

INDUSTRIAL ROBOTS

# SCARA ROBOTS

General catalog for SCARA robots

THE Series

THL 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."

# SHIBAURA MAC

|                                                    | TOSHIBA CORPORATION                      |                                                                                     |                                                       | Toshiba Machine Co., Ltd.                |                       |           |               |       |                                 |                             |                                 |                                 |         |        |                                                |
|----------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------|-----------------------|-----------|---------------|-------|---------------------------------|-----------------------------|---------------------------------|---------------------------------|---------|--------|------------------------------------------------|
| SCARA Robot                                        | '81<br>Development of the SCARA robot    |  |                                                       | SR-424HSP                                | TH250                 | TH350     | Model change  |       | TH180                           | TH250A                      | TH350A                          |                                 |         |        |                                                |
|                                                    | '83<br>SR-H Series                       | '87<br>SR-HS Series                                                                 | '92<br>SR-HSP Series                                  | SR-554HSP                                | Model change          |           | TH450         | TH550 | Model change                    |                             |                                 |                                 |         |        |                                                |
| Vertical Articulated Robots and others SCARA Robot |                                          |                                                                                     | '91<br>SR-1054HZ<br>(Heavy payload SCARA robot)       | SR-1504HZ<br>(Heavy payload SCARA robot) |                       |           |               | TH650 |                                 | TH650A                      |                                 |                                 |         |        |                                                |
|                                                    |                                          |                                                                                     |                                                       |                                          |                       |           |               | TH850 | TH1050                          | Model change                |                                 | TH850A                          | TH1050A |        |                                                |
|                                                    | 1980                                     | 1985                                                                                | 1990 '95                                              | 1996                                     | 2000                  | 2001      | 2002          | 2003  | 2004                            | 2005                        | 2006                            | 2007                            | 2008    |        |                                                |
|                                                    | SR-606V<br>(Vertical articulated robot)  | SR-2604V<br>(Palletizer)                                                            | '93 Valibo<br>(Robot for final manufacturing process) |                                          | DTO-800<br>(Die-cast) |           |               | FPD   | TCR20V                          | TCR5L                       | TCR20V2                         | TCR10L                          | TCR12C  | TCR20C | Vertical articulated robot<br>TV800/<br>TV1000 |
|                                                    |                                          |                                                                                     |                                                       |                                          |                       |           | Semiconductor |       | SR-624HC<br>(Cassette Transfer) | SR-F9GL3<br>(FOUP TRANSFER) | SR-404HC<br>(Cassette Transfer) | SR-354VH<br>(Cassette Transfer) |         |        |                                                |
|                                                    | SR-2006V<br>(Vertical articulated robot) | SR-1806V, SR-2206V<br>(Vertical articulated robot)                                  | THP Series<br>(Cartesian coordinate system)           | Coating robot                            | SR-875VP              | SR-875VPN |               |       | TVP1100                         | THC700<br>(SCARA Painting)  |                                 |                                 |         |        |                                                |

# SCARA



# HIGH QUALITY

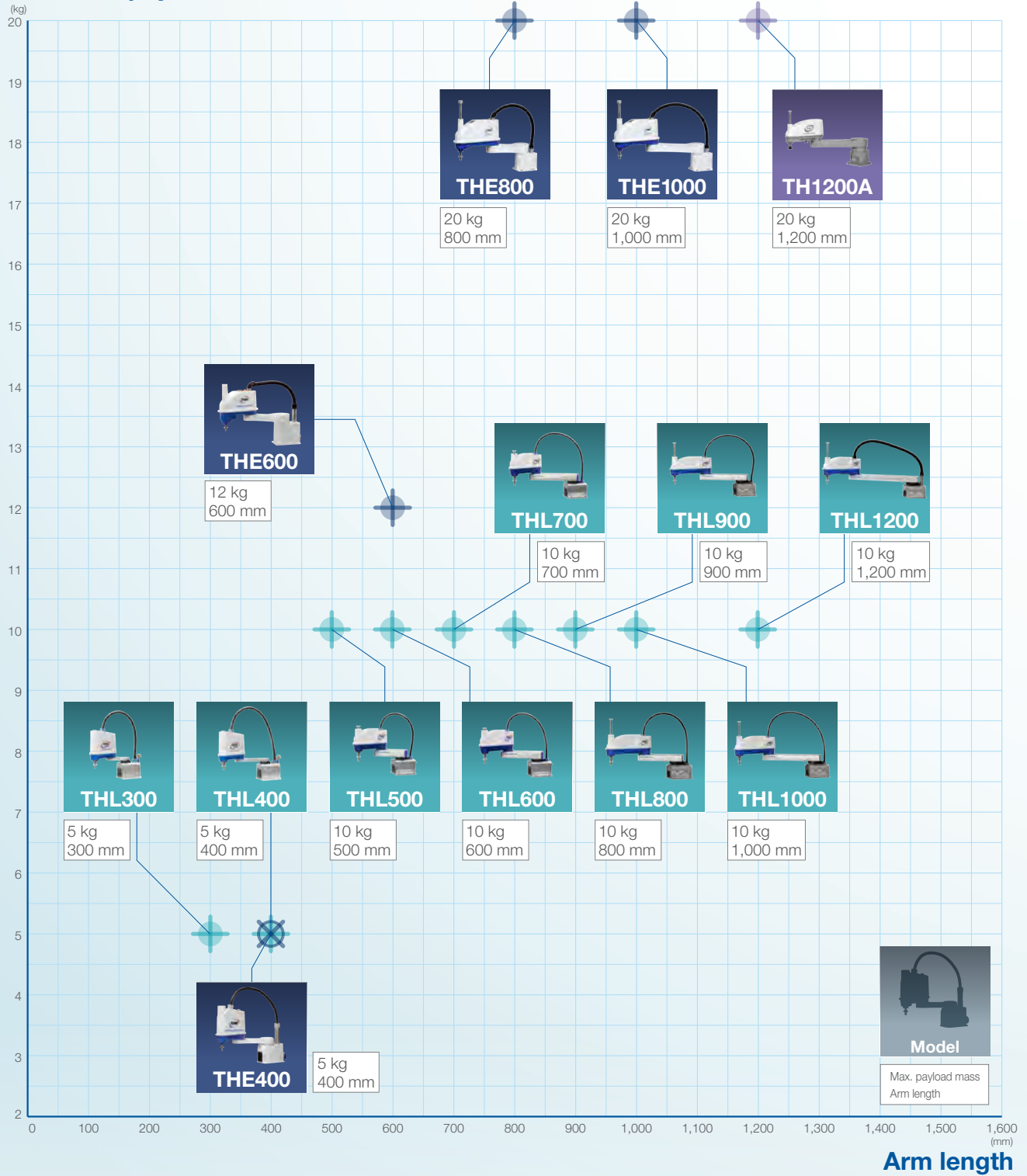
## HISTORY

SHIBAURA MACHINE CO., LTD.

|                                                                                          |                                                                          |                                                                                          |                                                                                           |                                                          |                                                                          |                                                                           |      |                                                                                            |      |                                                            |      |      |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------|------|------------------------------------------------------------|------|------|
| <ul style="list-style-type: none"> <li>TH450A</li> <li>TH550A</li> <li>THP550</li> </ul> | <ul style="list-style-type: none"> <li>THL300</li> <li>THL400</li> </ul> | <ul style="list-style-type: none"> <li>THL500</li> <li>THL600</li> <li>THL700</li> </ul> | <ul style="list-style-type: none"> <li>THL800</li> <li>THL900</li> <li>THL1000</li> </ul> | <ul style="list-style-type: none"> <li>THE400</li> </ul> | <ul style="list-style-type: none"> <li>THE600</li> </ul>                 | <ul style="list-style-type: none"> <li>THE800</li> <li>THE1000</li> </ul> |      |                                                                                            |      |                                                            |      |      |
| 2009                                                                                     | 2010                                                                     | 2011                                                                                     | 2012                                                                                      | 2013                                                     | 2014                                                                     | 2015                                                                      | 2016 | 2017                                                                                       | 2018 | 2019                                                       | 2020 | 2022 |
| <ul style="list-style-type: none"> <li>TV1000H-WP</li> </ul>                             |                                                                          |                                                                                          |                                                                                           | <ul style="list-style-type: none"> <li>TV600</li> </ul>  | <ul style="list-style-type: none"> <li>TVL500</li> <li>TVL700</li> </ul> |                                                                           |      | <ul style="list-style-type: none"> <li>TVM900</li> <li>TVM1200</li> <li>TVM1500</li> </ul> |      |                                                            |      |      |
|                                                                                          |                                                                          |                                                                                          | <ul style="list-style-type: none"> <li>TLD1100 (Line Dancer)</li> </ul>                   |                                                          |                                                                          | <ul style="list-style-type: none"> <li>SWAN</li> <li>CoSWAN</li> </ul>    |      |                                                                                            |      | <ul style="list-style-type: none"> <li>SR-405HC</li> </ul> |      |      |

# Contributes to productivity improvement in line work by high speed operation

## Maximum payload mass



### 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:

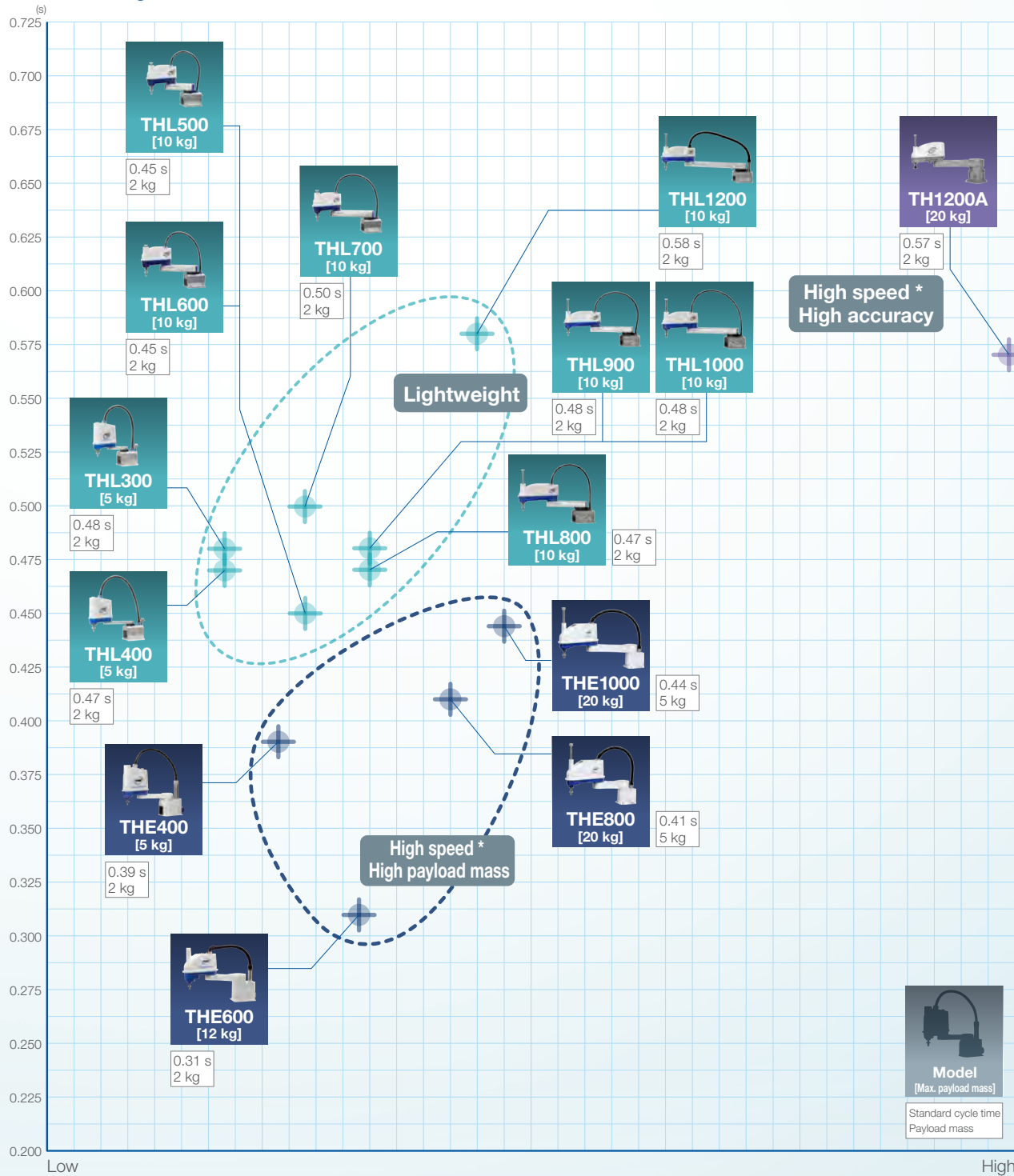
THE Series: P13

THL Series: P25



and high performance handling. Selection can be made according to the application.

### Standard cycle time



Price range



### 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=f7o5qgcEI7I>



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

<https://www.shibaura-machine.co.jp/en/product/robot/download.html>



# Example of applications using SCARA robots

Type: THL

## Conveyance and Inspection of battery cells

The battery cell is transported at high speed to the inspection equipment and can be easily transported even when it is heavy.



To see the application video use this QR Code

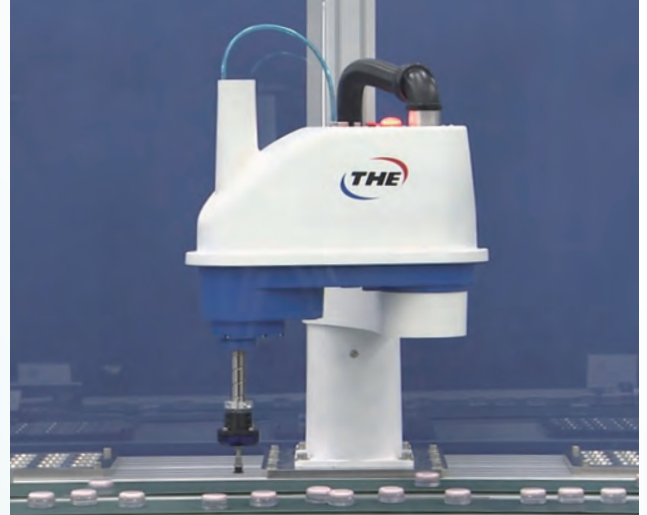
<https://www.youtube.com/watch?v=wBW0KPy3nPc>



Type: THE

## Conveyance of cosmetic items with conveyor tracking

Synchronization with the conveyor enables robots to sort and convey efficiently.



To see the application video use this QR Code

<https://youtu.be/f7o5qgcEI7I>



Type: THL

## Bolt fastening and conveyance of small parts

Assembly of small parts, fastening of bolts and conveying of completed parts.



To see the application video use this QR Code

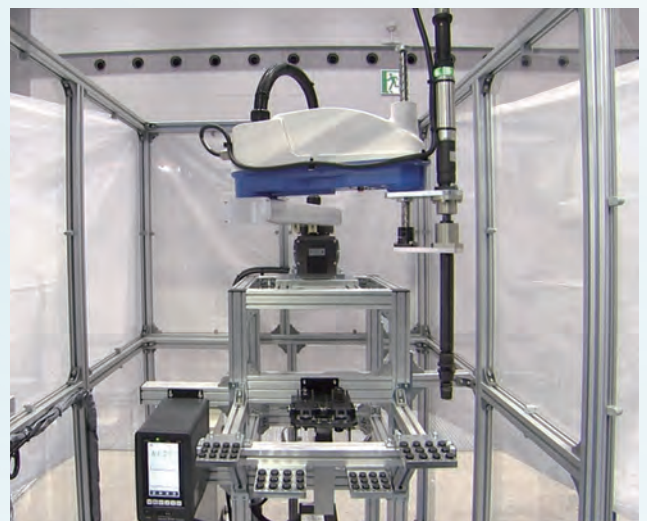
<https://youtu.be/N4tbGTLEBcl>



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.



To see the application video use this QR Code

<https://www.youtube.com/watch?v=0wcvouJxEGl>



# THE Series

## High speed

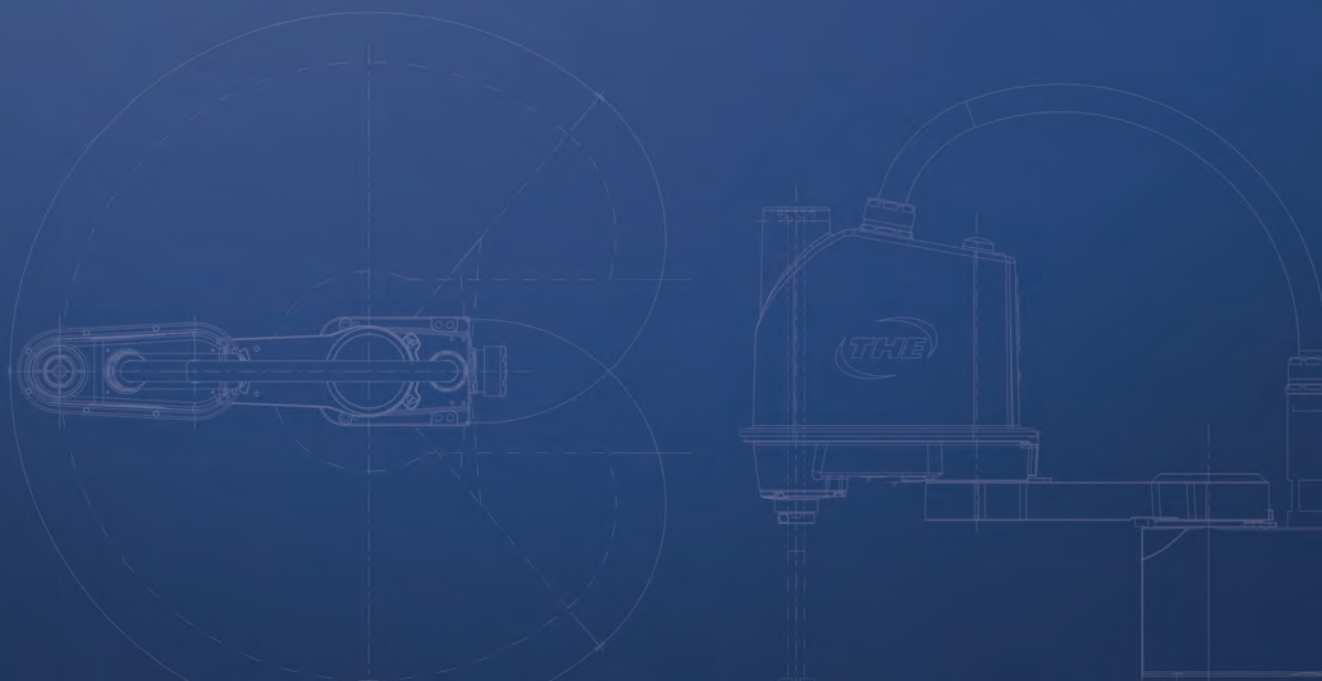
Fastest cycle time : 0.31 sec  
Support of mass production for precision parts

## High accuracy

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

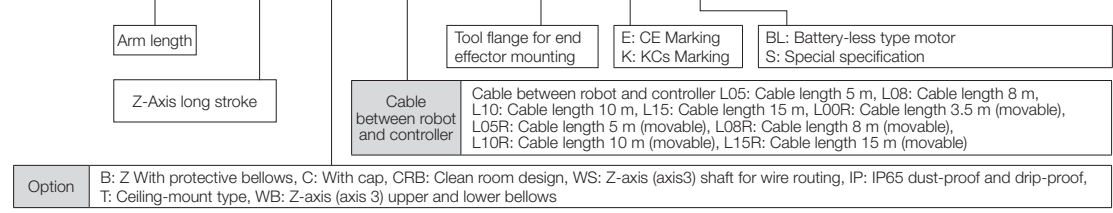
## Accurate movement trajectory

Suitable for coating process for grease and adhesive



Order  
model  
code

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



THE400



THE600



THE800



THE1000

| Model                                             | THE400                                   | THE600                  |
|---------------------------------------------------|------------------------------------------|-------------------------|
| Arm length (1st Arm + 2nd Arm)                    | 400 mm (225 mm+175 mm)                   | 600 mm (325 mm+275 mm)  |
| Maximum speed (Axis 1 and 2 composite)            | 7,000 mm/sec                             | 8,000 mm/s              |
| Standard cycle time (with 2 kg load) <sup>1</sup> | 0.39 sec                                 | 0.31s                   |
| Maximum payload mass <sup>2</sup>                 | 5 kg (rated 1 kg)                        | 12 kg (rated 2 kg)      |
| Positioning repeatability <sup>3</sup>            |                                          |                         |
| X-Y                                               | ±0.01 mm                                 | ±0.01 mm                |
| Axis Z (Axis 3)                                   | ±0.01 mm                                 | ±0.01 mm                |
| Axis C (Axis 4)                                   | ±0.007 deg                               | ±0.005 deg              |
| Mass                                              | 15 kg                                    | 31 kg                   |
| Connectable controller                            | TSL3000, TSL3000E, TS5000-SS, TS5000-EMS | TS5000-MS, TS5000-EMS   |
| Model                                             | THE800                                   | THE1000                 |
| Arm length (1st Arm + 2nd Arm)                    | 800 mm (350 mm+450 mm)                   | 1,000 mm (550 mm+450mm) |
| Maximum speed (Axis 1 and 2 composite)            | 8,400 mm/sec                             | 9,500 mm/sec            |
| Standard cycle time (with 2 kg load) <sup>1</sup> | 0.41 sec                                 | 0.44 sec                |
| Maximum payload mass <sup>2</sup>                 | 20 kg (rated 5 kg)                       | 20 kg (rated 5 kg)      |
| Positioning repeatability <sup>3</sup>            |                                          |                         |
| X-Y                                               | ±0.025 mm                                | ±0.025 mm               |
| Axis Z (Axis 3)                                   | ±0.01 mm                                 | ±0.01 mm                |
| Axis C (Axis 4)                                   | ±0.01 deg                                | ±0.01 deg               |
| Mass                                              | 46 kg                                    | 49 kg                   |
| Connectable controller                            | TS5000-MS, TS5000-EMS                    | TS5000-MS, TS5000-EMS   |

<sup>1</sup>1: Continuous operation is not possible beyond the effective load ratio. Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning.

<sup>2</sup>2: Acceleration/deceleration rates and maximum speed may be limited according to the motion pattern, load mass and amount of offset.

<sup>3</sup>3: Positioning repeatability 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.



# THE400

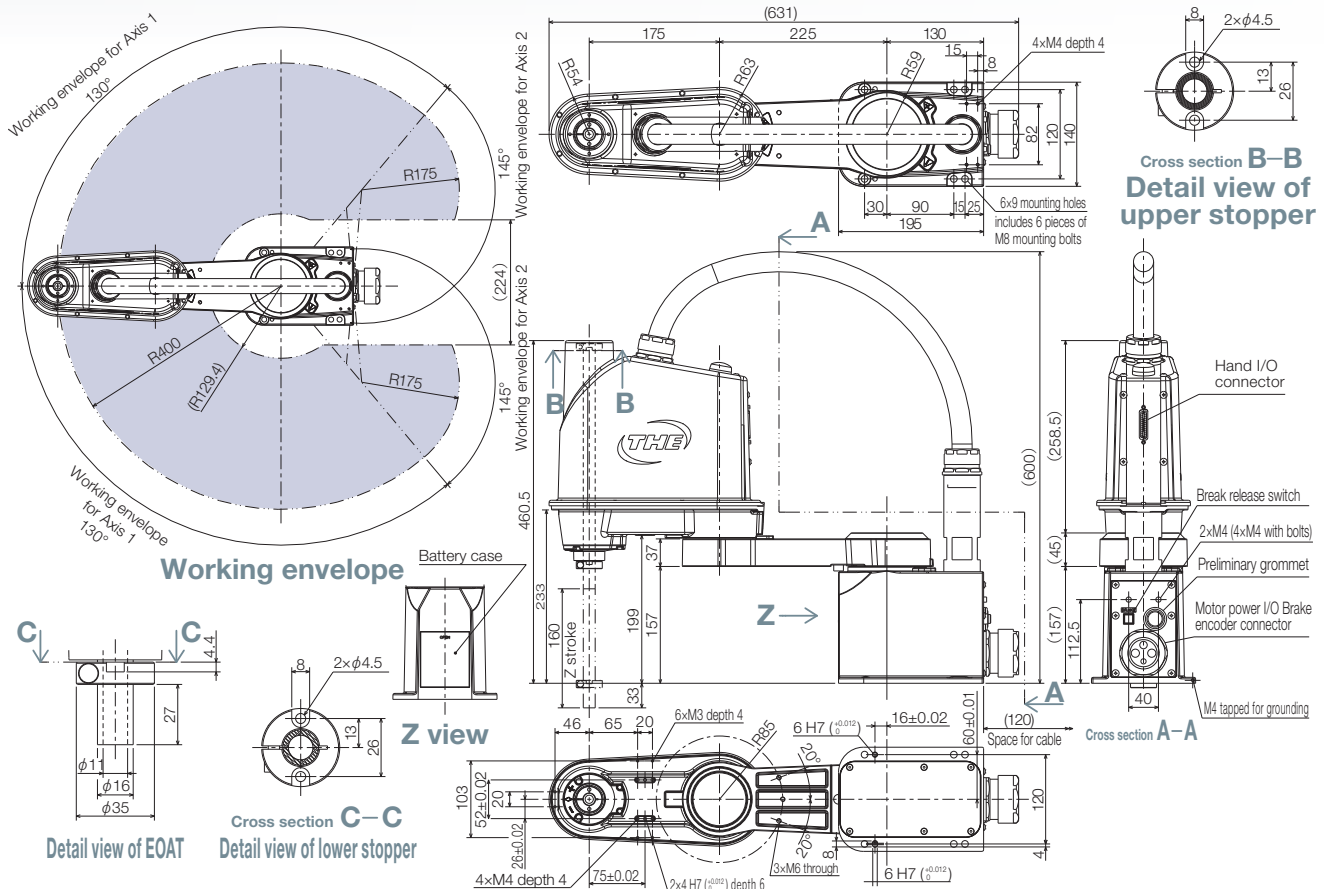


|                                           |                                          |               |
|-------------------------------------------|------------------------------------------|---------------|
| Model                                     | THE400                                   |               |
| 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) <sup>*4</sup>            | 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)                          | 1,120 mm/sec  |
|                                           | Axis 4 (Axis C)                          | 1,800 deg/sec |
|                                           | Composite (Axis 1 and 2 composite)       | 7,000 mm/sec  |
| Standard cycle time <sup>*1</sup>         | 0.39 sec (with 2 kg load)                |               |
| Maximum payload mass <sup>*2</sup>        | 5 kg (rated 1 kg)                        |               |
| Allowable moment of inertia <sup>*2</sup> | 0.06 kg·m <sup>2</sup>                   |               |
| Positioning repeatability <sup>*3</sup>   | 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, TS5000-SS, TS5000-EMS |               |

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

\*4 In the case of use with TS5000-EMS, Working envelope for Axis 3 is 0 to 150mm

## External View



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



# THE600

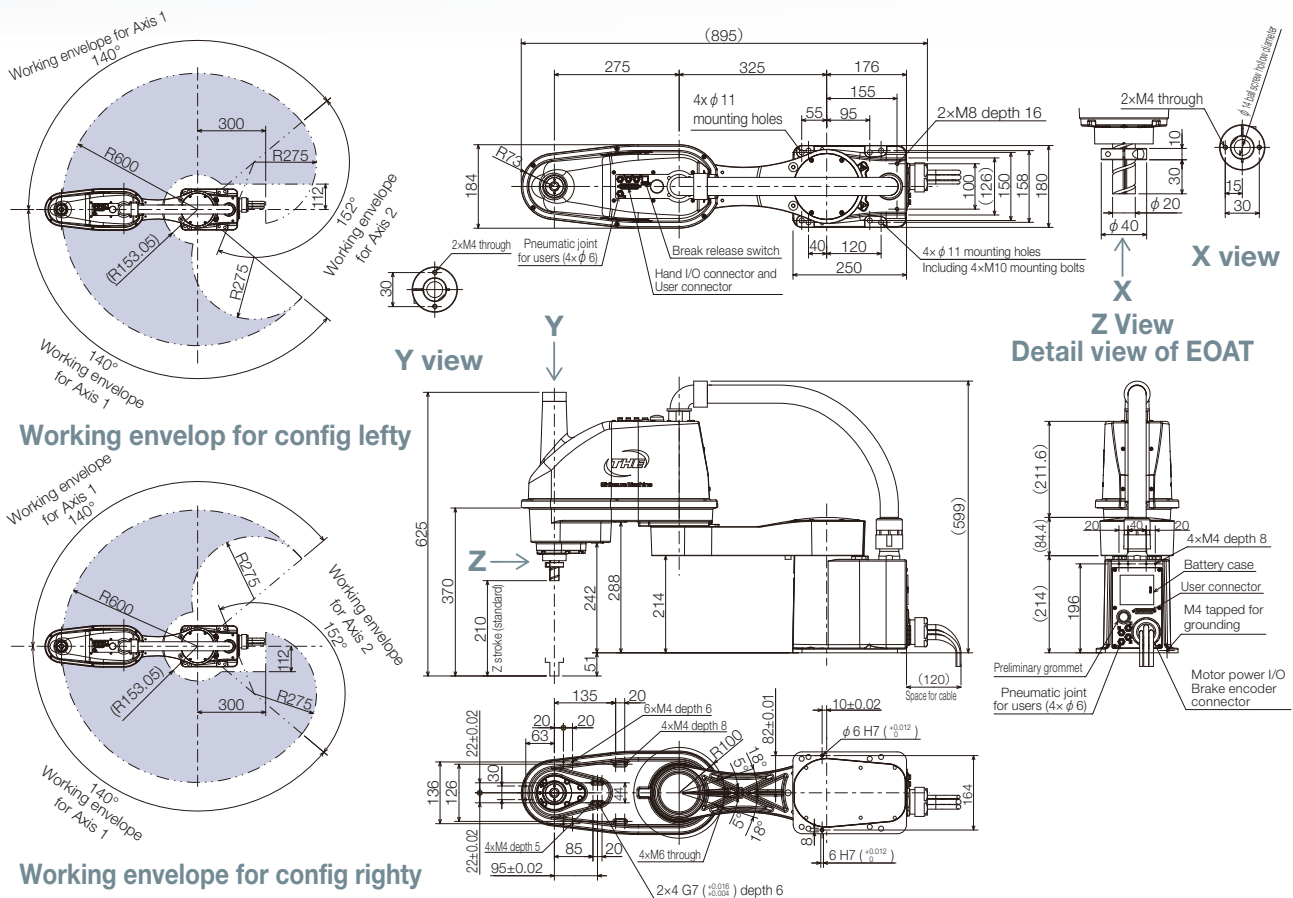


| Model                                     |                                    | THE600                    |
|-------------------------------------------|------------------------------------|---------------------------|
| Arm length (1st Arm + 2nd Arm)            |                                    | 600 mm (325 mm+275 mm)    |
| Working envelope                          | Axis 1                             | ±140 deg                  |
|                                           | Axis 2                             | ±152 deg                  |
|                                           | Axis 3 (Axis Z)                    | 0~210 mm                  |
|                                           | Axis 4 (Axis C)                    | ±360 deg                  |
| Maximum speed                             | Axis 1                             | 457 deg/sec               |
|                                           | Axis 2                             | 672 deg/sec               |
|                                           | Axis 3 (Axis Z) <sup>*4</sup>      | 2,000 mm/sec              |
|                                           | Axis 4 (Axis C)                    | 2,359 deg/sec             |
|                                           | Composite (Axis 1 and 2 composite) | 8,000 mm/sec              |
| Standard cycle time <sup>*1</sup>         |                                    | 0.31 sec (with 2 kg load) |
| Maximum payload mass <sup>*2</sup>        |                                    | 12 kg (rated 2 kg)        |
| Allowable moment of inertia <sup>*2</sup> |                                    | 0.25 kg·m <sup>2</sup>    |
| Positioning repeatability <sup>*3</sup>   | 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                      |                                    | φ6 x 4 pcs                |
| Robot controller cable                    |                                    | 3.5 m                     |
| Power supply                              |                                    | 4.3 kVA                   |
| Mass                                      |                                    | 31 kg                     |
| Connectable controller                    |                                    | TS5000-MS, TS5000-EMS     |

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

\*4 In the case of use with TS5000-EMS, Working envelope for Axis 3 is 0 to 200mm

## External View



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









# 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. It also prevents the cable from touching peripheral equipment.

## 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.)

\*Limitation of acceleration/deceleration rates. Please contact us for more details.

## Order model code

EX. THE 400 - Z - B - L05 - TF - E - S

|              |                                                            |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                              |                                                                                                        |                                                                                                |
|--------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| ● Arm length | ● No.1                                                     | ● No.2                                                                                                                                                                                                                                                                                              | ● No.3                                                                                                                                                                                                                                                                                                                       | ● No.4                                                                                                 | ● No.6                                                                                         |
| 400~1000     | No symbol No option (standard)<br>Z Z-Axis long stroke (Z) | No symbol No option (standard)<br>B Protective bellows for Z-Axis<br>C Z-axis upper cap (C)<br>CRB Cleanroom specification<br>WS Z-axis (axis3) shaft for wire routing<br>IP Dust-proof and splash-proof specification (IP65)<br>T Ceiling-mount type<br>WB Z-axis (axis 3) upper and lower bellows | No symbol Cable length 3.5 m (standard)<br>L05 Cable length 5 m<br>L08 Cable length 8 m<br>L10 Cable length 10 m<br>L15 Cable length 15 m<br>L00R Cable length 3.5 m (movable)<br>L05R Cable length 5 m (movable)<br>L08R Cable length 8 m (movable)<br>L10R Cable length 10 m (movable)<br>L15R Cable length 15 m (movable) | No symbol Tool flange for end effector mounting (standard)<br>TF Tool flange for end effector mounting | No symbol No other options (standard)<br>BL Battery-less motor (BL)<br>S Special specification |
|              |                                                            |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                              |                                                                                                        | ● No.5                                                                                         |
|              |                                                            |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                              |                                                                                                        | No symbol No special marking (standard)<br>E CE Marking<br>K KCs Marking                       |

## Option table

| Type                                             | No. | Symbol    | THE400     | THE600     | THE800     | THE1000    |
|--------------------------------------------------|-----|-----------|------------|------------|------------|------------|
| No option (standard)                             | 1   | No symbol | ○ (160 mm) | ○ (210 mm) | ○ (420 mm) | ○ (420 mm) |
| Z-Axis long stroke (Z) *2                        |     | Z         | △          | ○ (300 mm) | ×          | ×          |
| No option (standard)                             | 2   | No symbol | ○          | ○          | ○          | ○          |
| Protective bellows for Z-Axis                    |     | B         | ○          | ○          | ○          | ○          |
| Z-axis upper cap                                 |     | C         | ○          | ○          | ○          | ○          |
| Cleanroom specification                          |     | CRB       | △          | △          | △          | △          |
| Z-axis (axis3) shaft for wire routing            |     | WS        | ○          | ○          | △          | △          |
| Dust-proof and splash-proof specification(IP65)  |     | IP        | ○          | △          | △          | △          |
| Ceiling-mount type                               |     | T         | ○          | ○          | ○          | △          |
| Z-axis (axis 3) upper and lower bellows          | WB  | △         | △          | △          | △          |            |
| Cable length 3.5 m (standard)                    | 3   | No symbol | ○          | ○          | ○          | ○          |
| Cable length 5 m                                 |     | L05       | △          | ○          | ○          | ○          |
| Cable length 8 m                                 |     | L08       | △          | ○          | ○          | ○          |
| Cable length 10 m                                |     | L10       | △          | ○          | ○          | ○          |
| Cable length 15 m                                |     | L15       | △          | ○          | ○          | ○          |
| Cable length 3.5 m (movable)                     |     | L00R      | △          | △          | △          | △          |
| Cable length 5 m (movable)                       |     | L05R      | △          | △          | △          | △          |
| Cable length 8 m (movable)                       |     | L08R      | △          | △          | △          | △          |
| Cable length 10 m (movable)                      |     | L10R      | △          | △          | △          | △          |
| Cable length 15 m (movable)                      |     | L15R      | △          | △          | △          | △          |
| Tool flange for end effector mounting (standard) | 4   | No symbol | ○          | ○          | ○          | ○          |
| Tool flange for end effector mounting            |     | TF        | ○          | ○          | ○          | ○          |
| No special marking (standard)                    | 5   | No symbol | ○          | ○          | ○          | ○          |
| CE Marking                                       |     | E         | ○          | ○          | ○          | ○          |
| KCs Marking                                      |     | K         | ○ *1       | △          | △          | △          |
| No other options (standard)                      | 6   | No symbol | ○          | ○          | ○          | ○          |
| Battery-less motor (BL)                          |     | BL        | ○          | ×          | ×          | ×          |
| Special specification                            |     | S         | △          | △          | △          | △          |

## 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

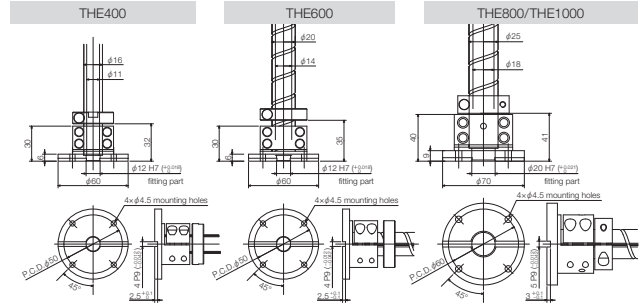
Length of the cable between the robot and controller can be changed. Useful when the control panel is far away from the robot.

\*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.



## Battery-less motor (BL)

Motor does not require battery back-up. Periodic replacement of battery is not required.

○: Developed △: Please contact us for details ×: Not available

\*1 Only for TSL3\*\*\* series controller. For TS5\*\*\* series controller, please contact us.

\*2 In case of combination with TS5000-EMS, THE400 and THE600 has 10mm shorter stroke.

# THL Series

## Low cost

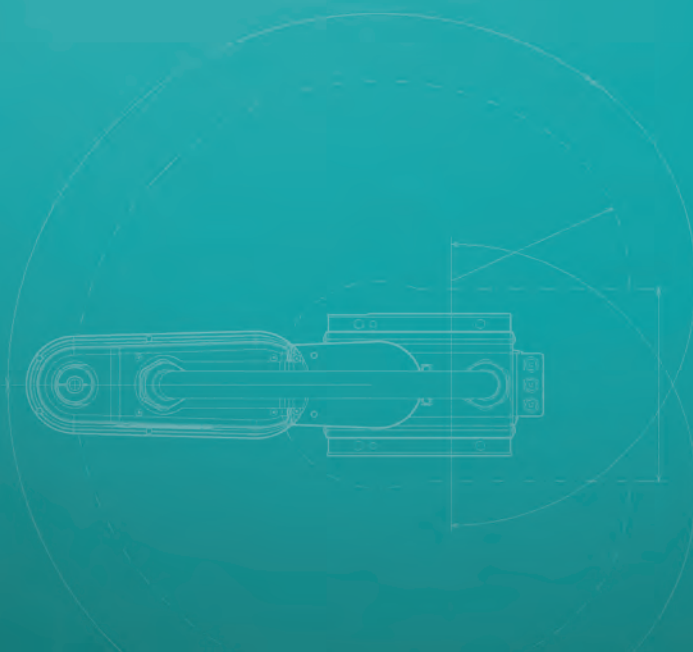
Impressive performance at affordable prices

## Lightweight

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

## Wide variety of arm lengths

Wide variety of arm lengths (300 mm to 1,200 mm)  
You can select the best robot for your application



Order model code

# THL 300 - Z - SC - K - S



Option B: Z With protective bellows, C: With cap, SC: Simple Cleanroom specification, IP6X: IP6X Dust-proof, T: Ceiling-mount type, LH: Low height design



THL300



THL400



THL500



THL600



THL700



THL800



THL900



THL1000



THL1200

| Model                                             | THL300                       | THL400                       | THL500                       |
|---------------------------------------------------|------------------------------|------------------------------|------------------------------|
| Arm length (1st Arm + 2nd Arm)                    | 300 mm (125 mm+175 mm)       | 400 mm (225 mm+175 mm)       | 500 mm (200 mm+300 mm)       |
| Maximum speed (Axis 1 and 2 composite)            | 5,100 mm/s                   | 6,300 mm/s                   | 6,300 mm/s                   |
| Standard cycle time (with 2 kg load) <sup>1</sup> | 0.48 sec                     | 0.47 sec                     | 0.45 sec                     |
| Maximum payload mass <sup>2</sup>                 | 5 kg (rated 2 kg)            | 5 kg (rated 2 kg)            | 10 kg (rated 2 kg)           |
| Positioning repeatability <sup>3</sup>            | X-Y                          | ±0.01 mm                     | ±0.01 mm                     |
|                                                   | Axis Z (Axis 3)              | ±0.015 mm                    | ±0.015 mm                    |
|                                                   | Axis C (Axis 4)              | ±0.007 deg                   | ±0.007 deg                   |
| Mass                                              | 12 kg                        | 13 kg                        | 22 kg                        |
| Connectable controller                            | TSL3000, TSL3000E            | TSL3000, TSL3000E            | TSL3000, TSL3000E, TS5000-SS |
| Model                                             | THL600                       | THL700                       | THL800                       |
| Arm length (1st Arm + 2nd Arm)                    | 600 mm (300 mm+300 mm)       | 700 mm (400 mm+300 mm)       | 800 mm (350 mm+450 mm)       |
| Maximum speed (Axis 1 and 2 composite)            | 7,100 mm/s                   | 7,900 mm/s                   | 4,300 mm/s                   |
| Standard cycle time (with 2 kg load) <sup>1</sup> | 0.45 sec                     | 0.50 sec                     | 0.47 sec                     |
| Maximum payload mass <sup>2</sup>                 | 10 kg (rated 2 kg)           | 10 kg (rated 2 kg)           | 10 kg (rated 2 kg)           |
| Positioning repeatability <sup>3</sup>            | X-Y                          | ±0.01 mm                     | ±0.02 mm                     |
|                                                   | Axis Z (Axis 3)              | ±0.015 mm                    | ±0.015 mm                    |
|                                                   | Axis C (Axis 4)              | ±0.007 deg                   | ±0.007 deg                   |
| Mass                                              | 23 kg                        | 24 kg                        | 33 kg                        |
| Connectable controller                            | TSL3000, TSL3000E, TS5000-SS | TSL3000, TSL3000E, TS5000-SS | TSL3000, TSL3000E            |
| Model                                             | THL900                       | THL1000                      | THL1200                      |
| Arm length (1st Arm + 2nd Arm)                    | 900 mm (450 mm+450 mm)       | 1,000 mm (550 mm+450 mm)     | 1,200 mm (750 mm+450 mm)     |
| Maximum speed (Axis 1 and 2 composite)            | 4,600 mm/s                   | 5,000 mm/s                   | 5,700 mm/s                   |
| Standard cycle time (with 2 kg load) <sup>1</sup> | 0.48 sec                     | 0.48 sec                     | 0.58 sec                     |
| Maximum payload mass <sup>2</sup>                 | 10 kg (rated 2 kg)           | 10 kg (rated 2 kg)           | 10 kg (rated 2 kg)           |
| Positioning repeatability <sup>3</sup>            | X-Y                          | ±0.02 mm                     | ±0.02 mm                     |
|                                                   | Axis Z (Axis 3)              | ±0.015 mm                    | ±0.015 mm                    |
|                                                   | Axis C (Axis 4)              | ±0.007 deg                   | ±0.007 deg                   |
| Mass                                              | 35 kg                        | 37 kg                        | 40 kg                        |
| Connectable controller                            | TSL3000, TSL3000E            | TSL3000, TSL3000E            | TSL3000, TSL3000E            |

<sup>1</sup>: Continuous operation is not possible beyond the effective load ratio. Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning.  
<sup>2</sup>: Acceleration/deceleration rates and maximum speed may be limited according to the motion pattern, load mass and amount of offset.  
<sup>3</sup>: Positioning repeatability 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.  
<sup>4</sup>: Pneumatic joints for hand are provided on the base. Pipes are to be provided by the customers.

# THL300

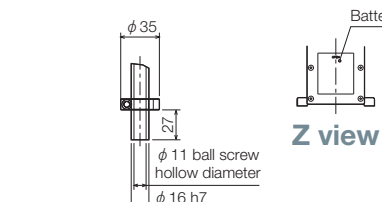
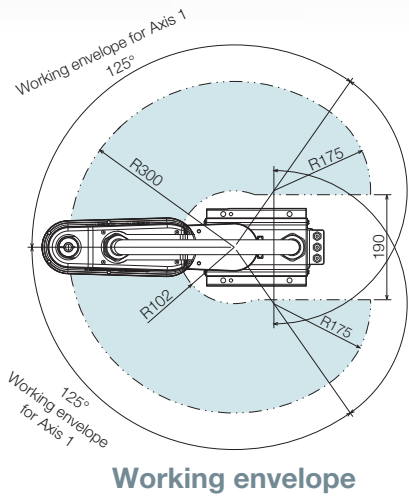


|                                           |                                    |               |
|-------------------------------------------|------------------------------------|---------------|
| Model                                     | THL300                             |               |
| Arm length (1st Arm + 2nd Arm)            | 300 mm (125 mm+175 mm)             |               |
| Working envelope                          | Axis 1                             | ±125 deg      |
|                                           | Axis 2                             | ±145 deg      |
|                                           | Axis 3 (Axis Z)                    | 0~160 mm      |
|                                           | Axis 4 (Axis C)                    | ±360 deg      |
| Maximum speed                             | Axis 1                             | 660 deg/sec   |
|                                           | Axis 2                             | 660 deg/sec   |
|                                           | Axis 3 (Axis Z)                    | 1,120 mm/sec  |
|                                           | Axis 4 (Axis C)                    | 1,500 deg/sec |
|                                           | Composite (Axis 1 and 2 composite) | 5,100 mm/sec  |
| Standard cycle time <sup>*1</sup>         | 0.48 sec (with 2 kg load)          |               |
| Maximum payload mass <sup>*2</sup>        | 5 kg (rated 2 kg)                  |               |
| Allowable moment of inertia <sup>*2</sup> | 0.05 kg·m <sup>2</sup>             |               |
| Positioning repeatability <sup>*3</sup>   | 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 <sup>*4</sup>        | φ4 x 3 pcs                         |               |
| Robot controller cable                    | 3.5 m                              |               |
| Power supply                              | 0.7 kVA                            |               |
| Mass                                      | 12 kg                              |               |
| Connectable controller                    | TSL3000, TSL3000E                  |               |

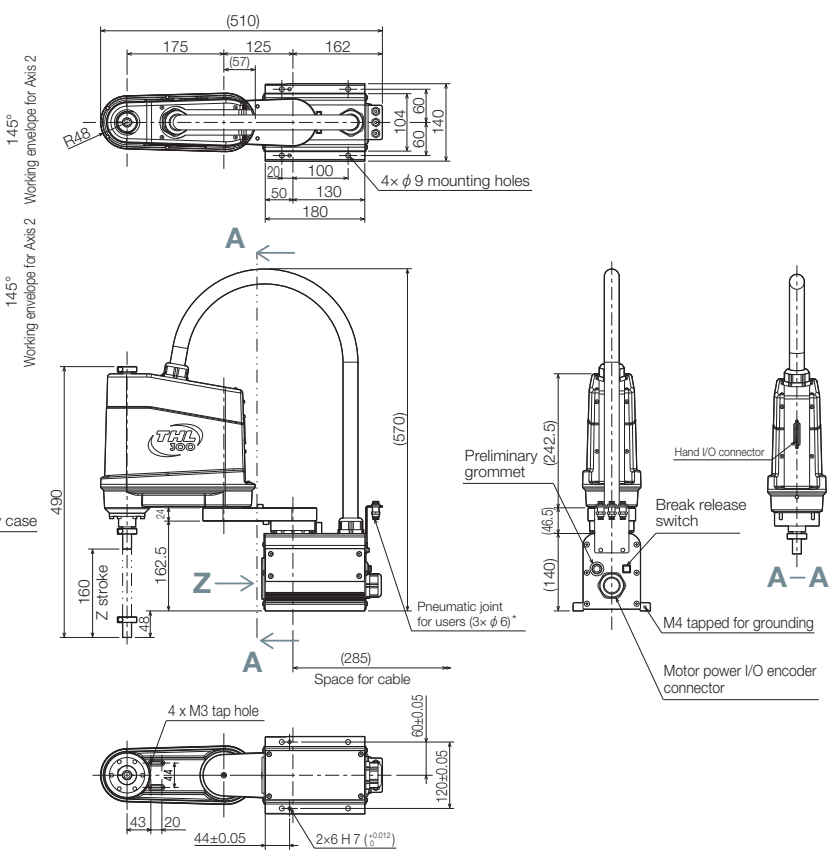
For \*1 to \*4 please see page 15.

## External View

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



## Detail view of EOAT



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# THL400

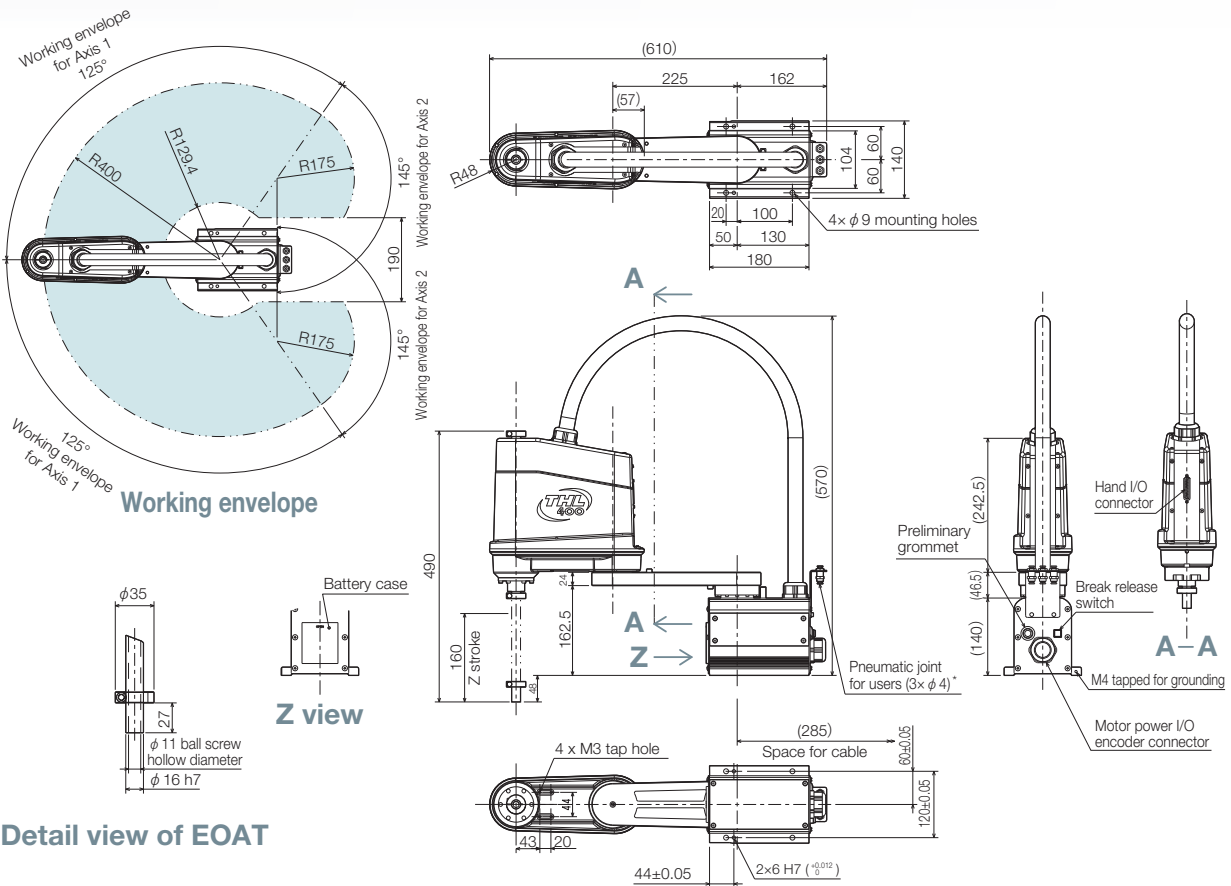


|                                           |                                    |               |
|-------------------------------------------|------------------------------------|---------------|
| Model                                     | THL400                             |               |
| Arm length (1st Arm + 2nd Arm)            | 400 mm (225 mm+175 mm)             |               |
| Working envelope                          | Axis 1                             | ±125 deg      |
|                                           | Axis 2                             | ±145 deg      |
|                                           | Axis 3 (Axis Z)                    | 0~160 mm      |
|                                           | Axis 4 (Axis C)                    | ±360 deg      |
| Maximum speed                             | Axis 1                             | 660 deg/sec   |
|                                           | Axis 2                             | 660 deg/sec   |
|                                           | Axis 3 (Axis Z)                    | 1,120 mm/sec  |
|                                           | Axis 4 (Axis C)                    | 1,500 deg/sec |
|                                           | Composite (Axis 1 and 2 composite) | 6,300 mm/sec  |
| Standard cycle time <sup>*1</sup>         | 0.47 sec (with 2 kg load)          |               |
| Maximum payload mass <sup>*2</sup>        | 5 kg (rated 2 kg)                  |               |
| Allowable moment of inertia <sup>*2</sup> | 0.05 kg·m <sup>2</sup>             |               |
| Positioning repeatability <sup>*3</sup>   | 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 <sup>*4</sup>        | φ4 x 3 pcs                         |               |
| Robot controller cable                    | 3.5 m                              |               |
| Power supply                              | 0.7 kVA                            |               |
| Mass                                      | 13 kg                              |               |
| Connectable controller                    | TSL3000, TSL3000E                  |               |

For \*1 to \*4 please see page 15.

## External View

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



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# THL700

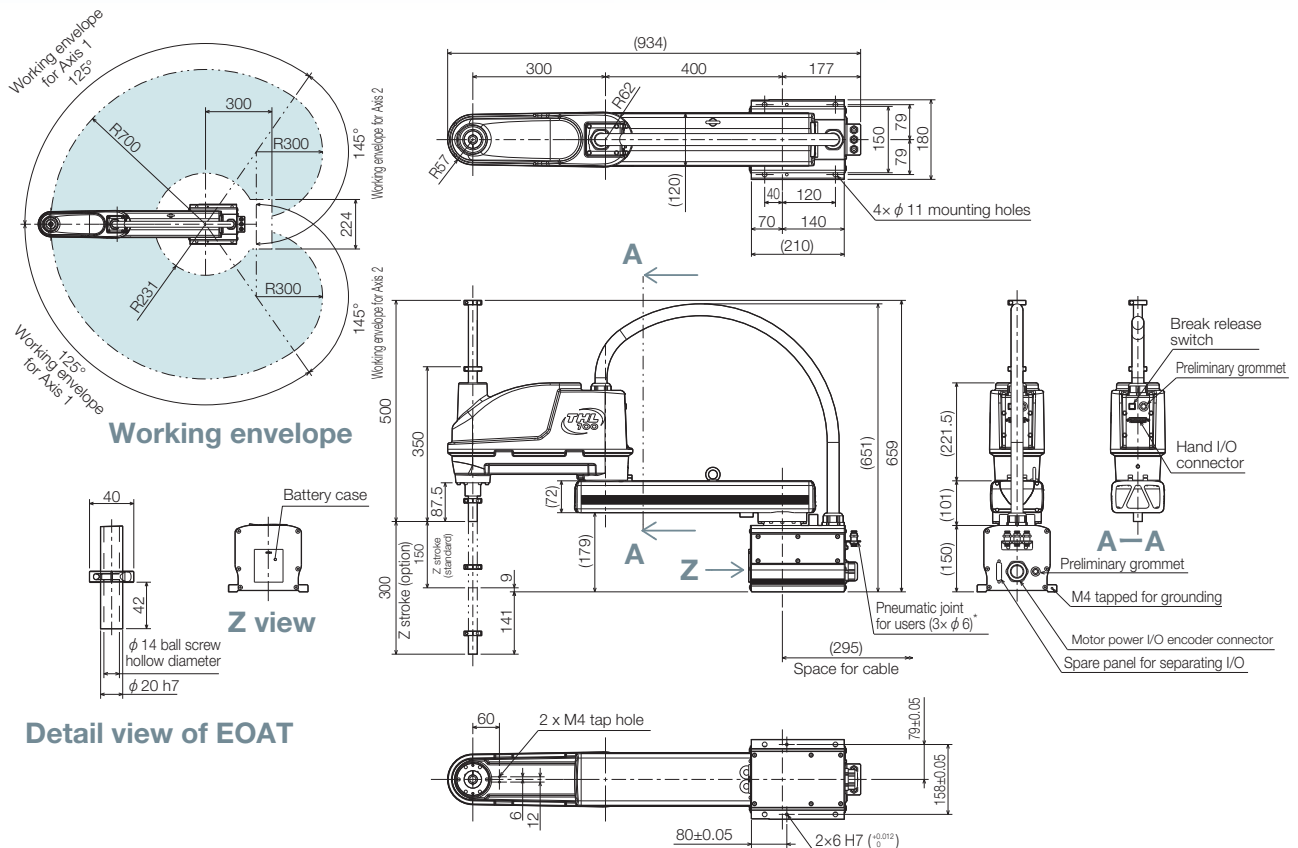


|                                           |                                    |               |
|-------------------------------------------|------------------------------------|---------------|
| Model                                     | THL700                             |               |
| Arm length (1st Arm + 2nd Arm)            | 700 mm (400 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)                    | 2,000 mm/sec  |
|                                           | Axis 4 (Axis C)                    | 1,700 deg/sec |
|                                           | Composite (Axis 1 and 2 composite) | 7,900 mm/sec  |
| Standard cycle time <sup>*1</sup>         | 0.50 sec (with 2 kg load)          |               |
| Maximum payload mass <sup>*2</sup>        | 10 kg (rated 2 kg)                 |               |
| Allowable moment of inertia <sup>*2</sup> | 0.2 kg·m <sup>2</sup>              |               |
| Positioning repeatability <sup>*3</sup>   | 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 <sup>*4</sup>        | φ6 x 3 pcs                         |               |
| Robot controller cable                    | 3.5 m                              |               |
| Power supply                              | 1.4 kVA                            |               |
| Mass                                      | 24 kg                              |               |
| Connectable controller                    | TSL3000, TSL3000E                  |               |

For \*1 to \*4 please see page 15.

## External View

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

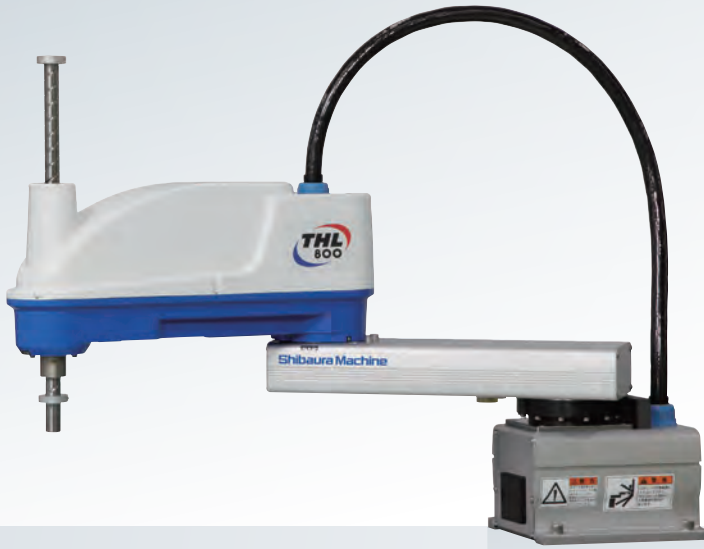


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# THL800

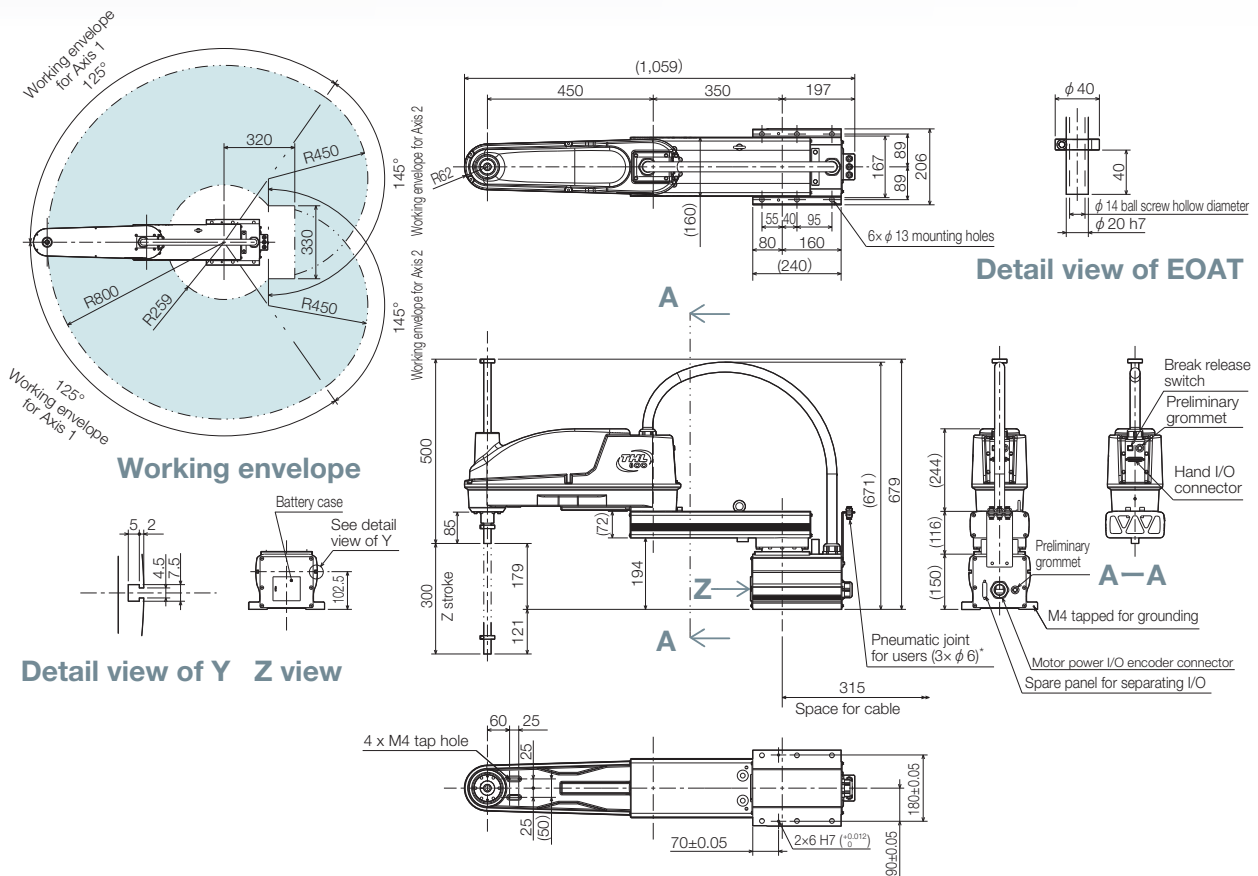


|                                          |                                    |               |
|------------------------------------------|------------------------------------|---------------|
| Model                                    | THL800                             |               |
| Arm length (1st Arm + 2nd Arm)           | 800 mm (350 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)                    | 2,000 mm/sec  |
|                                          | Axis 4 (Axis C)                    | 1,700 deg/sec |
|                                          | Composite (Axis 1 and 2 composite) | 4,300 mm/sec  |
| Standard cycle time <sup>1</sup>         | 0.47 sec (with 2 kg load)          |               |
| Maximum payload mass <sup>2</sup>        | 10 kg (rated 2 kg)                 |               |
| Allowable moment of inertia <sup>2</sup> | 0.2 kg·m <sup>2</sup>              |               |
| Positioning repeatability <sup>3</sup>   | 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 <sup>4</sup>        | φ6 x 3 pcs                         |               |
| Robot controller cable                   | 3.5 m                              |               |
| Power supply                             | 1.4 kVA                            |               |
| Mass                                     | 33 kg                              |               |
| Connectable controller                   | TSL3000, TSL3000E                  |               |

For <sup>1</sup> to <sup>4</sup> please see page 15.

## External View

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



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# THL900

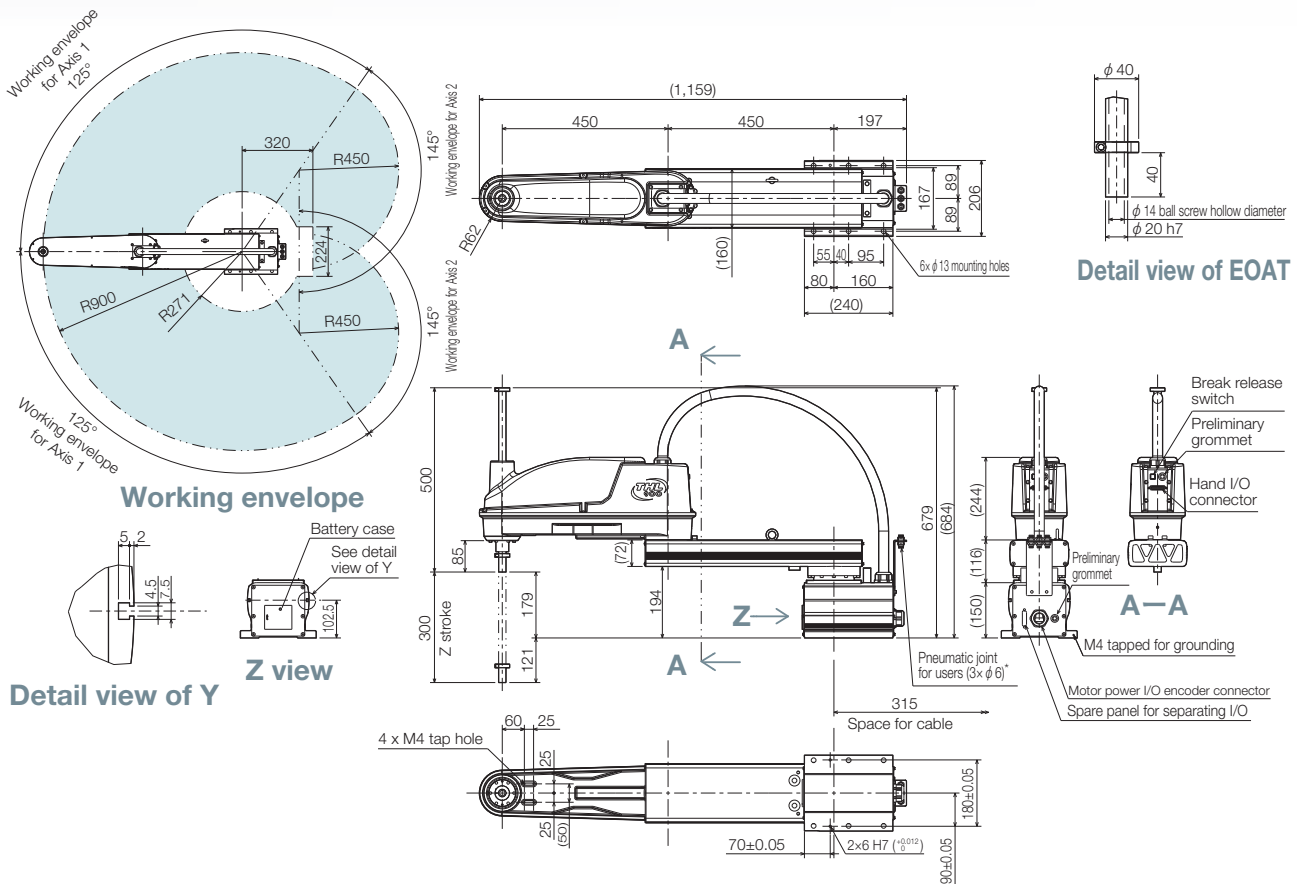


|                                           |                                    |               |
|-------------------------------------------|------------------------------------|---------------|
| Model                                     | THL900                             |               |
| Arm 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)                    | 2,000 mm/sec  |
|                                           | Axis 4 (Axis C)                    | 1,700 deg/sec |
|                                           | Composite (Axis 1 and 2 composite) | 4,600 mm/sec  |
| Standard cycle time <sup>*1</sup>         | 0.48 sec (with 2 kg load)          |               |
| Maximum payload mass <sup>*2</sup>        | 10 kg (rated 2 kg)                 |               |
| Allowable moment of inertia <sup>*2</sup> | 0.2 kg·m <sup>2</sup>              |               |
| Positioning repeatability <sup>*3</sup>   | 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 <sup>*4</sup>        | 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 15.

## External View

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



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# THL1000

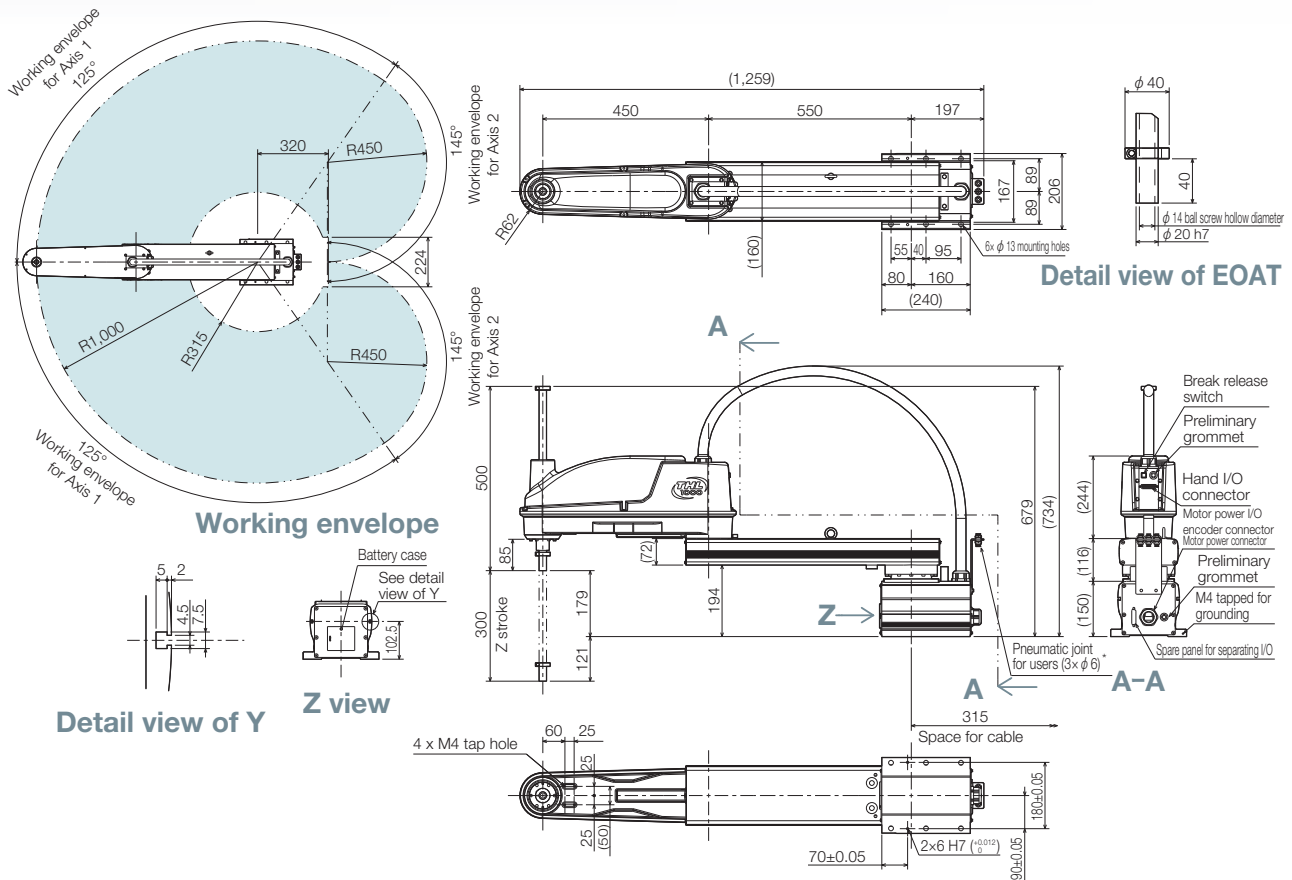


|                                           |                                    |               |
|-------------------------------------------|------------------------------------|---------------|
| Model                                     | THL1000                            |               |
| Arm length (1st Arm + 2nd Arm)            | 1,000 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)                    | 2,000 mm/sec  |
|                                           | Axis 4 (Axis C)                    | 1,700 deg/sec |
|                                           | Composite (Axis 1 and 2 composite) | 5,000 mm/sec  |
| Standard cycle time <sup>*1</sup>         | 0.48 sec (with 2 kg load)          |               |
| Maximum payload mass <sup>*2</sup>        | 10 kg (rated 2 kg)                 |               |
| Allowable moment of inertia <sup>*2</sup> | 0.2 kg·m <sup>2</sup>              |               |
| Positioning repeatability <sup>*3</sup>   | 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 <sup>*4</sup>        | 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 15.

## External View

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



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# 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.

## 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.



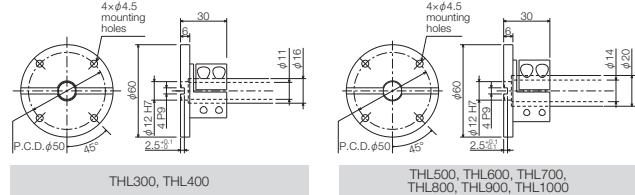
## Low height design (LH)

Alternative wire harness design enables lower height than standard and is suitable for installation in a tight space.

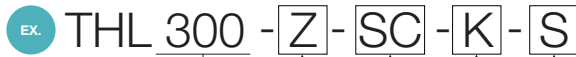
## Tool flange for end effector mounting (TF)

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.



## Order model code



|              |                                                            |                                                                                                                                                                                                                          |                                                          |                                                                  |
|--------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------|
| ● Arm length | ● No.1                                                     | ● No.2                                                                                                                                                                                                                   | ● No.3                                                   | ● No.4                                                           |
| 300-1200     | No symbol No option (standard)<br>Z Z-Axis long stroke (Z) | No symbol No option (standard)<br>B Protective bellows for Z-Axis<br>C Z-axis upper cap (C)<br>SC Simple cleanroom specification<br>IP6X Dust-proof specification (IP6X)<br>T Ceiling-mount type<br>LH Low height design | No symbol No special marking (standard)<br>K KCs Marking | No symbol No other options (standard)<br>S Special specification |

## Option table

○: Developed △: Please contact us for detail ×: No development

| Type                            | No. | Symbol    | THL300, 400     | THL500, 600, 700 | THL800, 900, 1000 | THL1200 |
|---------------------------------|-----|-----------|-----------------|------------------|-------------------|---------|
| No option (standard)            | 1   | No symbol | ○               | ○                | ○                 | ○       |
| Z-Axis long stroke (Z)          |     | Z         | ×               | ○ (300 mm)       | ×                 | ×       |
| No option (standard)            | 2   | No symbol | ○               | ○                | ○                 | ○       |
| Protective bellows for Z-Axis   |     | B         | ○               | ○                | ○                 | ○       |
| Z-axis upper cap                |     | C         | ○               | ○                | ○                 | ○       |
| Simple cleanroom specification  |     | SC        | ○               | ○                | ○                 | ×       |
| Dust-proof specification (IP6X) |     | IP6X      | ×               | ○                | ×                 | ×       |
| Ceiling-mount type              | 3   | T         | ○ (THL400 only) | ○                | ○                 | ×       |
| Low height design               |     | LH        | ×               | ○ (THL600 only)  | ○ (THL1000 only)  | ×       |
| No special marking (standard)   |     | No symbol | ○               | ○                | ○                 | ○       |
| KCs Marking                     | 4   | K         | ○               | ○                | ○                 | ×       |
| No other options (standard)     |     | No symbol | ○               | ○                | ○                 | ○       |
| Special specification           |     | S         | △               | △                | △                 | △       |

# Controller Teach Pendant

## Small and lightweight

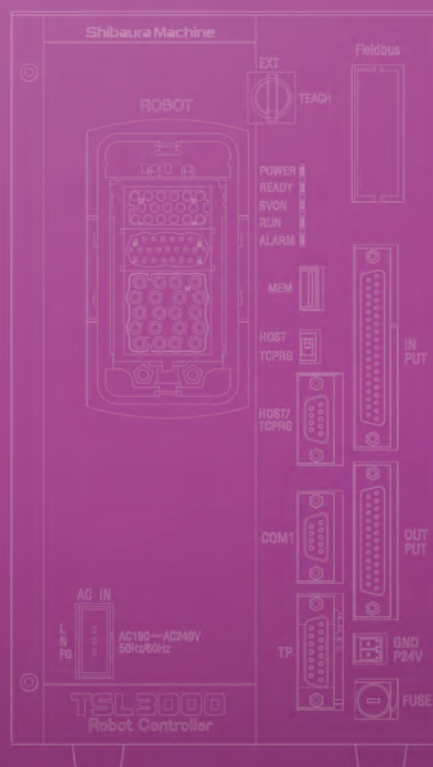
Small and lightweight controller (height 161 mm to 266 mm)  
Contributes to the reduction in size of a control panel

## 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



# TS5000-SS TS5000-MS TS5000-EMS



TS5000-SS



TS5000-MS



TS5000-EMS

## Order model code

EX. TS5000 - **SS** - **HR** - **IO** - **CC** - **CV**

| Type of controller                                                                                                                                                          | Hand I/O                                                                                                                                    | Extended I/O                                                                  | Industrial field network                                                                                                                                            | Conveyor tracking                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>SS</b> Popular type of controller for SCARA Robot<br><b>MS</b> Popular type of controller for SCARA Robot<br><b>EMS</b> Controller with CE specification for SCARA robot | <b>HR</b> Hand I/O is built in the robot (8 inputs and 8 outputs)<br><b>HC</b> Hand I/O is built in the controller (8 inputs and 8 outputs) | <b>No symbol</b> Extended I/O not included<br><b>IO</b> Extended I/O included | <b>No symbol</b> No Fieldbus<br><b>CC</b> CC-Link<br><b>DN</b> DeviceNet<br><b>PB</b> PROFIBUS<br><b>IP</b> EtherNet/IP<br><b>PN</b> PROFINET<br><b>CA</b> EtherCAT | <b>No symbol</b> Conveyor tracking not included<br><b>CV</b> Conveyor tracking included |

### Improvement in synchronized control and tracking precision by better servo performances.

The synchronous control tracking system has been improved by improving the control processing cycle (the position control cycle is three times faster than the conventional machine).

This enables more sensitive control during 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 short cycle times.

### Improved communication performances, and IoT ready fast data communication

Enhanced communication capabilities with Gigabit Ethernet. Real-time transmission of internal data is possible. Enhanced Ethernet communication functionalities for better usability. Simultaneous communication is possible through 8 general-purpose ports (IP 1 ~ 8) and dedicated ports for operation instructions, monitoring functions, and periodic communication, improving efficiency. Ready to meet the requirement for taking part in a "heavy edge" system, as better precision in AI vibration analysis and data collection for predictive and preventative maintenance.

### Enhanced robot programming language

New compiler (processing system). Clearer and succinct SCOL program with new and improved commands. Character string type variables, string manipulation functions, new and improved commands for conditional branching, coordinate conversion functions, etc. all for clear and succinct programming.

### The compact-size controller contributes to a smaller control panel.

The small and high-performance controller was realized by adopting a new CPU with high functionality. Additionally, all the connectors are on the front side. This reduces the size and installation area by approximately 2/3 compared to the existing model (TS3100). The smaller controller contributes to a smaller control panel. The fan-less design reduces maintenance.

### Increase in user file capacity

File memory capacity is expanded to 12MB. By adding an SD card, it is expandable to maximum 32GB.

### Others

Built-in PLC TC-Mini included. Can Modify the number of input and output signals.

| Model                                 | TS5000-SS                                                                           | TS5000-MS                                                                                                            | TS5000-EMS                                   |
|---------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Number of controlled axes             | 4 axis                                                                              |                                                                                                                      |                                              |
| Program language                      | SCOL2 (Original language)                                                           |                                                                                                                      |                                              |
| Movement command                      | PTP (point to point), CP (Continuous Path: Linear,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 | installed memory                                                                    | Maximum:512 Usr files:502, System files:10                                                                           |                                              |
|                                       | Auxiliary memory                                                                    | Maximum:512 Usr files:512                                                                                            |                                              |
| Maximum number of program lines       | Per program, Data part: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, reset, etc. 9 output signals: Servo on ready to start, fault, etc. |                                              |
| Communication port                    | Ethernet: 8 Ports                                                                   |                                                                                                                      |                                              |
| Power supply*1                        | 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) × 161(H) × 325 (D) mm <sup>*2</sup>                                         | 365 (W) × 161(H) × 350 (D) mm <sup>*2</sup>                                                                          | 410 (W) × 161 (H) × 350 (D) mm <sup>*2</sup> |
| Mass                                  | 9 kg                                                                                | 11 kg                                                                                                                | 13 kg                                        |
| Teach Pendant (optional)              | TP5000                                                                              |                                                                                                                      |                                              |
| Connectable robot                     | THE400, THL500, THL600, THL700                                                      | THE600, THE800, THE1000                                                                                              | THE400-E, THE600-E, THE800-E, THE1000-E      |

\*1 The power supply capacity is listed in the robot specification table.

\*2 Height (H) includes rubber feet. Installation requires additional space for cabling, etc.

Please see website for details <https://www.shibaura-machine.co.jp/en/product/robot/lineup/th/ts5000.html>



# TSL3000 TSL3000E



TSL3000



TSL3000E

Please see website for details

<https://www.shibaura-machine.co.jp/en/product/robot/lineup/thtstl3000.html>



|                                                 |                                                                                     |                                                                                                                                        |
|-------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Model                                           | TSL3000                                                                             | TSL3000E                                                                                                                               |
| Number of controlled axes                       | 4 axis                                                                              |                                                                                                                                        |
| Program language                                | SCOL (Original language)                                                            |                                                                                                                                        |
| Movement command                                | PTP (point to point), CP (Continuous Path: Linear,Circular), short-cut, arch motion |                                                                                                                                        |
| Memory                                          | 0.5 MB                                                                              |                                                                                                                                        |
| Auxiliary memory                                | USB memory                                                                          |                                                                                                                                        |
| Number of installed programs that can be stored | Maximum: 256<br>Use files: 243<br>System files: 13                                  |                                                                                                                                        |
| Auxiliary memory                                | None                                                                                |                                                                                                                                        |
| Maximum number of program lines                 | Per program,<br>Teaching points: 2,000 points<br>Program part: 3,000 lines          |                                                                                                                                        |
| I/O signals                                     | General                                                                             | 8 inputs and 8 outputs                                                                                                                 |
|                                                 | System                                                                              | 13 input signals:<br>Program selection, start, stop, program reset, etc.<br>9 output signals:<br>Servo on, emergency stop, fault, etc. |
| Communication port                              | RS-232C: 1 port (COM1) general                                                      |                                                                                                                                        |
| Power supply <sup>1</sup>                       | 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                                | 150 (W) × 266 (H) × 304 (D) mm <sup>2</sup>                                         | 320 (W) × 266 (H) × 304 (D) mm <sup>2</sup>                                                                                            |
| Mass                                            | 7 kg                                                                                | 13 kg                                                                                                                                  |
| Teach Pendant (optional)                        | Teach Pendant: TP5100                                                               |                                                                                                                                        |
| Connectable robot                               | THL series<br>THE400                                                                |                                                                                                                                        |

<sup>1</sup>: Please see specification table for power capacity of each robot

<sup>2</sup>: Height (H) includes the rubber legs.

## Teach Pendant

# TP5000



|                        |                                            |
|------------------------|--------------------------------------------|
| Model                  | TP5000                                     |
| Display devices        | 7-Inch, wide TFT LCD                       |
| Input method           | Touch-Sensitive Operator panel, Key button |
| Mass                   | 800 g (except cable)                       |
| Outer dimensions       | 218 (W) × 173 (H) × 60 (D) mm              |
| Cable length           | 5 m (standard), 10 m, 15 m (option)        |
| Protection level       | IP65                                       |
| Connectable controller | TS5000-SS, TS5000-MS, TS5000-EMS           |

### Improved operability

With 7-inch, widescreen color touch-sensitive panel, intuitive operation is realized.

In the larger display area, programs and position data can be checked in one glance.

With split-screen display, two sets of data can be displayed side by side, for example, the current position display and program monitor.

Multiple languages and switchable by setting.

### Ease of handling and operation.

Easy to hold teach pendant for long periods of work

# TP5100



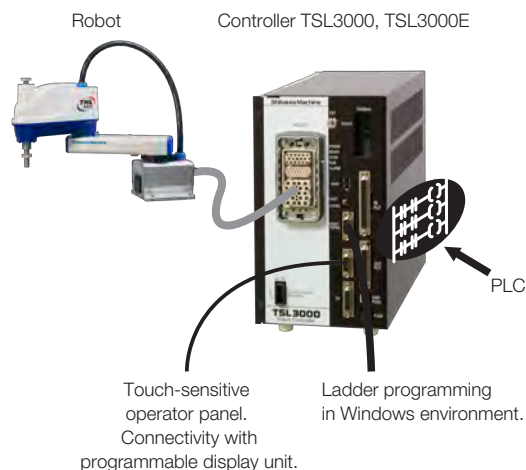
|                        |                                            |
|------------------------|--------------------------------------------|
| Model                  | TP5100                                     |
| Display devices        | 7-Inch, wide TFT LCD                       |
| Input method           | Touch-Sensitive Operator panel, key button |
| Mass                   | 800 g (except cable)                       |
| Outer dimensions       | 218 (W) × 173 (H) × 60 (D) mm              |
| Cable length           | 5 m (standard), 10 m, 15 m (option)        |
| Protection level       | IP65                                       |
| Connectable controller | TSL3000                                    |



## Built-in PLC TCmini

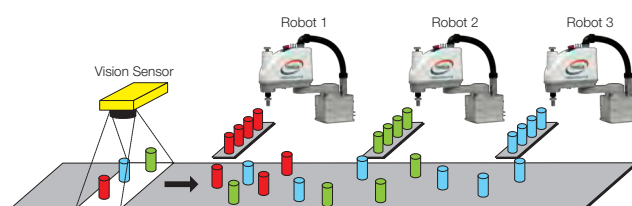
Each controller has a built-in PLC (Tcmini) Input and output signals can be handled by ladder-style programming logic, independent from the robot motion.

\*TC-WORX is required for editing the ladder program.



## 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.



## Industrial networks

The controllers supports CC-Link, DeviceNet, PROFIBUS, EtherNet/IP, EtherCAT, and PROFINET. You can output the start signal from the sequencer to the controller, and monitor the status of the controller with the sequencer.

## 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. Possible to add 56 input signals and 40 output signals.

## Option table

|                                   | TS5000-SS                      | TS5000-MS               | TS5000-EMS           | TSL3000              | TSL3000E             |
|-----------------------------------|--------------------------------|-------------------------|----------------------|----------------------|----------------------|
| Built-in PLC TCmini               | 1 k word 2 ms                  | 1 k word 2 ms           | 1 k word 2 ms        | 1 k word 5 ms        | 1 k word 5 ms        |
| Industrial network <sup>1</sup>   | CC-Link                        | ○                       | ○                    | ○                    | ○                    |
|                                   | DeviceNet                      | ○                       | ○                    | ○                    | ○                    |
|                                   | PROFIBUS                       | ○                       | ○                    | ○                    | ○                    |
|                                   | EtherNet/IP                    | ○                       | ○                    | ○                    | ○                    |
|                                   | EtherCAT                       | ○                       | ○                    | ○                    | ○                    |
|                                   | PROFINET                       | ○                       | ○                    | ○                    | ○                    |
| Vision + Conveyor Synchronization | ○                              | ○                       | ○                    | ×                    | ○                    |
| CE Marking                        | ×                              | ×                       | ○                    | ×                    | ×                    |
| KCs Marking                       | ×                              | ×                       | ×                    | ○*2                  | ○*2                  |
| Additional axis                   | ×                              | ×                       | ×                    | ○                    | ○                    |
| Extended I/O Unit                 | 21 inputs/17 outputs           | 21 inputs/17 outputs    | 21 inputs/17 outputs | 56 inputs/40 outputs | 56 inputs/40 outputs |
| Connectable robot                 | THL500, THL600, THL700, THE400 | THE600, THE800, THE1000 | THE400-E, THE600-E   | THL series           | THL series           |

<sup>1</sup> : Ethernet is registered trademark of XEROX Corp. from the U.S.

CC-Link is registered trademark of CC-Link society

Device Net and Ethernet I/P is registered trademark of ODVA.

PROFIBUS and PROFINET is registered trademark of PROFIBUS User Organization.

Ether CAT is registered trademark and patent technology of Beckoff Automation GmbH from Germany.

\*2: Not applicable to THL1200

# Robot Programming Assist Tool

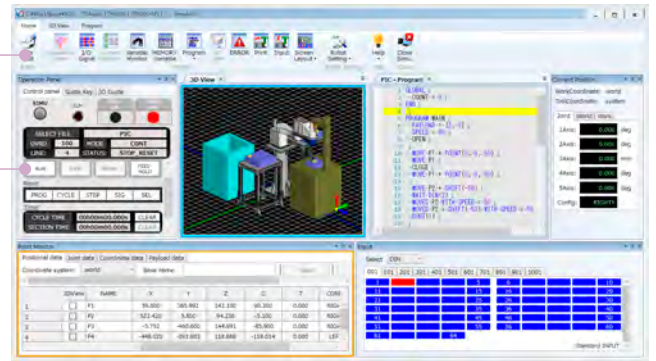


## Easy Operation

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



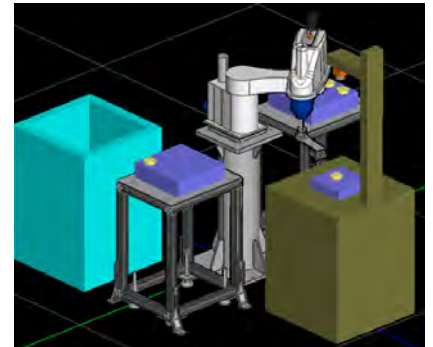
## High Performance 3D Simulation

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

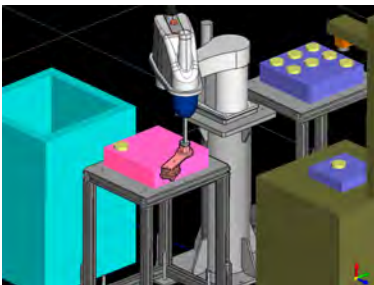
These functions enable the accurate and high quality estimation of robot-automation processes. From simple outline simulation to detailed simulation closer to actual machine implementation, TSAssist helps with all phases of the robot automation system life cycle, from initial "sketch," planning, proposal,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

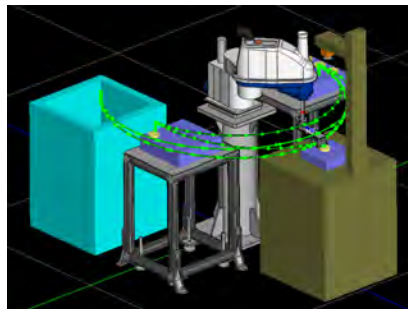
\* USB license key (sold separately) is required to use the high performance 3D simulation.



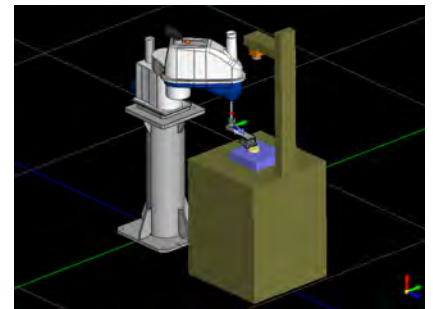
### Interference check



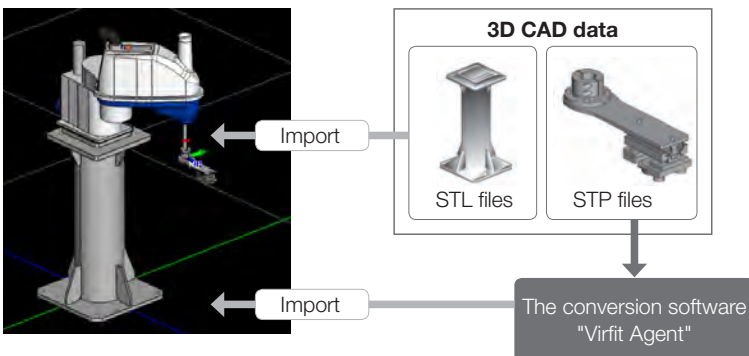
### Locus display



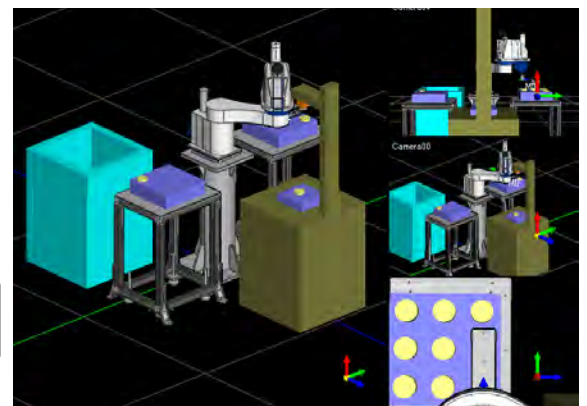
### Placing simple work pieces



### Loading 3D CAD data



### Multi-angle view

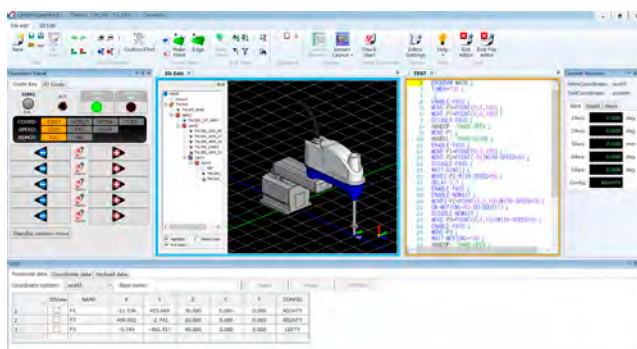


- Timer (cycle time measurement)
- Saving 3D simulation to a video file (MP4 format)

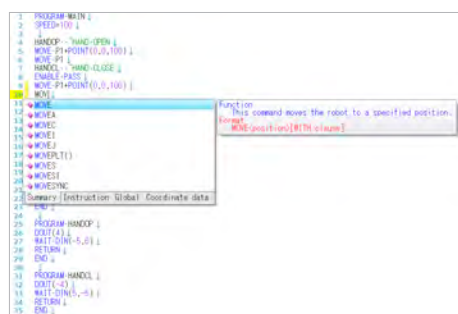
# Highly Functional Program Editor

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.



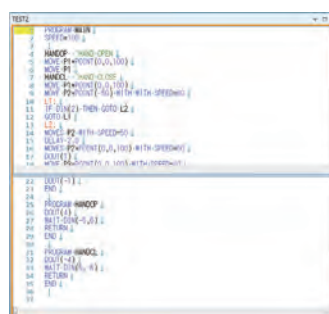
## ■ Robot language input support (keyword suggestions)



## ■ Outline display



## ■ Split display



- Point data editor's sort, search and filter functions
- 3D editor mode enables robot guidance and teaching by mouse

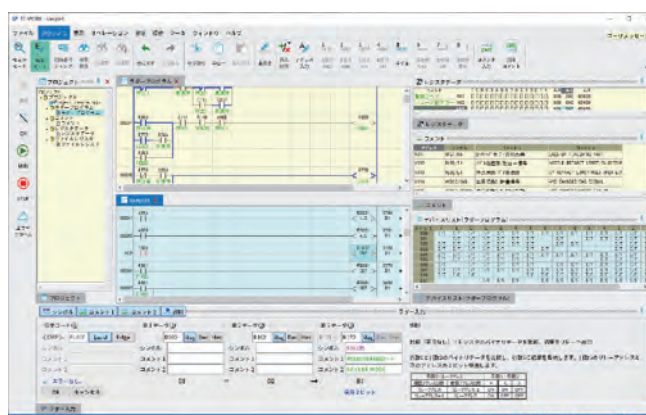
## Operating environment

|                    |                                                                                                                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OS                 | Windows7 / 8.1 / 10 (32/64bit)                                                                                                                                                          |
| CPU                | Intel Core I series or newer than Intel Core2 Quad                                                                                                                                      |
| Memory             | More than 2 GB recommended                                                                                                                                                              |
| Monitor            | Screen resolution 1,024×768 (WXGA) or higher *1,366×768 (FEXGA) is recommended                                                                                                          |
| HDD                | More than 1 GB free hard drive space                                                                                                                                                    |
| Graphics (display) | NVIDIA GeForce series, Quadro series, Intel HD Graphics 4,000 or newer recommended<br>DirectX 9.0c ready<br>More than 64 MB graphics memory recommended<br>Direct3D Acceleration enable |
| Mouse              | Use Wheel Mouse for operation                                                                                                                                                           |
| USB                | Use 1Port (USB2.0 for USB license key)                                                                                                                                                  |
| DVD-ROM            | Use DVD-ROM drive to install this software                                                                                                                                              |
| I/F                | LAN-Port or COM-Port for connect to Controller                                                                                                                                          |

# TC-WORX

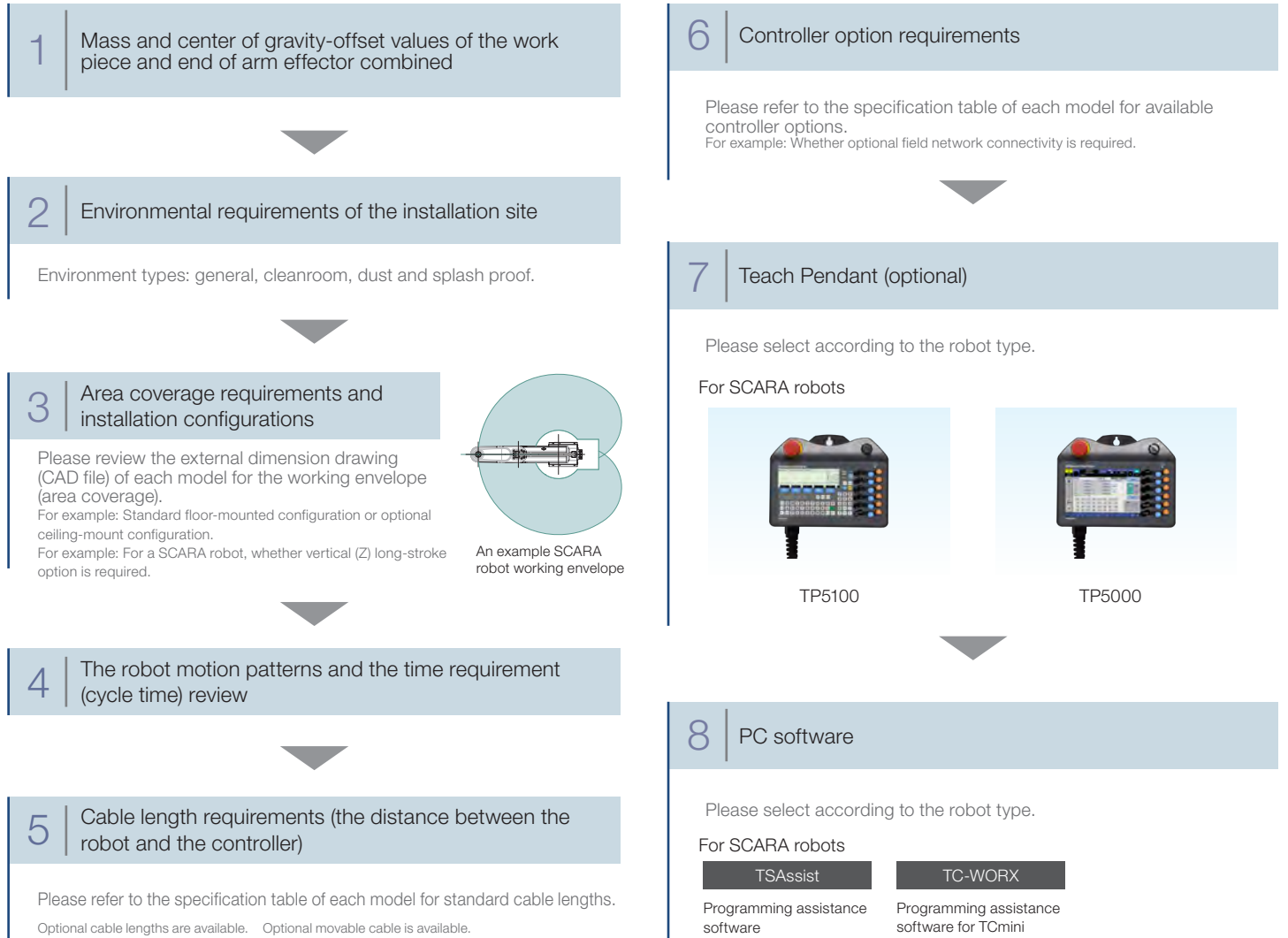
## For programming the simple PLC

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:



\* 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.

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Email: www.tmrobotics.com

[www.shibaura-machine.co.jp/](http://www.shibaura-machine.co.jp/)



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