

---

### Order model code

**THE 400 - Z - B - L05 - TF - E - S**

<table>
<thead>
<tr>
<th>Option</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>No special marking (standard)</td>
<td>K</td>
</tr>
<tr>
<td>CE Marking</td>
<td>E</td>
</tr>
<tr>
<td>KCs Marking</td>
<td>K</td>
</tr>
<tr>
<td>Battery-less motor (BL)</td>
<td>BL</td>
</tr>
<tr>
<td>Cable length 10 m</td>
<td>L10R</td>
</tr>
<tr>
<td>Cable length 15 m (movable)</td>
<td>L15</td>
</tr>
<tr>
<td>Cable length 15 m (standard)</td>
<td>L15R</td>
</tr>
<tr>
<td>Cable length 5 m (movable)</td>
<td>L05R</td>
</tr>
<tr>
<td>Cable length 5 m (standard)</td>
<td>L05</td>
</tr>
<tr>
<td>Cable length 8 m (movable)</td>
<td>L08R</td>
</tr>
<tr>
<td>Cable length 8 m (standard)</td>
<td>L08</td>
</tr>
<tr>
<td>Cable length 10 m (movable)</td>
<td>L10</td>
</tr>
<tr>
<td>Cable length 10 m (standard)</td>
<td>L10R</td>
</tr>
</tbody>
</table>

---

### Option table

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>No option (standard)</td>
<td>1</td>
<td>Z</td>
</tr>
<tr>
<td>Z-Axis long stroke (Z)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No option (standard)</td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>Protective bellows for Z-Axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z-axis upper cap (C)</td>
<td></td>
<td>CRB</td>
</tr>
<tr>
<td>Cleanroom specification</td>
<td></td>
<td>WS</td>
</tr>
<tr>
<td>Z-axis (axis3) shaft for wire routing</td>
<td></td>
<td>IP</td>
</tr>
<tr>
<td>Dust-proof and splash-proof specification (IP65)</td>
<td></td>
<td>T</td>
</tr>
<tr>
<td>Ceiling-mount type</td>
<td></td>
<td>WB</td>
</tr>
<tr>
<td>Z-axis (axis 3) upper and lower bellows</td>
<td>3</td>
<td>L05</td>
</tr>
<tr>
<td>Cable length 3.5 m (standard)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 5 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 8 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 10 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 15 m (movable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 5 m (movable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 8 m (movable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length 10 m (movable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool flange for end effector mounting (standard)</td>
<td>4</td>
<td>TF</td>
</tr>
<tr>
<td>Tool flange for end effector mounting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No special marking (standard)</td>
<td>5</td>
<td>E</td>
</tr>
<tr>
<td>CE Marking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KCs Marking</td>
<td>6</td>
<td>S</td>
</tr>
<tr>
<td>Battery-less motor (BL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special specification</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Low cost
Impressive performance at affordable prices

Lightweight
Lightweight robot (minimum: 12 kg)
Easy installation in narrow spaces

Wide variety of arm lengths
Wide variety of arm lengths (300 mm to 1200 mm)
You can select the best robot for your application
### THL Series

**Model:** THL300 - Z - SC - E - S

<table>
<thead>
<tr>
<th>THL300</th>
<th>THL400</th>
<th>THL500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arm length:</strong></td>
<td>300 mm (125 mm+175 mm)</td>
<td>400 mm (225 mm+175 mm)</td>
</tr>
<tr>
<td><strong>Maximum speed (Axis 1 and 2 composite):</strong></td>
<td>5.1 m/sec</td>
<td>6.3 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time (with 2 kg load):</strong></td>
<td>0.48 sec</td>
<td>0.47 sec</td>
</tr>
<tr>
<td><strong>Maximum payload mass:</strong></td>
<td>5 kg (rated 2 kg)</td>
<td>5 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Positioning repeatability: X-Y:</strong></td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td></td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td><strong>Mass:</strong></td>
<td>12 kg</td>
<td>13 kg</td>
</tr>
<tr>
<td><strong>Connectable controller:</strong></td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

**Model:** THL600 - Z - SC - E - S

<table>
<thead>
<tr>
<th>THL600</th>
<th>THL700</th>
<th>THL800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arm length:</strong></td>
<td>600 mm (300 mm+300 mm)</td>
<td>700 mm (400 mm+300 mm)</td>
</tr>
<tr>
<td><strong>Maximum speed (Axis 1 and 2 composite):</strong></td>
<td>7.1 m/sec</td>
<td>7.9 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time (with 2 kg load):</strong></td>
<td>0.45 sec</td>
<td>0.50 sec</td>
</tr>
<tr>
<td><strong>Maximum payload mass:</strong></td>
<td>10 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Positioning repeatability: X-Y:</strong></td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td></td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td><strong>Mass:</strong></td>
<td>23 kg</td>
<td>24 kg</td>
</tr>
<tr>
<td><strong>Connectable controller:</strong></td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

**Model:** THL900 - Z - SC - E - S

<table>
<thead>
<tr>
<th>THL900</th>
<th>THL1000</th>
<th>THL1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arm length:</strong></td>
<td>900 mm (450 mm+450 mm)</td>
<td>1,000 mm (550 mm+450 mm)</td>
</tr>
<tr>
<td><strong>Maximum speed (Axis 1 and 2 composite):</strong></td>
<td>4.6 m/sec</td>
<td>5.0 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time (with 2 kg load):</strong></td>
<td>0.48 sec</td>
<td>0.48 sec</td>
</tr>
<tr>
<td><strong>Maximum payload mass:</strong></td>
<td>10 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Positioning repeatability: X-Y:</strong></td>
<td>±0.02 mm</td>
<td>±0.02 mm</td>
</tr>
<tr>
<td></td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td></td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td><strong>Mass:</strong></td>
<td>35 kg</td>
<td>37 kg</td>
</tr>
<tr>
<td><strong>Connectable controller:</strong></td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

---

1. Continuous operation is not possible beyond the effective load ratio. Horizontal 300 mm, vertical 25 mm, round trip with coarse positioning.
2. Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.
3. Positioning repeatable accuracy is one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount. Positioning repeatability for X-Y and C are for when Z-axis is at the uppermost position. Trajectory accuracy is not ensured.
4. Pneumatic joints for hand are provided on the base. Pipes are to be provided by the customers.

---

**Controller/Teach pendant THE Series**

**Model:** THL300 THL400 THL500

<table>
<thead>
<tr>
<th>Model</th>
<th>THL300</th>
<th>THL400</th>
<th>THL500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arm length (1st Arm + 2nd Arm):</strong></td>
<td>300 mm (125 mm+175 mm)</td>
<td>400 mm (225 mm+175 mm)</td>
<td>500 mm (200 mm+300 mm)</td>
</tr>
<tr>
<td><strong>Maximum speed (Axis 1 and 2 composite):</strong></td>
<td>5.1 m/sec</td>
<td>6.3 m/sec</td>
<td>6.3 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time (with 2 kg load):</strong></td>
<td>0.48 sec</td>
<td>0.47 sec</td>
<td>0.48 sec</td>
</tr>
<tr>
<td><strong>Maximum payload mass:</strong></td>
<td>5 kg (rated 2 kg)</td>
<td>5 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Positioning repeatability:</strong></td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td></td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td><strong>Mass:</strong></td>
<td>12 kg</td>
<td>13 kg</td>
<td>22 kg</td>
</tr>
<tr>
<td><strong>Connectable controller:</strong></td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

---

**THL Series**

**Model:** THL600 THL700 THL800

<table>
<thead>
<tr>
<th>Model</th>
<th>THL600</th>
<th>THL700</th>
<th>THL800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arm length (1st Arm + 2nd Arm):</strong></td>
<td>600 mm (300 mm+300 mm)</td>
<td>700 mm (400 mm+300 mm)</td>
<td>800 mm (350 mm+450 mm)</td>
</tr>
<tr>
<td><strong>Maximum speed (Axis 1 and 2 composite):</strong></td>
<td>7.1 m/sec</td>
<td>7.9 m/sec</td>
<td>4.3 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time (with 2 kg load):</strong></td>
<td>0.45 sec</td>
<td>0.50 sec</td>
<td>0.47 sec</td>
</tr>
<tr>
<td><strong>Maximum payload mass:</strong></td>
<td>10 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Positioning repeatability:</strong></td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
<td>±0.02 mm</td>
</tr>
<tr>
<td></td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td></td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td><strong>Mass:</strong></td>
<td>23 kg</td>
<td>24 kg</td>
<td>33 kg</td>
</tr>
<tr>
<td><strong>Connectable controller:</strong></td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

---

**Model:** THL900 THL1000 THL1200

<table>
<thead>
<tr>
<th>Model</th>
<th>THL900</th>
<th>THL1000</th>
<th>THL1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arm length (1st Arm + 2nd Arm):</strong></td>
<td>900 mm (450 mm+450 mm)</td>
<td>1,000 mm (550 mm+450 mm)</td>
<td>1,200 mm (750 mm+450 mm)</td>
</tr>
<tr>
<td><strong>Maximum speed (Axis 1 and 2 composite):</strong></td>
<td>4.6 m/sec</td>
<td>5.0 m/sec</td>
<td>5.7 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time (with 2 kg load):</strong></td>
<td>0.48 sec</td>
<td>0.48 sec</td>
<td>0.58 sec</td>
</tr>
<tr>
<td><strong>Maximum payload mass:</strong></td>
<td>10 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Positioning repeatability:</strong></td>
<td>±0.02 mm</td>
<td>±0.02 mm</td>
<td>±0.05 mm</td>
</tr>
<tr>
<td></td>
<td>±0.015 mm</td>
<td>±0.015 mm</td>
<td>±0.03 mm</td>
</tr>
<tr>
<td></td>
<td>±0.007 deg</td>
<td>±0.007 deg</td>
<td>±0.014 deg</td>
</tr>
<tr>
<td><strong>Mass:</strong></td>
<td>35 kg</td>
<td>37 kg</td>
<td>40 kg</td>
</tr>
<tr>
<td><strong>Connectable controller:</strong></td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>
**THL Series**

**THL300**

<table>
<thead>
<tr>
<th>Model</th>
<th>THL300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>300 mm (125 mm+175 mm)</td>
</tr>
<tr>
<td><strong>Working envelope</strong></td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~160 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td><strong>Maximum speed</strong></td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>660 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>660 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>1120 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1500 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>5.1 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time</strong> *1</td>
<td>0.48 sec (with 2 kg load)</td>
</tr>
<tr>
<td><strong>Maximum payload mass</strong> *2</td>
<td>5 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Allowable moment of inertia</strong> *2</td>
<td>0.05 kg·m²</td>
</tr>
<tr>
<td><strong>Positioning repeatability</strong> *3</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td><strong>Hand wiring</strong></td>
<td></td>
</tr>
<tr>
<td>Hand pneumatic joint *4</td>
<td>φ4 x 3 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.7 kVA</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 kg</td>
</tr>
<tr>
<td><strong>Connectable controller</strong></td>
<td></td>
</tr>
<tr>
<td>TSL3000, TSL3000E</td>
<td></td>
</tr>
</tbody>
</table>

*1 to *4 please see page 13.

**External View**

* The air tubes are packed, which need to be installed by the user.


**Detail view of EOAT**

**Working envelope**

**Z view**

---

**SCARA ROBOTS**

14
## THL Series

### THL400

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>THL400</td>
</tr>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>400 mm (225 mm + 175 mm)</td>
</tr>
<tr>
<td>Working envelope Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Working envelope Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Working envelope Axis 3 (Axis Z)</td>
<td>0–160 mm</td>
</tr>
<tr>
<td>Working envelope Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed Axis 1</td>
<td>660 deg/sec</td>
</tr>
<tr>
<td>Maximum speed Axis 2</td>
<td>660 deg/sec</td>
</tr>
<tr>
<td>Maximum speed Axis 3 (Axis Z)</td>
<td>1120 mm/sec</td>
</tr>
<tr>
<td>Maximum speed Axis 4 (Axis C)</td>
<td>1500 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>6.3 m/sec</td>
</tr>
<tr>
<td>Standard cycle time *1</td>
<td>0.47 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass *2</td>
<td>5 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia *2</td>
<td>0.06 kg·m²</td>
</tr>
<tr>
<td>Positioning repeatability *3</td>
<td>X·Y ±0.01 mm</td>
</tr>
<tr>
<td>Positioning repeatability *3</td>
<td>Axis Z (Axis 3) ±0.015 mm</td>
</tr>
<tr>
<td>Positioning repeatability *3</td>
<td>Axis C (Axis 4) ±0.007 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint *4</td>
<td>φ4 x 3 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>0.7 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>13 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

*1 For *1 to *4 please see page 13.

### External View

**Working envelope for Axis 1**

**Working envelope for Axis 2**

**Working envelope for Axis 3**

**Working envelope for Axis 4**

**Z view**

**Detail view of EOAT**

THL Series

THL500

Model | THL500
---|---
Arm length (1st Arm + 2nd Arm) | 500 mm (200 mm + 300 mm)
Working envelope | Axis 1 ±125 deg
 | Axis 2 ±145 deg
 | Axis 3 (Axis Z) 0–150 mm
 | Axis 4 (Axis C) ±360 deg
Maximum speed | Axis 1 450 deg/sec
 | Axis 2 450 deg/sec
 | Axis 3 (Axis Z) 2000 mm/sec
 | Axis 4 (Axis C) 1700 deg/sec
 | Composite (Axis 1 and 2 composite) 6.3 m/sec
Standard cycle time* | 0.45 sec (with 2 kg load)
Maximum payload mass* | 10 kg (rated 2 kg)
Allowable moment of inertia** | 0.2 kg·m²
Positioning repeatability*** | X:Y ±0.01 mm
 | Axis Z (Axis 3) ±0.015 mm
 | Axis C (Axis 4) ±0.007 deg
Hand wiring | 8 inputs and 8 outputs
Hand pneumatic joint** | φ6 x 3 pcs
Robot controller cable | 3.5 m
Power supply | 1.4 kVA
Mass | 22 kg
Connectable controller | TSL3000, TSL3000E

For *1 to *4 please see page 13.

External View

* The air tubes are packed, which need to be installed by the user.

**External View**

<table>
<thead>
<tr>
<th>Model</th>
<th>THL600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>600 mm (300 mm + 300 mm)</td>
</tr>
<tr>
<td><strong>Working envelope</strong></td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~150 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td><strong>Maximum speed</strong></td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>450 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>450 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1700 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>7.1 m/sec</td>
</tr>
<tr>
<td><strong>Standard cycle time</strong></td>
<td>0.45 sec (with 2 kg load)</td>
</tr>
<tr>
<td><strong>Maximum payload mass</strong></td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td><strong>Allowable moment of inertia</strong></td>
<td>0.2 kg • m²</td>
</tr>
<tr>
<td><strong>Positioning repeatability</strong></td>
<td>X-Y ±0.01 mm, Axis Z (Axis 3) ±0.015 mm, Axis C (Axis 4) ±0.007 deg</td>
</tr>
<tr>
<td><strong>Hand wiring</strong></td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td><strong>Hand pneumatic joint</strong></td>
<td>φ6 x 3 pcs</td>
</tr>
<tr>
<td><strong>Robot controller cable</strong></td>
<td>3.5 m</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>1.4 KVA</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>23 kg</td>
</tr>
<tr>
<td><strong>Connectable controller</strong></td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

For *1 to *4 please see page 13.

* The air tubes are packed, which need to be installed by the user.

**CAD Download URL**
**THL Series**

**THL700**


<table>
<thead>
<tr>
<th>Model</th>
<th>THL700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>700 mm (400 mm+300 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~150 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>450 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>450 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1700 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>7.9 m/sec</td>
</tr>
<tr>
<td>Standard cycle time</td>
<td>0.50 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>0.2 kg·m²</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>φ6 x 3 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>1.4 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>24 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

*For *1 to *4 please see page 13.*

**External View**

* The air tubes are packed, which need to be installed by the user.

**THL Series**

**THL800**

<table>
<thead>
<tr>
<th>Model</th>
<th>THL800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>800 mm (350 mm+450 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~300 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>187.5 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>217.5 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1700 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>4.3 m/sec</td>
</tr>
<tr>
<td>Standard cycle time</td>
<td>0.47 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>0.2 kg·m²</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.02 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>φ6 x 3 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>1.4 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>33 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

For *1 to *4 please see page 13.

* The air tubes are packed, which need to be installed by the user.

**External View**

**Model THL800**

Arm length (1st Arm + 2nd Arm) 800 mm (350 mm+450 mm)

**External View**

**Detail view of EOAT**

**Detail view of Y Z view**

**CAD Download URL**

THL Series

THL900

Model | THL900
--- | ---
Arm length (1st Arm + 2nd Arm) | 900 mm (450 mm+450 mm)

| Working envelope | Axis 1 | ±125 deg |
| | Axis 2 | ±145 deg |
| | Axis 3 (Axis Z) | 0~300 mm |
| | Axis 4 (Axis C) | ±360 deg |

| Maximum speed | Axis 1 | 187.5 deg/sec |
| | Axis 2 | 217.5 deg/sec |
| | Axis 3 (Axis Z) | 2000 mm/sec |
| | Axis 4 (Axis C) | 1700 deg/sec |
| Composite (Axis 1 and 2 composite) | 4.6 m/sec |

| Standard cycle time | 0.48 sec (with 2 kg load) |
| Maximum payload mass | 10 kg (rated 2 kg) |
| Allowable moment of inertia | 0.2 kg·m² |
| Positioning repeatability | X-Y ±0.02 mm |
| | Axis Z (Axis 3) ±0.015 mm |
| | Axis C (Axis 4) ±0.007 deg |

| Hand wiring | 8 inputs and 8 outputs |
| Hand pneumatic joint | φ6 x 3 pcs |
| Robot controller cable | 3.5 m |
| Power supply | 1.4 kVA |
| Mass | 35 kg |
| Connectable controller | TSL3000, TSL3000E |

For *1 to *4 please see page 13.

---

**External View**

* The air tubes are packed, which need to be installed by the user.

---

**THL Series**

**THL1000**

<table>
<thead>
<tr>
<th>Model</th>
<th>THL1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>1000 mm (550 mm + 450 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0–300 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>187.5 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>217.5 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1700 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>5.0 m/sec</td>
</tr>
<tr>
<td>Maximum cycle time</td>
<td>0.48 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>0.2 kg·m²</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.02 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.015 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.007 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>φ6 x 3 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>1.4 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>37 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

For *1 to *4 please see page 13.

* The air tubes are packed, which need to be installed by the user.

---

**External View**

- **Working envelope**
  - 125° for Axis 1
  - 145° for Axis 2
  - 315° for Axis 2R315
  - 125° for Axis 1R1000

- **Detail view of EOAT**

- **Model THL1000**
  - Arm length (1st Arm + 2nd Arm) 1000 mm (550 mm + 450 mm)
  - Working envelope:
    - Axis 1 ±125 deg
    - Axis 2 ±145 deg
    - Axis 3 (Axis Z) 0–300 mm
    - Axis 4 (Axis C) ±360 deg
  - Maximum speed:
    - Axis 1 187.5 deg/sec
    - Axis 2 217.5 deg/sec
    - Axis 3 (Axis Z) 2000 mm/sec
    - Axis 4 (Axis C) 1700 deg/sec
    - Composite (Axis 1 and 2 composite) 5.0 m/sec
  - Maximum cycle time: 0.48 sec (with 2 kg load)
  - Maximum payload mass: 10 kg (rated 2 kg)
  - Allowable moment of inertia: 0.2 kg·m²
  - Positioning repeatability:
    - X-Y ±0.02 mm
    - Axis Z (Axis 3) ±0.015 mm
    - Axis C (Axis 4) ±0.007 deg
  - Hand wiring: 8 inputs and 8 outputs
  - Hand pneumatic joint: φ6 x 3 pcs
  - Robot controller cable: 3.5 m
  - Power supply: 1.4 kVA
  - Mass: 37 kg
  - Connectable controller: TSL3000, TSL3000E

For *1 to *4 please see page 13.

---

THL Series

THL1200

<table>
<thead>
<tr>
<th>Model</th>
<th>THL1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>1200 mm (750 mm + 450 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±125 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±155 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~300 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>187.5 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>217.5 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1700 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>5.7 m/sec</td>
</tr>
<tr>
<td>Standard cycle time</td>
<td>*1</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>*2</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>*2</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.05 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.03 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.014 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>*4</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>1.4 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>40 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TSL3000, TSL3000E</td>
</tr>
</tbody>
</table>

For *1 to *4 please see page 13.

External View

Detail view of EOAT

There are various options so robots can be used in a variety of applications, environments, and layouts.

**Z-Axis long stroke (Z)**
The Z-axis stroke range is extended. Useful when handling long work pieces and when height or depth is required.

**Protective bellows for Z-Axis (B)**
Bellows protect the lower part of the ball screw when liquid or particles could become attached.
*Cycle time and working envelope of Z-axis (axis 3) is different from standard specification. Please contact us for more details.*

**Z-axis upper cap (C)**
Cap protects the upper part of the ball screw when liquid or particles could become attached. It also prevents the cable from touching peripheral equipment.

**Simple cleanroom specification (SC)**
Cleanroom design equivalent of ISO clean Class 5. Effective for dust-averse applications such as semiconductor and electronics manufacturing.

**Dust-proof specification (IP6X)**
Dust-proof specification equivalent to IP6X. (Does not allow dust intrusion.) Suitable for dusty environments.
*Hand wire and hand pneumatic joints differ from standard specification. Please contact us for more details.*

**Low height design (LH)**
Alternative wire harness design enables lower height than standard and is suitable for installation in a tight space.

**Tool flange for end effector mounting (TF)**
Flange helps to attach a tool, such as a gripper, at the end of the ball screw.
*Please refer to dimensions of each robot for mounting method.*

**Optional cable lengths**
The length of the cable between a SCARA robot and its controller can be extended. Suitable for when the robot and controller panel are far apart.
*Maximum length depends on the controller. Please contact us for more details.*

**Order model code**

**Option table**

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Symbol</th>
<th>THL300, 400</th>
<th>THL500, 600, 700</th>
<th>THL800~1000</th>
<th>THL1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>No option (standard)</td>
<td>1</td>
<td>No symbol</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Z-Axis long stroke (Z)</td>
<td>1</td>
<td>Z</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>No option (standard)</td>
<td>2</td>
<td>No symbol</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Protective bellows for Z-Axis</td>
<td>2</td>
<td>B</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Z-axis upper cap (C)</td>
<td>2</td>
<td>C</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Simple cleanroom specification</td>
<td>2</td>
<td>SC</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Dust-proof specification (IP6X)</td>
<td>2</td>
<td>IP6X</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Ceiling-mount type</td>
<td>3</td>
<td>T</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Low height design</td>
<td>3</td>
<td>LH</td>
<td>×</td>
<td>● (THL400 only)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>No special marking (standard)</td>
<td>3</td>
<td>No symbol</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CE Marking</td>
<td>3</td>
<td>E</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>KCs Marking</td>
<td>3</td>
<td>K</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>No other options (standard)</td>
<td>3</td>
<td>No symbol</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Special specification</td>
<td>4</td>
<td>S</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

EX. THL 300, THL400, THL500, THL600, THL700, THL800, THL900, THL1000

[Diagram of THL series SCARA robots and option symbols]
Wide variety of arm lengths
Wide variety of arm lengths (180 mm to 1200 mm)
You can select the best robot for your application

High payload mass
Maximum payload mass 20 kg
Parts handling such as automobile components

High speed and high accuracy
Fast cycle time (maximum: 0.30 sec)
Suitable for mass production of precision parts
### TH Series

#### TH/THP Series Controller/Teach Pendant

**TH Series**

<table>
<thead>
<tr>
<th>Model</th>
<th>TH180</th>
<th>TH250A</th>
<th>TH350A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>180 mm (70 mm+110 mm)</td>
<td>250 mm (125 mm+125 mm)</td>
<td>350 mm (225 mm+125 mm)</td>
</tr>
<tr>
<td>Maximum speed (Axis 1 and 2 composite)</td>
<td>2.6 m/sec</td>
<td>3.53 m/sec</td>
<td>3.24 m/sec</td>
</tr>
<tr>
<td>Standard cycle time (with 2 kg load)</td>
<td>0.35 sec</td>
<td>0.41 sec</td>
<td>0.41 sec</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>2 kg (rated 1 kg)</td>
<td>3 kg (rated 1 kg)</td>
<td>3 kg (rated 1 kg)</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td>X-Y: ±0.01 mm</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Axis Z (Axis 3)</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Axis C (Axis 4)</td>
<td>±0.005 deg</td>
<td>±0.005 deg</td>
</tr>
<tr>
<td>Mass</td>
<td>9 kg</td>
<td>14 kg</td>
<td>14 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS3000, TS3000E</td>
<td>TS3000, TS3000E</td>
<td>TS3000, TS3000E</td>
</tr>
</tbody>
</table>

#### THL Series

<table>
<thead>
<tr>
<th>Model</th>
<th>TH450A</th>
<th>TH550A</th>
<th>TH650A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>450 mm (200 mm+250 mm)</td>
<td>550 mm (300 mm+250 mm)</td>
<td>650 mm (300 mm+350 mm)</td>
</tr>
<tr>
<td>Maximum speed (Axis 1 and 2 composite)</td>
<td>7.3 m/sec</td>
<td>6.2 m/sec</td>
<td>7.52 m/sec</td>
</tr>
<tr>
<td>Standard cycle time (with 2 kg load)</td>
<td>0.30 sec</td>
<td>0.30 sec</td>
<td>0.31 sec</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>5 kg (rated 2 kg)</td>
<td>5 kg (rated 2 kg)</td>
<td>10 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td>X-Y: ±0.01 mm</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Axis Z (Axis 3)</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Axis C (Axis 4)</td>
<td>±0.005 deg</td>
<td>±0.005 deg</td>
</tr>
<tr>
<td>Mass</td>
<td>26 kg</td>
<td>28 kg</td>
<td>52 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS3000, TS3000E</td>
<td>TS3000, TS3000E</td>
<td>TS3100, TS3100E</td>
</tr>
</tbody>
</table>

#### TH850A

<table>
<thead>
<tr>
<th>Model</th>
<th>TH850A</th>
<th>TH1050A</th>
<th>TH1200A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>850 mm (300 mm+550 mm)</td>
<td>1050 mm (550 mm+500 mm)</td>
<td>1200 mm (700 mm+500 mm)</td>
</tr>
<tr>
<td>Maximum speed (Axis 1 and 2 composite)</td>
<td>8.13 m/sec</td>
<td>9.15 m/sec</td>
<td>7.9 m/sec</td>
</tr>
<tr>
<td>Standard cycle time (with 2 kg load)</td>
<td>0.39 sec</td>
<td>0.39 sec</td>
<td>0.57 sec</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>20 kg (rated 5 kg)</td>
<td>20 kg (rated 5 kg)</td>
<td>20 kg (rated 5 kg)</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td>X-Y: ±0.01 mm</td>
<td>±0.01 mm</td>
<td>±0.03 mm</td>
</tr>
<tr>
<td></td>
<td>Axis Z (Axis 3)</td>
<td>±0.01 mm</td>
<td>±0.02 mm</td>
</tr>
<tr>
<td></td>
<td>Axis C (Axis 4)</td>
<td>±0.004 deg</td>
<td>±0.005 deg</td>
</tr>
<tr>
<td>Mass</td>
<td>76 kg</td>
<td>80 kg</td>
<td>83 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS3100, TS3100E</td>
<td>TS3100, TS3100E</td>
<td>TS3100, TS3100E</td>
</tr>
</tbody>
</table>

---

*1: Continuous operation is not possible beyond the effective load ratio.

*Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning (with 1 kg load for TH250A and TH350A). With 1 kg load, horizontal 100 mm, vertical 25 mm for TH180.

*2: Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.

*3: Positioning repeatability in one-direction movement, with the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount. Positioning repeatability for X-Y and C are for when Z-axis is at the uppermost position. Trajectory accuracy is not ensured.
**TH Series**

**TH180**

<table>
<thead>
<tr>
<th>Model</th>
<th>TH180</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>250 mm (70 mm + 110 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±120 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±140 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~120 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±380 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>533 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>480 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>1013 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1186 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>2.6 m/sec</td>
</tr>
<tr>
<td>Standard cycle time *1</td>
<td>0.35 sec (with 1 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass *2</td>
<td>2 kg (rated 1 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia *2</td>
<td>0.01 kg・m²</td>
</tr>
<tr>
<td>Positioning repeatability *3</td>
<td>X-Y ±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Axis Z (Axis 3) ±0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Axis C (Axis 4) ±0.005 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>5 inputs and 4 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>φ4 x 4 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>3 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>0.5 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>9 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS3000, TS3000E</td>
</tr>
</tbody>
</table>

For *1 to *3 please see page 25.

---

**External View**

**Working envelope**

- Tapped hole for peripheral device mounting 2×M4 (both sides)

**Detail view of A (EOAT)**

- Hand I/O connector
- Pneumatic joint for users (4×φ4)

**Detail view of B**

- Pneumatic joint for cleanroom vacuum: φ4/6 tube
- Pneumatic joint for users (4×φ4)

**Detail view of C (T-shaped slot for peripheral device mount)**

TH Series

TH250A

Model

TH250A

Arm length (1st Arm + 2nd Arm) 250 mm (125 mm + 125 mm)

Working envelope

<table>
<thead>
<tr>
<th>Axis</th>
<th>±115 deg</th>
<th>±140 deg</th>
<th>±120 mm</th>
<th>±360 deg</th>
</tr>
</thead>
</table>

Maximum speed

<table>
<thead>
<tr>
<th>Axis</th>
<th>540 deg/sec</th>
<th>540 deg/sec</th>
<th>1120 mm/sec</th>
<th>1143 deg/sec</th>
</tr>
</thead>
</table>

Composite (Axis 1 and 2 composite) 3.53 m/sec

Standard cycle time *1 0.41 sec (with 1 kg load)

Maximum payload mass *2 3 kg (rated 1 kg)

Allowable moment of inertia *2 0.017 kg·m²

Positioning repeatability *3

<table>
<thead>
<tr>
<th>X-Y</th>
<th>±0.01 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.005 deg</td>
</tr>
</tbody>
</table>

Hand wiring 5 inputs and 4 outputs

Hand pneumatic joint φ4 x 4 pcs

Robot controller cable 3 m

Power supply 0.9 kVA

Mass 14 kg

Connectable controller TS3000, TS3000E

For *1 to *3 please see page 25.

External View


SCARA ROBOTS 27
## External View

### TH350A

- **Model**: TH350A
- **Arm length (1st Arm + 2nd Arm)**: 350 mm (225 mm+125 mm)
- **Working envelope**:
  - Axis 1: ±115 deg
  - Axis 2: ±145 deg
  - Axis 3 (Axis Z): 0–120 mm
  - Axis 4 (Axis C): ±360 deg
- **Maximum speed**:
  - Axis 1: 337.5 deg/sec
  - Axis 2: 540 deg/sec
  - Axis 3 (Axis Z): 1120 mm/sec
  - Axis 4 (Axis C): 1143 deg/sec
  - Composite (Axis 1 and 2 composite): 3.24 m/sec
- **Standard cycle time**: 0.41 sec (with 1 kg load)
- **Maximum payload mass**: 3 kg (rated 1 kg)
- **Allowable moment of inertia**: 0.017 kg-m²
- **Positioning repeatability**:
  - X-Y: ±0.01 mm
  - Axis Z (Axis 3): ±0.01 mm
  - Axis C (Axis 4): ±0.005 deg
- **Hand wiring**: 5 inputs and 4 outputs
- **Hand pneumatic joint**: φ4 x 4 pcs
- **Robot controller cable**: 3 m
- **Power supply**: 0.9 kVA
- **Mass**: 14 kg
- **Connectable controller**: TS3000, TS3000E

For *1 to *3 please see page 25.

### Dimensions

- **Working envelope**
  - Axis 1: ±115 deg
  - Axis 2: ±145 deg
  - Axis 3 (Axis Z): 0–120 mm
  - Axis 4 (Axis C): ±360 deg

### CAD Download URL


---

**Z view**

- **Battery case**
- **Hand I/O connector**
- **Pneumatic joint for users (4×M5)**
- **Mounting holes**

**Detail view of T-shaped slot for peripheral device mount**

- **Space for cable (Over 80)**

**Detail view of EOAT**

- **Pneumatic joint for cleanroom vacuum for 8φ tube**
- **Hand I/O connector**
- **Break release switch for Axis 3**
- **Motor power connector**
- **Encoder connector**
- **M4 tapped for grounding**

**Space for EOAT 27**

- **φ9**

---

28 SCARA ROBOTS
TH Series

TH450A

<table>
<thead>
<tr>
<th>Model</th>
<th>TH450A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>450 mm (200 mm+250 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±120 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0–150 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>600 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>600 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2000 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>2000 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>7.3 m/sec</td>
</tr>
<tr>
<td>Standard cycle time</td>
<td>0.30 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>5 kg (rated 2 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>0.06 kg-m²</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.005 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td>8 inputs and 8 outputs</td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>φ4 x 4 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>2.3 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>26 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS3000, TS3000E</td>
</tr>
</tbody>
</table>

For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.

External View

Model TH450A
Arm length (1st Arm + 2nd Arm) 450 mm (200 mm+250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0–150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 600 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 7.3 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg-m²
Positioning repeatability X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 26 kg
Connectable controller TS3000, TS3000E
For *1 to *3 please see page 25.
External View

Model TH550A
Arm length (1st Arm + 2nd Arm) 550 mm (300 mm + 250 mm)
Working envelope
Axis 1 ±120 deg
Axis 2 ±145 deg
Axis 3 (Axis Z) 0~150 mm
Axis 4 (Axis C) ±360 deg
Maximum speed
Axis 1 375 deg/sec
Axis 2 600 deg/sec
Axis 3 (Axis Z) 2000 mm/sec
Axis 4 (Axis C) 2000 deg/sec
Composite (Axis 1 and 2 composite) 6.2 m/sec
Standard cycle time 0.30 sec (with 2 kg load)
Maximum payload mass 5 kg (rated 2 kg)
Allowable moment of inertia 0.06 kg·m²
Positioning repeatability
X-Y ±0.01 mm
Axis Z (Axis 3) ±0.01 mm
Axis C (Axis 4) ±0.005 deg
Hand wiring 8 inputs and 8 outputs
Hand pneumatic joint φ4 x 4 pcs
Robot controller cable 5 m
Power supply 2.3 kVA
Mass 28 kg
Connectable controller TS3000, TS3000E

For *1 to *3 please see page 25.

TH650A

**External View**

**Working envelope**
- Axis 1: ±160 deg
- Axis 2: ±143 deg
- Axis 3 (Axis Z): 0–200 mm
- Axis 4 (Axis C): ±360 deg

**Maximum speed**
- Axis 1: 340 deg/sec
- Axis 2: 600 deg/sec
- Axis 3 (Axis Z): 2050 mm/sec
- Axis 4 (Axis C): 1700 deg/sec
- Composite (Axis 1 and 2 composite): 7.52 m/sec

**Standard cycle time**
- 0.31 sec (with 2 kg load)

**Maximum payload mass**
- 10 kg (rated 2 kg)

**Allowable moment of inertia**
- 0.1 kg·m²

**Positioning repeatability**
- X-Y: ±0.01 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.004 deg

**Hand wiring**
- 5 inputs and 4 outputs

**Hand pneumatic joint**
- φ6 x 4 pcs

**Robot controller cable**
- 5 m

**Power supply**
- 3.5 kVA

**Mass**
- 52 kg

**Connectable controller**
- TS3100, TS3100E

For *1 to *3 please see page 25.

**CAD Download URL**
TH850A

Model | TH850A
---|---
Arm length (1st Arm + 2nd Arm) | 850 mm (300 mm+550 mm)
Working envelope | 
Axis 1 | ±160 deg
Axis 2 | ±145 deg
Axis 3 (Axis Z) | 0~200 mm
Axis 4 (Axis C) | ±360 deg
Maximum speed | 
Axis 1 | 300 deg/sec
Axis 2 | 420 deg/sec
Axis 3 (Axis Z) | 2050 mm/sec
Axis 4 (Axis C) | 1200 deg/sec
Composite (Axis 1 and 2 composite) | 8.13 m/sec
Standard cycle time | 0.39 sec (with 2 kg load)
Maximum payload mass | 20 kg (rated 5 kg)
Allowable moment of inertia | 0.2 kg·m²
Positioning repeatability | 
X-Y | ±0.01 mm
Axis Z (Axis 3) | ±0.01 mm
Axis C (Axis 4) | ±0.004 deg
Hand wiring | 5 inputs and 4 outputs
Hand pneumatic joint | φ6 x 4 pcs
Robot controller cable | 5 m
Power supply | 4.4 kVA
Mass | 76 kg
Connectable controller | TS3100, TS3100E

For *1 to *3 please see page 25.

External View

Detail view of EOAT

Detail view of mounting holes

Z view

Detail view of base mount

Model | TH1050A
---|---
Arm length (1st Arm + 2nd Arm) | 1050 mm (550 mm+500 mm)

### Working envelope

<table>
<thead>
<tr>
<th>Axis</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 1 (Axis 1)</td>
<td>±160 deg</td>
</tr>
<tr>
<td>Axis 2 (Axis 2)</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0–200 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
</tbody>
</table>

### Maximum speed

<table>
<thead>
<tr>
<th>Axis</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 1 (Axis 1)</td>
<td>300 deg/sec</td>
</tr>
<tr>
<td>Axis 2 (Axis 2)</td>
<td>420 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>2050 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1200 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>9.15 m/sec</td>
</tr>
</tbody>
</table>

### Standard cycle time

- 0.39 sec (with 2 kg load)

### Maximum payload mass

- 20 kg (rated 5 kg)

### Allowable moment of inertia

- 0.2 kg·m²

### Positioning repeatability

- X-Y: ±0.01 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.004 deg

### Hand wiring

- 5 inputs and 4 outputs

### Hand pneumatic joint

- φ6 x 4 pcs

### Robot controller cable

- 5 m

### Power supply

- 4.4 kVA

### Mass

- 80 kg

### Connectable controller

- TS3100, TS3100E

For *1 to *3 please see page 25.

---

**External View**

**Model TH1050A**

**Arm length (1st Arm + 2nd Arm)** 1050 mm (550 mm+500 mm)

**Working envelope**

- Axis 1 ±160 deg
- Axis 2 ±145 deg
- Axis 3 (Axis Z) 0–200 mm
- Axis 4 (Axis C) ±360 deg

**Maximum speed**

- Axis 1 300 deg/sec
- Axis 2 420 deg/sec
- Axis 3 2050 mm/sec
- Axis 4 1200 deg/sec
- Composite (Axis 1 and 2 composite) 9.15 m/sec

**Standard cycle time**

- 0.39 sec (with 2 kg load)

**Maximum payload mass**

- 20 kg (rated 5 kg)

**Allowable moment of inertia**

- 0.2 kg·m²

**Positioning repeatability**

- X-Y ±0.01 mm
- Axis Z ±0.01 mm
- Axis C ±0.004 deg

**Hand wiring**

- 5 inputs and 4 outputs

**Hand pneumatic joint**

- φ6 x 4 pcs

**Robot controller cable**

- 5 m

**Power supply**

- 4.4 kVA

**Mass**

- 80 kg

**Connectable controller**

- TS3100, TS3100E

*For *1 to *3 please see page 25.*

---

**CAD Download URL**

## TH Series

### TH1200A

<table>
<thead>
<tr>
<th>Model</th>
<th>TH1200A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm length (1st Arm + 2nd Arm)</td>
<td>1200 mm (700 mm+500 mm)</td>
</tr>
<tr>
<td>Working envelope</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>±160 deg</td>
</tr>
<tr>
<td>Axis 2</td>
<td>±145 deg</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>0~200 mm</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>±360 deg</td>
</tr>
<tr>
<td>Maximum speed</td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>240 deg/sec</td>
</tr>
<tr>
<td>Axis 2</td>
<td>330 deg/sec</td>
</tr>
<tr>
<td>Axis 3 (Axis Z)</td>
<td>1800 mm/sec</td>
</tr>
<tr>
<td>Axis 4 (Axis C)</td>
<td>1000 deg/sec</td>
</tr>
<tr>
<td>Composite (Axis 1 and 2 composite)</td>
<td>7.9 m/sec</td>
</tr>
<tr>
<td>Standard cycle time</td>
<td>0.57 sec (with 2 kg load)</td>
</tr>
<tr>
<td>Maximum payload mass</td>
<td>20 kg (rated 5 kg)</td>
</tr>
<tr>
<td>Allowable moment of inertia</td>
<td>0.2 kg-m²</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
</tr>
<tr>
<td>X-Y</td>
<td>±0.03 mm</td>
</tr>
<tr>
<td>Axis Z (Axis 3)</td>
<td>±0.02 mm</td>
</tr>
<tr>
<td>Axis C (Axis 4)</td>
<td>±0.005 deg</td>
</tr>
<tr>
<td>Hand wiring</td>
<td></td>
</tr>
<tr>
<td>5 inputs and 4 outputs</td>
<td></td>
</tr>
<tr>
<td>Hand pneumatic joint</td>
<td>6 x 4 pcs</td>
</tr>
<tr>
<td>Robot controller cable</td>
<td>5 m</td>
</tr>
<tr>
<td>Power supply</td>
<td>4.4 kVA</td>
</tr>
<tr>
<td>Mass</td>
<td>83 kg</td>
</tr>
<tr>
<td>Connectable controller</td>
<td>TS3100, TS3100E</td>
</tr>
</tbody>
</table>

For *1 to *3 please see page 25.
THP Series

Fastest cycle time: 0.29 sec
Withstands 24-hour high-cycle operation
Assists automation for continuous operations

Suitable for handling items such as food and clothing products and
the inspection of automobile components and electronic parts

### THP 550 - Z - B - E - S

<table>
<thead>
<tr>
<th>Arm length</th>
<th>Z-Axis long stroke</th>
<th>E: CE Marking</th>
<th>Special specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option</td>
<td>B: With protective bellows, C: With cap, CRB: Cleanroom specification, IP65: IP65 Dust-proof, T: Ceiling mount type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### THP550

- **Arm length (1st Arm + 2nd Arm)**: 550 mm (300 mm+250 mm)
- **Maximum speed (Axis 1 and 2 composite)**: 6.21 m/sec
- **Standard cycle time**: 0.29 sec (with 1 kg load)
- **Maximum payload mass**: 2 kg (rated 1 kg)
- **Positioning repeatability**
  - X-Y: ±0.015 mm
  - Axis Z (Axis 3): ±0.01 mm
  - Axis C (Axis 4): ±0.02 deg
- **Mass**: 26 kg
- **Connectable controller**: TS3000, TS3000E

### THP700

- **Arm length (1st Arm + 2nd Arm)**: 700 mm (350 mm+350 mm)
- **Maximum speed (Axis 1 and 2 composite)**: 7.8 m/sec
- **Standard cycle time**: 0.345 sec (with 2 kg load)
- **Maximum payload mass**: 10 kg (rated 2 kg)
- **Positioning repeatability**
  - X-Y: ±0.03 mm
  - Axis Z (Axis 3): ±0.02 mm
  - Axis C (Axis 4): ±0.02 deg
- **Mass**: 57 kg
- **Connectable controller**: TS3100, TS3100E

---

*1: Continuous operation is not possible beyond the effective load ratio. Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning.
*2: Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.
*3: Positioning repeatability accuracy in one-direction movement, when the environmental temperature and motor temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount. Positioning repeatability for X-Y and C are for when Z-axis is at the uppermost position. Trajectory accuracy is not ensured.
**External View**

**Model:** THP550

**Arm length (1st Arm + 2nd Arm):** 550 mm (300 mm + 250 mm)

**Working envelope:**
- Axis 1: ±120 deg
- Axis 2: ±145 deg
- Axis 3 (Axis Z): 0~150 mm
- Axis 4 (Axis C): ±360 deg

**Maximum speed:**
- Axis 1: 375 deg/sec
- Axis 2: 600 deg/sec
- Axis 3 (Axis Z): 2000 mm/sec
- Axis 4 (Axis C): 2000 deg/sec
- Composite (Axis 1 and 2 composite): 6.21 m/sec

**Standard cycle time:** 0.29 sec (with 1 kg load)

**Maximum payload mass:** 2 kg (rated 1 kg)

**Allowable moment of inertia:** 0.01 kg·m²

**Positioning repeatability:**
- X-Y: ±0.015 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.02 deg

**Hand wiring:** 8 inputs and 8 outputs

**Hand pneumatic joint:** φ4 × 4 pcs

**Robot controller cable:** 5 m

**Power supply:** 2.3 kVA

**Mass:** 26 kg

**Connectable controller:** TS3000, TS3000E

For *1 to *3 please see page 25.

**CAD Download URL:** https://www.shibaura-machine.co.jp/en/product/robot/download.html

---

**TH Series**

**THP550**

Arm length (1st Arm + 2nd Arm) 550 mm (300 mm + 250 mm)

Working envelope
- Axis 1: ±120 deg
- Axis 2: ±145 deg
- Axis 3 (Axis Z): 0~150 mm
- Axis 4 (Axis C): ±360 deg

Maximum speed
- Axis 1: 375 deg/sec
- Axis 2: 600 deg/sec
- Axis 3 (Axis Z): 2000 mm/sec
- Axis 4 (Axis C): 2000 deg/sec
- Composite (Axis 1 and 2 composite): 6.21 m/sec

Standard cycle time 0.29 sec (with 1 kg load)

Maximum payload mass 2 kg (rated 1 kg)

Allowable moment of inertia 0.01 kg·m²

Positioning repeatability
- X-Y: ±0.015 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.02 deg

Hand wiring 8 inputs and 8 outputs

Hand pneumatic joint φ4 × 4 pcs

Robot controller cable 5 m

Power supply 2.3 kVA

Mass 26 kg

Connectable controller TS3000, TS3000E

For *1 to *3 please see page 25.

---

**External View**

**Model:** THP550

Arm length (1st Arm + 2nd Arm) 550 mm (300 mm + 250 mm)

Working envelope
- Axis 1: ±120 deg
- Axis 2: ±145 deg
- Axis 3 (Axis Z): 0~150 mm
- Axis 4 (Axis C): ±360 deg

Maximum speed
- Axis 1: 375 deg/sec
- Axis 2: 600 deg/sec
- Axis 3 (Axis Z): 2000 mm/sec
- Axis 4 (Axis C): 2000 deg/sec
- Composite (Axis 1 and 2 composite): 6.21 m/sec

Standard cycle time 0.29 sec (with 1 kg load)

Maximum payload mass 2 kg (rated 1 kg)

Allowable moment of inertia 0.01 kg·m²

Positioning repeatability
- X-Y: ±0.015 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.02 deg

Hand wiring 8 inputs and 8 outputs

Hand pneumatic joint φ4 × 4 pcs

Robot controller cable 5 m

Power supply 2.3 kVA

Mass 26 kg

Connectable controller TS3000, TS3000E

For *1 to *3 please see page 25.

---

THP700

Model: THP700

Arm length (1st Arm + 2nd Arm): 700 mm (350 mm + 350 mm)

Working envelope:
- Axis 1: ±120 deg
- Axis 2: ±145 deg
- Axis 3 (Axis Z): 0~150 mm
- Axis 4 (Axis C): ±360 deg

Maximum speed:
- Axis 1: 340 deg/sec
- Axis 2: 600 deg/sec
- Axis 3 (Axis Z): 2050 mm/sec
- Axis 4 (Axis C): 1800 deg/sec
- Composite (Axis 1 and 2 composite): 7.8 m/sec

Standard cycle time: 0.345 sec (with 2 kg load)

Maximum payload mass: 10 kg (rated 2 kg)

Allowable moment of inertia:
- X-Y: ±0.015 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.01 deg

Positioning repeatability:
- X-Y: ±0.015 mm
- Axis Z (Axis 3): ±0.01 mm
- Axis C (Axis 4): ±0.01 deg

Hand wiring: 8 inputs and 8 outputs

Hand pneumatic joint: ø6 x 4 pcs

Robot controller cable: 5 m

Power supply: 4.8 kVA

Mass: 57 kg

Connectable controller: TS3100, TS3100E

For *1 to *3 please see page 25.

External View

- Y view
- Z view
- Working envelope
- Detail view of EOAT

There are various options so robots can be used in a variety of applications, environments, and layouts.

**Z-Axis long stroke (Z)**
The Z-Axis stroke range is extended. Useful when handling long work pieces and when height and depth is required.

**Protective bellows for Z-Axis (B)**
Bellows protect the lower part of the ball screw when liquid or particles could become attached.
*Cycle time and working envelope of Z-axis (axis 3) is different from standard specification. Please contact us for more details.*

**Z-axis upper cap (C)**
Cap protects the upper part of the ball screw when liquid or particles could become attached. It also prevents the cable from touching peripheral equipment.

**Cleanroom specification (CRB/CR)**
Our SCARA robots have optional CRB specifications, which are equivalent to ISO Air Cleanliness Class 3, or CR specifications for a simple clean environment. These options are useful in dust-free manufacturing processes, such as semi-conductor and liquid crystal manufacturing. Choose a CRB-specification or CR-specification robot in accordance with your operating environment.

**Order model code**

<table>
<thead>
<tr>
<th>No.</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No symbol</td>
</tr>
<tr>
<td>No option (standard)</td>
<td>Z-Axis long stroke</td>
</tr>
<tr>
<td>2</td>
<td>No symbol</td>
</tr>
<tr>
<td>No option (standard)</td>
<td>Protective bellows for Z-axis</td>
</tr>
<tr>
<td>B</td>
<td>Protective bellows for Z-axis</td>
</tr>
<tr>
<td>C</td>
<td>Z-axis upper cap (C)</td>
</tr>
<tr>
<td>CRB</td>
<td>Cleanroom specification</td>
</tr>
<tr>
<td>IP</td>
<td>Dust-proof and splash-proof specification (IP65)</td>
</tr>
<tr>
<td>T</td>
<td>Ceiling mount type</td>
</tr>
<tr>
<td>3</td>
<td>No symbol</td>
</tr>
<tr>
<td>No special marking (standard)</td>
<td>E CE Marking</td>
</tr>
<tr>
<td>No special marking (standard)</td>
<td>K KCs Marking</td>
</tr>
<tr>
<td>4</td>
<td>No symbol</td>
</tr>
<tr>
<td>No other options (standard)</td>
<td>S Special specification</td>
</tr>
</tbody>
</table>
Dust-proof and splash-proof specification (IP)
Dust-proof and splash-proof specification equivalent to IP65. (Does not allow dust intrusion and prevents the robot from the harmful effects of splashing water.)
*Limitation of acceleration/deceleration rates. Please contact us for more details.

Ceiling-mount type (T)
Space can be saved by installing ceiling mounted robots above the work area.
*Working envelope is different from standard specification. Please contact us for more details.

Optional cables length
The length of the cable between a SCARA robot and its controller can be extended.
Suitable for when the robot and controller panel are far apart.
*Maximum length depends on the controller. Please contact us for more details.

Tool flange for end effector mounting
Flange helps to attach a tool, such as a gripper, at the end of the ball screw.
*Please refer to dimensions of each robot for mounting method.

---

### Option table

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Symbol</th>
<th>TH450A, TH550A</th>
<th>TH650A</th>
<th>TH850A, TH1050A, TH1200A</th>
</tr>
</thead>
<tbody>
<tr>
<td>No option (standard)</td>
<td>1</td>
<td>No symbol</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Z-Axis long stroke</td>
<td>2</td>
<td>Z</td>
<td>○ (300 mm)</td>
<td>○ (400 mm)</td>
<td>○ (400 mm)</td>
</tr>
<tr>
<td>No option (standard)</td>
<td>3</td>
<td>No symbol</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Protective bellows for Z-axis</td>
<td></td>
<td>B</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Z-axis upper cap (C)</td>
<td></td>
<td>C</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cleanroom specification</td>
<td></td>
<td>CRB</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Dust-proof and splash-proof specification (IP65)</td>
<td></td>
<td>IP</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Ceiling-mount type</td>
<td></td>
<td>T</td>
<td>○</td>
<td>○</td>
<td>○ (TH1050A only)</td>
</tr>
<tr>
<td>No special marking (standard)</td>
<td></td>
<td>No symbol</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>CE Marking</td>
<td>3</td>
<td>E</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>KCs Marking</td>
<td></td>
<td>K</td>
<td>Δ</td>
<td>Δ</td>
<td>○</td>
</tr>
<tr>
<td>No other options (standard)</td>
<td>4</td>
<td>No symbol</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Special specification</td>
<td></td>
<td>S</td>
<td>Δ</td>
<td>Δ</td>
<td>Δ</td>
</tr>
</tbody>
</table>
**Controller Teach Pendant**

**Small and lightweight**

Small and lightweight controller (height 161 mm to 266 mm)
Contributes to the reduction in size of a control panel

**Powerful software**

Provides world-class programming support
User-friendly software

**TC mini (simple PLC) function**

Includes simple PLC function as standard
Customization possible for I/O allocation
**Controller**

**TS5000**

---

**Model TS5000**

**Number of controlled axes**: 4 axis

**Program language**: SCOL2 (Original language)

**Movement command**: PTP (point to point), CP (Continuous Path: Line, Circular), short-cut, arch motion

**Memory**: Built-in Flash ROM

- **Capacity**: 12 Mbytes
- **Auxiliary memory**: SD card (SD and SDHC)
  - **Maximum capacity**: 32 Gbytes

**Number of programs that can be stored**

- **Maximum**: 512
- **Use files**: 502
  - **System files**: 10

**Auxiliary memory**

- **Maximum**: 512
- **Use files**: 512

**Maximum number of program lines**

- **Per program**: Teaching points: 5,000 points
- **Program part**: 5,000 lines

**I/O signals**

- **General**: 8 inputs and 8 outputs
- **System**: 13 input signals
  - Program selection, start, stop, program reset, etc.
  - 9 output signals
  - Servo on, emergency stop, fault, etc.

**Communication port**

- **Ethernet**: 8 ports
- **Main power supply**: Single phase AC190 V to 240 V 50/60 Hz
- **Power supply for I/O signals**: DC24 V (over 100 W)

**Outer dimensions**: 365 (W) x 161 (H) x 350 (D) mm

**Mass**: 11 kg

**Teach Pendant (optional)**

- **Teach Pendant**: TP5000, TP1000

**Connectable robot**: TH5000

---

**Order model code**

```
TS5000 - M S - HR - IO - CC - CV
```

- **Power board capacity**
  - M: THE/THA equivalent power board
- **OS type**
  - S: (SCARA) 4-axis System
- **Hand I/O**
  - Hand I/O is built in the robot (8 inputs and 8 outputs)
- **Extended I/O**
  - Without expansion I/O
  - With expansion I/O
- **Fieldbus**
  - No symbol
  - Without fieldbus
  - With fieldbus
    - CC: CC-Link
    - DN: DeviceNet
    - PB: PROFIBUS
    - IP: EtherNet/IP
    - PN: PROFINET
- **Conveyor tracking synchronization function**
  - No symbol
  - Without conveyor tracking synchronization function
  - With conveyor tracking synchronization function

---

**Improve in synchronized control and tracking precision by enhanced servo performances.**

Faster control cycle results in improved synchronized control and tracking precision (position control cycle is three times faster than the previous model). This enables more sensitive control during the robot's fast movements and improves its performance in such aspects as locus precision and vibration suppression.

Acceleration auto adjustment function (SPURT function) - acceleration rate is increased when the load stress to the motor and reduction gear is low. This contributes to a shorter cycle time.

**Improved communication performance and IoT fast data communication**

Enhanced communication capabilities with Gigabit Ethernet. Real-time transmission of internal data is possible.

Enhanced Ethernet communication for better functionality.

Easy to use by most popular communication standard.

Simultaneous communication by 8 general-purpose ports (IP1–8) and dedicated ports (motion command port, monitor port, periodic communication port, etc.) is possible and improves operation efficiency. Ready to meet the requirement for taking part in a "heavy-edge" system, as improves precision in AI vibration analysis and data collection for predictive and preventative maintenance.

**Enhanced robot programming language**

New compiler (processing system).

Clear and succinct SCOL program with new and improved commands. For example functions include character string type variables, string manipulation functions, conditional branching and coordinate conversion functions.

**The compact controller contributes to a smaller control panel**

The small and high performance controller features a new CPU with improved functionality.

All the connectors are on the front side. Its size and installation area are approximately 2/3 smaller than the existing model (TS3100). The compact controller contributes to a smaller control panel.

The fan-less design reduces maintenance.

**Increase in user file capacity**

File memory capacity has been increased to 12 MB. With the addition of an SD card, it can be increased to a maximum of 32 Gb.

**Other features**

Built-in PLC TCmini is included as standard. Changes of input and output signals can be made and stored in the memory without restriction.

---

**Please see website for details**

### TSL3000, TSL3000E

<table>
<thead>
<tr>
<th>Model</th>
<th>TSL3000</th>
<th>TSL3000E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of controlled axes</td>
<td>4 axis</td>
<td>4 axis</td>
</tr>
<tr>
<td>Program language</td>
<td>SCOL (Original language)</td>
<td>SCOL (Original language)</td>
</tr>
<tr>
<td>Movement command</td>
<td>PTP (point to point), CP (Continuous Path: Linear, Circular), short-cut, arch motion</td>
<td>PTP (point to point), CP (Continuous Path: Linear, Circular), short-cut, arch motion</td>
</tr>
<tr>
<td>Memory</td>
<td>0.5 MB</td>
<td>1.5 MB</td>
</tr>
<tr>
<td>Auxiliary memory</td>
<td>USB memory</td>
<td>USB memory</td>
</tr>
<tr>
<td>Number of programs that can be stored</td>
<td>Maximum: 256 Use files: 243 System files: 13</td>
<td>Maximum: 256 Use files: 243 System files: 13</td>
</tr>
<tr>
<td>Maximum number of program lines</td>
<td>Per program, Teaching points: 2000 points Program part: 3000 lines</td>
<td>Per program, Teaching points: 2000 points Program part: 3000 lines</td>
</tr>
<tr>
<td>I/O signals</td>
<td>General: 8 inputs and 8 outputs</td>
<td>General: 32 inputs and 32 outputs</td>
</tr>
<tr>
<td>System</td>
<td>13 input signals: Program selection, start, stop, program reset, etc. 9 output signals: Servo on, emergency stop, fault, etc.</td>
<td>13 input signals: Program selection, start, stop, program reset, etc. 9 output signals: Servo on, emergency stop, fault, etc.</td>
</tr>
<tr>
<td>Communication port</td>
<td>RS-232C: 1 port (COM1) general</td>
<td>RS-232C: 1 port (COM1) general</td>
</tr>
<tr>
<td>Power supply</td>
<td>Single phase AC190 V to 240 V 50/60 Hz</td>
<td>Single phase AC200 V to 240 V 50/60 Hz</td>
</tr>
<tr>
<td>Power supply for I/O signals</td>
<td>DC24 V (over 100 W)</td>
<td>DC24 V (over 100 W)</td>
</tr>
<tr>
<td>Outer dimensions</td>
<td>150 (W) x 266 (H) x 304 (D) mm²</td>
<td>290 (W) x 241 (H) x 298 (D) mm²</td>
</tr>
<tr>
<td>Mass</td>
<td>7 kg</td>
<td>13 kg</td>
</tr>
<tr>
<td>Teach Pendant (optional)</td>
<td>Teach Pendant: TP1000, TP3000</td>
<td>Teach Pendant: TP1000, TP3000</td>
</tr>
</tbody>
</table>

*1: Please see specification table for power capacity of each robot
*2: Height (H) includes the rubber legs.

### TS3000, TS3000E

<table>
<thead>
<tr>
<th>Model</th>
<th>TS3000, TS3000E</th>
<th>TS3100, TS3100E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of controlled axes</td>
<td>4 axis</td>
<td>6 axis</td>
</tr>
<tr>
<td>Program language</td>
<td>SCOL (Original language)</td>
<td>SCOL (Original language)</td>
</tr>
<tr>
<td>Movement command</td>
<td>PTP (point to point), CP (Continuous Path: Linear, Circular), short-cut, arch motion</td>
<td>PTP (point to point), CP (Continuous Path: Linear, Circular), short-cut, arch motion</td>
</tr>
<tr>
<td>Memory</td>
<td>1.5 MB</td>
<td>1.5 MB</td>
</tr>
<tr>
<td>Auxiliary memory</td>
<td>USB memory</td>
<td>USB memory</td>
</tr>
<tr>
<td>Number of programs that can be stored</td>
<td>Maximum: 256 Use files: 243 System files: 13</td>
<td>Maximum: 256 Use files: 243 System files: 13</td>
</tr>
<tr>
<td>Maximum number of program lines</td>
<td>Per program, Teaching points: 2000 points Program part: 3000 lines</td>
<td>Per program, Teaching points: 2000 points Program part: 3000 lines</td>
</tr>
<tr>
<td>I/O signals</td>
<td>General: 32 inputs and 32 outputs</td>
<td>General: 32 inputs and 32 outputs</td>
</tr>
<tr>
<td>System</td>
<td>13 input signals: Program selection, start, stop, program reset, etc. 9 output signals: Servo on, emergency stop, fault, etc.</td>
<td>13 input signals: Program selection, start, stop, program reset, etc. 9 output signals: Servo on, emergency stop, fault, etc.</td>
</tr>
<tr>
<td>Communication port</td>
<td>RS-232C: 1 port (COM1) general</td>
<td>RS-232C: 1 port (COM1) general</td>
</tr>
<tr>
<td>Power supply</td>
<td>Single phase AC200 V to 240 V 50/60 Hz</td>
<td>Single phase AC200 V to 240 V 50/60 Hz</td>
</tr>
<tr>
<td>Power supply for I/O signals</td>
<td>DC24 V (over 100 W)</td>
<td>DC24 V (over 100 W)</td>
</tr>
<tr>
<td>Outer dimensions</td>
<td>290 (W) x 241 (H) x 298 (D) mm²</td>
<td>420 (W) x 241 (H) x 298 (D) mm²</td>
</tr>
<tr>
<td>Mass</td>
<td>13 kg</td>
<td>17 kg</td>
</tr>
<tr>
<td>Teach Pendant (optional)</td>
<td>Teach Pendant: TP1000, TP3000</td>
<td>Teach Pendant: TP1000, TP3000</td>
</tr>
</tbody>
</table>

*1: Please see specification table for power capacity of each robot
*2: Height (H) includes the rubber legs.

Please see website for details

* TSL3000, TSL3000E
* TS3000
* TS3100
Improved operability
With 7-inch, widescreen color touch-sensitive panel for intuitive operation is realized.
In the larger display area, programs and position data can be checked easily. Split-screen display allows two sets of data to be shown side-by-side, for example the current position display and program monitor. Program editing can be done with the full on-screen keyboard.

Ease of handling and operation.
Fast boot-up, ready in 30 seconds. Multiple languages are selectable including Japanese, English and Chinese with Korean planned. Master mode (AUTO/MANUAL) switchable by key switch on the teach pendant.

Model | Display devices | Input method | Mass | Outer dimensions | Cable length | Protection level | Connectable controller |
--- | --- | --- | --- | --- | --- | --- | --- |
TP5000 | 7-Inch, wide TFT LCD | Touch-Sensitive Operator panel | 800 g (except cable) | 218 (W) × 173 (H) × 60 (D) mm | 5 m (standard), 10 m, 15 m (option) | IP65 | TS5000 |
TP3000 | Graphic operation keyboard | 520 g (except cable) | 226 (W) × 162 (H) × 55 (D) mm | 5 m | IP65 | TSL3000, TSL3000E, TS3000, TS3000E, TS3100, TS3100E |
TP1000 | Button | 600 g (except cable) | 133 (W) × 255 (H) × 48 (D) mm | 5 m | TSL3000, TSL3000E, TS3000, TS3000E, TS3100, TS3100E |

Features an easy-to-view vivid color screen
Equipped with graphic operation keys
Equipped with language association function
Outline function

Please see website for details
Built-in PLC TCmini

A PLC (TCmini) is built into the controllers. Input and output signals can be handled by ladder-style programming logic, independent from robot motion. Please use “TC-WORX” optional software for editing.

[Features and advantages]
- TCmini controls input/output signals of standard I/O, extension I/O and touch-sensitive panel by ladder program and exchanges data with robot program.
- Address of I/O can be changed, and contributes to flexible system design.

Industrial networks

Various industrial networks are supported. Please refer to the table for each applicable industrial network. The usable number of I/O is dependant on network.
Vision + Conveyor Synchronization

- A large number and variety of types of work pieces on a conveyor can be sorted and put into boxes by multiple robots in coordination.
- Damage and breakage of work pieces is avoided by synchronization with the conveyor.
- Programming is made easy with special, dedicated commands to achieve efficient work-piece handling, with functionalities such as identification and duplicate data avoidance.

CE Marking

KCs Marking

Applicable to each marking

Additional axis

An additional axis can be added for usage such as moving the robot on a traverse axis.

Extended I/O Unit

The number of I/O signals can be increased with the addition of the extended I/O module.

Option table

<table>
<thead>
<tr>
<th></th>
<th>TS5000</th>
<th>TSL3000</th>
<th>TSL3000E</th>
<th>TS3000</th>
<th>TS3000E</th>
<th>TS3100</th>
<th>TS3100E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built-in PLC TCmini</td>
<td>1 k word 2 ms</td>
<td>1 k word 5 ms</td>
<td>1 k word 5 ms</td>
<td>1 k word 5 ms</td>
<td>1 k word 5 ms</td>
<td>1 k word 5 ms</td>
<td></td>
</tr>
<tr>
<td>Industrial network¹</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vision + Conveyor Synchronization</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CE Marking</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>KCs Marking</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Additional axis</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Extended I/O Unit</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

¹: Ethernet is registered trademark of XEROX Corp. from the U.S.
CC-Link is registered trademark of CC-Link society.
DeviceNet and Ethernet/IP is registered trademark of ODVA.
PROFIBUS and PROFINET is registered trademark of PROFINET User Organization.
EtherCAT is registered trademark and patent technology of Beckhoff Automation GmbH from Germany.
**Easy Operation**

Easy-to-understand, intuitive screen design, ribbon interface, window-dock function for customizable operator panels

Beginners will find it easy to understand and can quickly master robot programming skills. For experienced robot users, TSAssist helps them make robot programs efficiently.

- Easy-to-understand, intuitive screen design
- Ribbon interface
- Customized operation panels by window-dock function

**High Performance 3D Simulation**

Interference check, Locus display, timer (cycle time measurement), placing simple work pieces and model shapes, loading 3D CAD data, saving 3D simulations to a video file and multi-angle view

These functions enable the accurate and high quality estimation of robot-automation processes. From simple outline simulation to detailed simulation closer to actual machine implementation, TSAssist helps with all phases of the robot automation system life cycle, from initial "sketch," planning, proposal, designing and installation, to the improvement and repurposing of existing facilities.

* "*.stl" files of 3D CAD data can add to TSAssist directly. The conversion software "Virfit Agent" is required to add the "*.stp" files of 3D CAD data.

* USB license key (sold separately) is required to use the high performance 3D simulation.

- Interference check
- Locus display
- Placing simple work pieces
- Loading 3D CAD data
- Multi-angle view
- Timer (cycle time measurement)
- Saving 3D simulation to a video file
Highly Functional Program Editor

Robot language input support (keyword suggestions), outline display and split display.

Point data (taught position information) editor with, sort, search and filter functions. In 3D editor mode, the robot can be guided by mouse dragging and by clicking on the object model surface. No complex position calculation is necessary. With these functions, programming can be done efficiently with minimum mistakes.

- Robot language input support (keyword suggestions)
- Outline display
- Split display
- Point data editor’s sort, search and filter functions
- 3D editor mode enables robot guidance and teaching by mouse

Operating environment

<table>
<thead>
<tr>
<th>OS</th>
<th>Windows7 / 8.1 / 10 (32/64bit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel Core i series or newer than Intel Core2 Quad</td>
</tr>
<tr>
<td>Memory</td>
<td>More than 2 GB recommended</td>
</tr>
<tr>
<td>Monitor</td>
<td>Screen resolution 1024×768 (WXGA) or higher *1366×768 (FHDGA) is recommended</td>
</tr>
<tr>
<td>HDD</td>
<td>More than 1 GB free hard drive space</td>
</tr>
<tr>
<td>Graphics (display)</td>
<td>NVIDIA GeForce series, Quadro series, Intel HD Graphics 4000 or newer recommended</td>
</tr>
<tr>
<td></td>
<td>DirectX 9.0c ready</td>
</tr>
<tr>
<td></td>
<td>More than 64 MB graphics memory recommended</td>
</tr>
<tr>
<td></td>
<td>Direct3D Acceleration enable</td>
</tr>
<tr>
<td>Mouse</td>
<td>Use Wheel Mouse for operation</td>
</tr>
<tr>
<td>USB</td>
<td>Use 1Port (USB2.0 for USB license key)</td>
</tr>
<tr>
<td>DVD-ROM</td>
<td>Use DVD-ROM drive to install this software</td>
</tr>
<tr>
<td>I/F</td>
<td>LAN-Port or COM-Port for connect to Controller</td>
</tr>
</tbody>
</table>

TC-WORX

For programming the simple PLC

1. Ladder-style logic programming for the simple PLC.
2. In addition to program creation, online monitoring of ladder program and I/O status to help reduce development and debugging time.
3. Extensive functions, such as address map display, comment display and search, are provided.
Robot selection guidelines

In order to select a robot model please consider the following factors:

1. Mass and center of gravity-offset values of the work piece and end of arm effector combined

2. Environmental requirements of the installation site
   Environment types: general, cleanroom, dust and splash proof.

3. Area coverage requirements and installation configurations
   Please review the external dimension drawing (CAD file) of each model for the working envelope (area coverage).
   For example: Standard floor-mounted configuration or optional ceiling-mount configuration.
   For example: For a SCARA robot, whether vertical (Z) long-stroke option is required.

4. The robot motion patterns and the time requirement (cycle time) review

5. Cable length requirements (the distance between the robot and the controller)
   Please refer to the specification table of each model for standard cable lengths.
   Optional cable lengths are available. Optional movable cable is available.

6. Controller option requirements
   Please refer to the specification table of each model for available controller options.
   For example: Whether optional field network connectivity is required.

7. Teach Pendant (optional)
   Please select according to the robot type.
   For SCARA robots
   TP1000  TP3000  TP5000

8. PC software
   Please select according to the robot type.
   For SCARA robots
   TSAssist  TC-WORX
   Programming assistance software
   Programming assistance software for TCmini (simple PLC)

* This document presents an overview of our robot product lineup. For full details, such as specification data and external dimension CAD files, please refer to the brochure for each model and our website. Please contact our sales representatives with any questions you may have.

--

SHIBAURA MACHINE CO., LTD.
Control Systems Sales Department, Control Systems Company
2068-3, Ooka, Numazu-shi, Shizuoka-ken 410-8510, Japan
TEL:[81]-(0)55-926-5032  FAX:[81]-(0)55-925-6527

* Contents included in this catalog are subject to change without prior notice.