Shibaura Machine

INDUSTRIAL ROBOTS

SCARA ROBOTS

General catalog for SCARA robots

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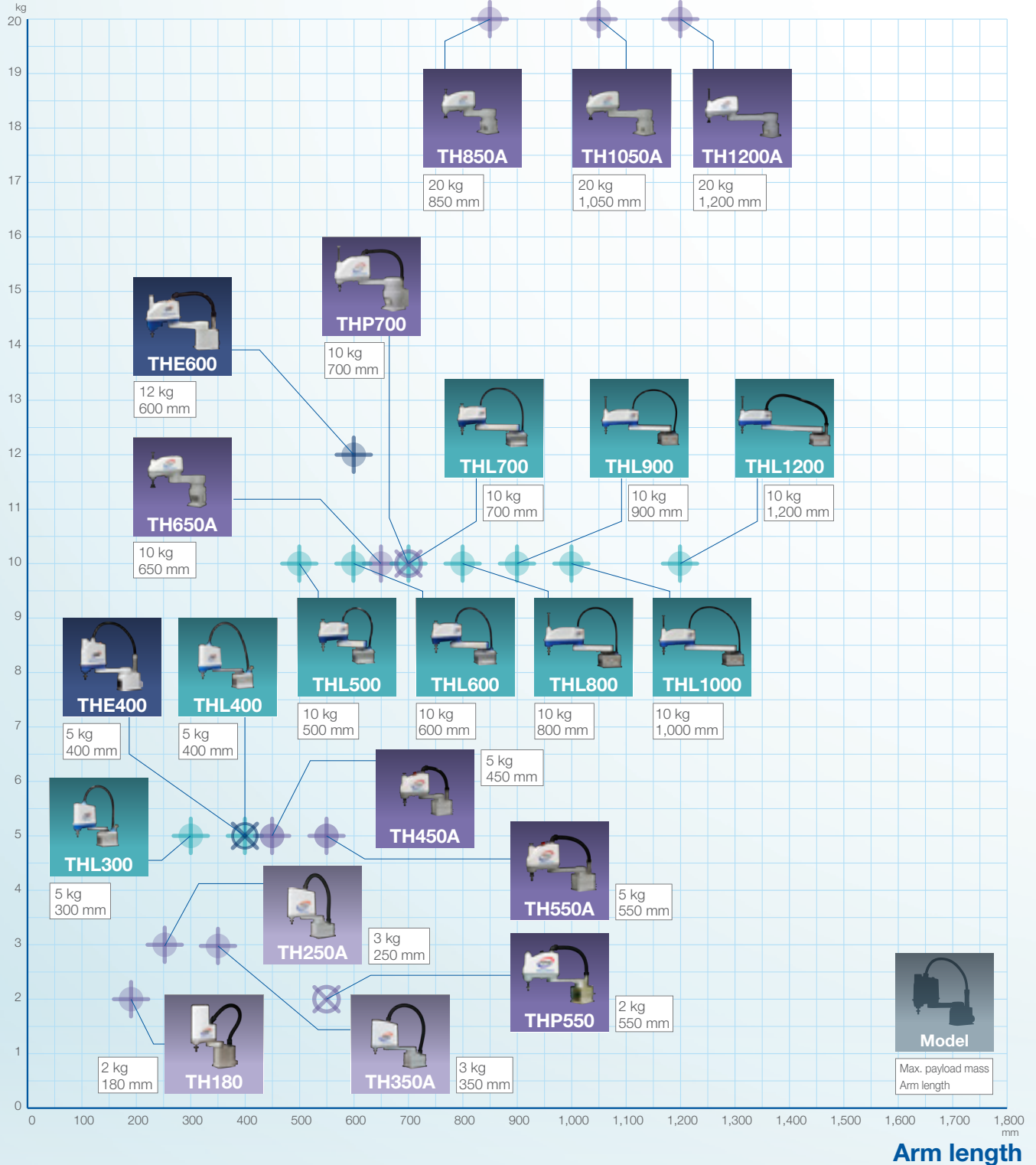
Wide-ranging and diverse industrial robots contribute to automation, labor saving and increased efficiency.

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

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

SHIBAURA MAC

SCARA Robot

TOSHIBA CORPORATION

Toshiba Machine Co., Ltd.

- '81 Development of the SCARA robot
- '83 SR-H Series
- '87 SR-HS Series
- '92 SR-HSP Series
- '91 SR-1054HZ (Heavy payload SCARA robot)

- SR-424HSP
- SR-554HSP
- SR-1504HZ (Heavy payload SCARA robot)

- TH250
- TH350
- Model change
- Model change
- TH650
- TH450 / TH550
- TH850 / TH1050
- TH180 / TH250A / TH350A
- Model change
- TH650A
- Model change

Vertical articulated robot

1980	1985	1990	'95	1996	2000	2001	2002	2003	2004	2005	2006	2007

- SR-606V (Vertical articulated robot)
- SR-2604V (Palletizer)
- '93 Valibo (Robot for final manufacturing process)
- SR-2006V (Vertical articulated robot)
- SR-1806V, SR-2206V (Vertical articulated robot)
- THP Series (Cartesian coordinate system)

- DTO-800 (Die-cast)

Semiconductor
- SR-624HC (Cassette Transfer)
- SR-F9GL3 (FOUP TRANSFER)
- SR-404HC (Cassette Transfer)
- SR-354VH (Cassette Transfer)

FPD
- TCR20V
- TCR5L
- TCR20V2
- TCR10L
- TCR12C
- TCR20C

Coating robot
- SR-875VP
- SR-875VPN
- TVP1100
- THC700 (SCARA Painting)

HINE QUALITY

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	■TH450A ■TH550A ■THP550			■THL300 ■THL400					■THE400		■THE600
		■THP700	■THL500 ■THL600 ■THL700								
					■THL800 ■THL900 ■THL1000				■THL1200		
■TH850A ■TH1050A		■TH1200A									

Vertical articulated robot
■TV800/TV1000

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
■TV800/TV1000		■TV1000H-WP			■TV600	■TVL500 ■TVL700			■TVM900 ■TVM1200 ■TVM1500		
					■TLD1100 (Line Dancer)		■SWAN ■CoSWAN		■SR-405HC		

Contributes to productivity improvement in line work by high speed operation

Maximum payload mass

Arm length (mm)

TH850A — 20 kg, 850 mm
TH1050A — 20 kg, 1,050 mm
TH1200A — 20 kg, 1,200 mm

THP700 — 10 kg, 700 mm

THE600 — 12 kg, 600 mm

THL700 — 10 kg, 700 mm
THL900 — 10 kg, 900 mm
THL1200 — 10 kg, 1,200 mm

TH650A — 10 kg, 650 mm

THE400 — 5 kg, 400 mm
THL400 — 5 kg, 400 mm
THL500 — 10 kg, 500 mm
THL600 — 10 kg, 600 mm
THL800 — 10 kg, 800 mm
THL1000 — 10 kg, 1,000 mm

TH450A — 5 kg, 450 mm

THL300 — 5 kg, 300 mm

TH550A — 5 kg, 550 mm

TH250A — 3 kg, 250 mm

THP550 — 2 kg, 550 mm

TH180 — 2 kg, 180 mm
TH350A — 3 kg, 350 mm

Model
Max. payload mass
Arm length

Various options

(Main robot options)

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

Details:
THE Series: P11   THL Series: P23   TH Series: P38

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

Standard cycle time

THL500 [10 kg]
0.45 s
2 kg

THL600 [10 kg]
0.45 s
2 kg

THL700 [10 kg]
0.50 s
2 kg

THL1200 [10 kg]
0.58 s
2 kg

TH1200A [20 kg]
0.57 s
2 kg

THL900 [10 kg]
0.48 s
2 kg

THL1000 [10 kg]
0.48 s
2 kg

Lightweight

THL300 [5 kg]
0.48 s
2 kg

THL800 [10 kg]
0.47 s
2 kg

High speed * High accuracy

THL400 [5 kg]
0.47 s
2 kg

TH350A [3 kg]
0.41 s
1 kg

Small size

THE400 [5 kg]
0.39 s
2 kg

TH250A [3 kg]
0.41 s
1 kg

High speed * High cycle time

TH850A [20 kg]
0.39 s
2 kg

TH1050A [20 kg]
0.39 s
2 kg

High speed * High payload mass

TH180 [2 kg]
0.35 s
1 kg

THE600 [12 kg]
0.31 s
2 kg

THP700 [10 kg]
0.345 s
2 kg

TH650A [10 kg]
0.31 s
2 kg

TH450A [5 kg]
0.30 s
2 kg

TH550A [5 kg]
0.30 s
2 kg

THP550 [2 kg]
0.29 s
1 kg

Model [Max. payload mass]
Standard cycle time
Payload mass

Low   High

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=f7o5qgcEl7I

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 boards

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

To see the application video use this QR Code

https://youtu.be/6VXwr-CG930

Type: THE
Conveyance of cosmetic items with conveyor tracking

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

To see the application video use this QR Code

https://youtu.be/f7o5qgcEl7I
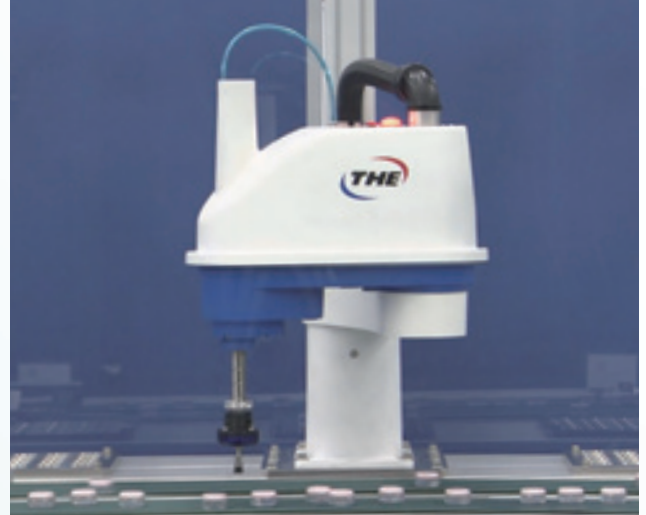
Type: THL
Bolt fastening and conveyance of small parts

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=0wcveuJxEGl
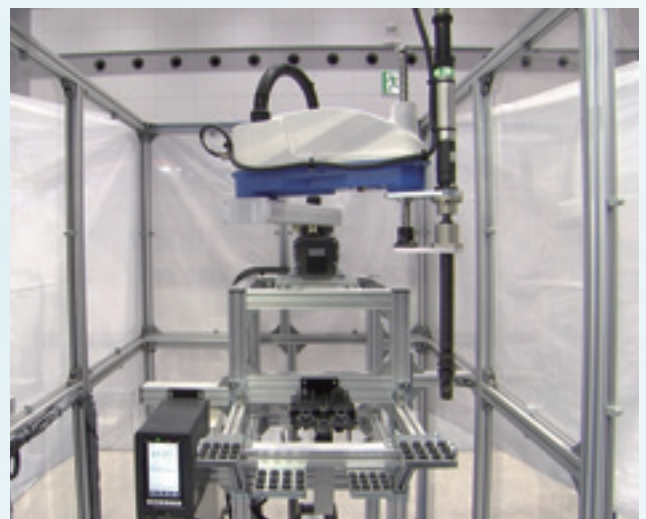
THE Series

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**

- Arm length
- Z-Axis long stroke
- Option — B: Z With protective bellows, C: With cap, CRB: Clean room design, WS: Z-axis (axis3) shaft for wire routing, IP: IP65 dust-proof and drip-proof, T: Ceiling-mount type, WB: Z-axis (axis 3) upper and lower bellows
- Cable between robot and controller — Cable between robot and controller L05: Cable length 5 m, L08: Cable length 8 m, L10: Cable length 10 m, L15: Cable length 15 m, L00R: Cable length 3.5 m (movable), L05R: Cable length 5 m (movable), L08R: Cable length 8 m (movable), L10R: Cable length 10 m (movable), L15R: Cable length 15 m (movable)
- Tool flange for end effector mounting
- E: CE Marking / K: KCs Marking
- BL: Battery-less type motor / S: Special specification

THE400

THE600

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)	7.0 m/sec	8.0 m/sec
Standard cycle time (with 2 kg load)[*1]	0.39 sec	0.31 sec
Maximum payload mass [*2]	5 kg (rated 1 kg)	12 kg (rated 2 kg)
Positioning repeatability[*3] — X-Y	±0.01 mm	±0.01 mm
Positioning repeatability[*3] — Axis Z (Axis 3)	±0.01 mm	±0.01 mm
Positioning repeatability[*3] — Axis C (Axis 4)	±0.007 deg	±0.005 deg
Mass	15 kg	31 kg
Connectable controller	TSL3000, TSL3000E	TS5000

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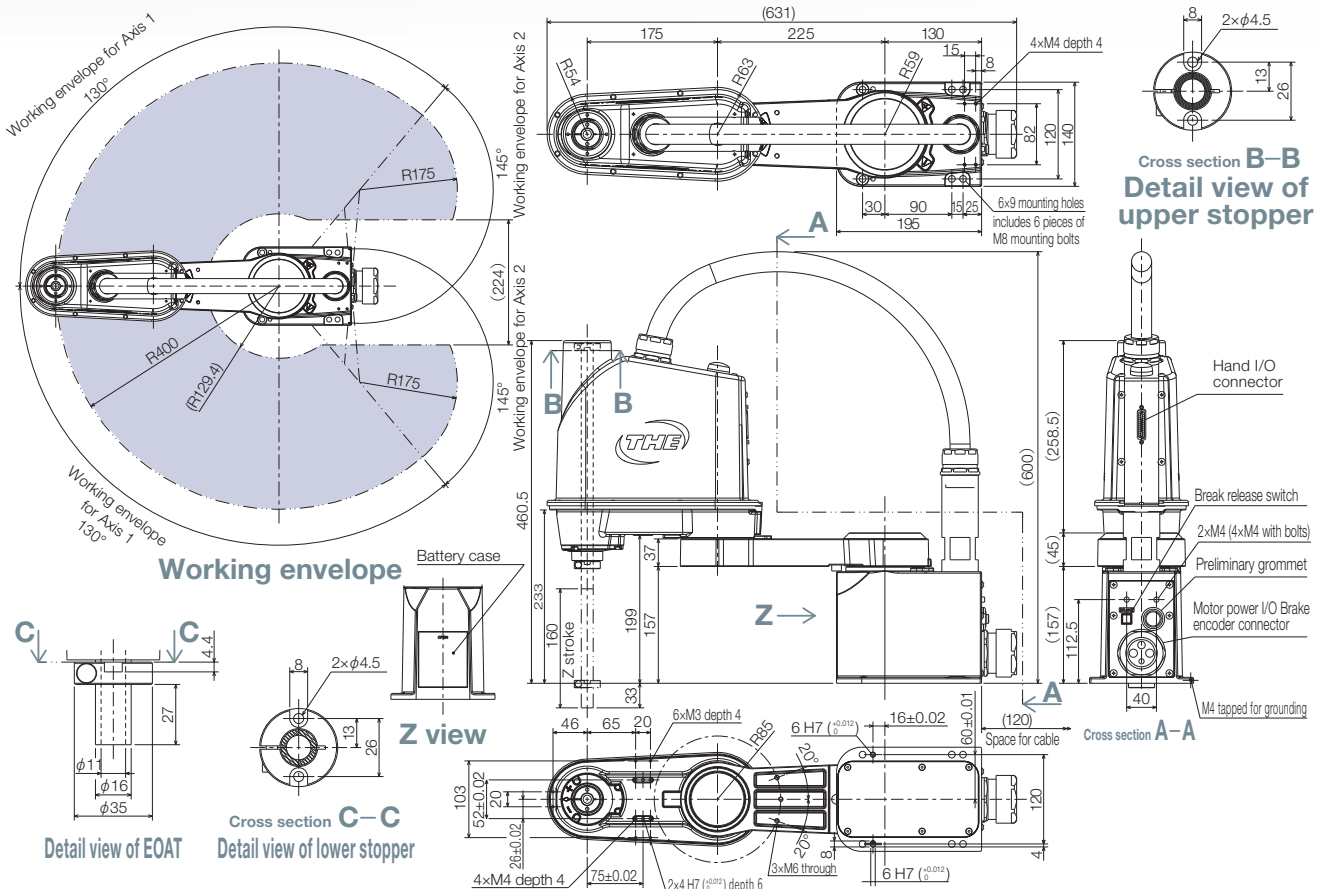
THE400

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)	0~160 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	672 deg/sec
	Axis 2	780 deg/sec
	Axis 3 (Axis Z)	1120 mm/sec
	Axis 4 (Axis C)	1800 deg/sec
	Composite (Axis 1 and 2 composite)	7.0 m/sec
Standard cycle time [1]		0.39 sec (with 2 kg load)
Maximum payload mass [2]		5 kg (rated 1 kg)
Allowable moment of inertia [2]		0.06 kg·m^2
Positioning repeatability [3]	X-Y	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.007 deg
Hand wiring		8 inputs and 8 outputs
Hand pneumatic joint		Provided by user
Robot controller cable		3.5 m
Power supply		2.6 kVA
Mass		15 kg
Connectable controller		TSL3000, TSL3000E

For [1] to [3], please see page 8.

External View

Working envelope

Cross section B—B
Detail view of upper stopper

Cross section A—A

Z view

Detail view of EOAT   Detail view of lower stopper

Cross section C—C

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)	2000 mm/sec
	Axis 4 (Axis C)	2359 deg/sec
	Composite (Axis 1 and 2 composite)	8.0 m/sec
Standard cycle time [*1]		0.31 sec (with 2 kg load)
Maximum payload mass [*2]		12 kg (rated 2 kg)
Allowable moment of inertia [*2]		0.25 kg·m^2
Positioning repeatability [*3]	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

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

External View

Working envelop for config lefty

Working envelope for config righty

Y view

Z View

X view

Detail view of EOAT

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.

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

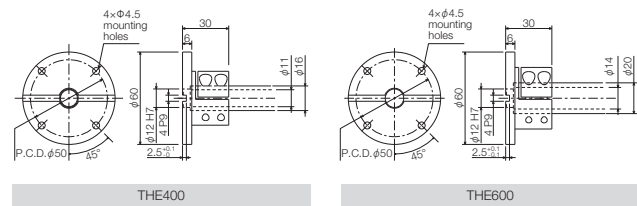Length of the cable between the robot and controller can be changed. Useful when the control panel is far away from the robot.
*Maximum length of cable between robot and controller depends on controller type. Please contact us for more details.

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.

| THE400 | THE600 |

Battery-less motor (BL)

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

Order model code

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

● Arm length	● No.1		● No.2		● No.3		● No.4		● No.6	
400~600	No symbol	No option (standard)	No symbol	No option (standard)	No symbol	Cable length 3.5 m (standard)	No symbol	Tool flange for end effector mounting (standard)	No symbol	No other options (standard)
	Z	Z-Axis long stroke (Z)	B	Protective bellows for Z-Axis	L05	Cable length 5 m	TF	Tool flange for end effector mounting	BL	Battery-less motor (BL)
			C	Z-axis upper cap (C)	L08	Cable length 8 m			S	Special specification
			CRB	Cleanroom specification	L10	Cable length 10 m				
			WS	Z-axis (axis3) shaft for wire routing	L15	Cable length 15 m				
			IP	Dust-proof and splash-proof specification (IP65)	L00R	Cable length 3.5 m (movable)				
			T	Ceiling-mount type	L05R	Cable length 5 m (movable)	● No.5			
			WB	Z-axis (axis 3) upper and lower bellows	L08R	Cable length 8 m (movable)	No symbol	No special marking (standard)		
					L10R	Cable length 10 m (movable)	E	CE Marking		
					L15R	Cable length 15 m (movable)	K	KCs Marking		

Option table

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

Type	No.	Symbol	THE400	THE600
No option (standard)	1	No symbol	○ (160 mm)	○ (210 mm)
Z-Axis long stroke (Z)		Z	△	△
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	○	△
No other options (standard)	6	No symbol	○	○
Battery-less motor (BL)		BL	○	×
Special specification		S	△	△

THL Series

Low cost

Impressive performance at affordable prices

Lightweight

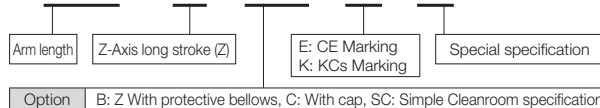Lightweight robot (minimumm: 12 kg)
Easy installation in narrow spaces

Wide variety of arm lengths

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

Order model code

THL 300 - Z - SC - E - S

- Arm length
- Z-Axis long stroke (Z)
- E: CE Marking / K: KCs Marking
- Special specification

| 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)		5.1 m/sec	6.3 m/sec	6.3 m/sec
Standard cycle time (with 2 kg load)*1		0.48 sec	0.47 sec	0.45 sec
Maximum payload mass *2		5 kg (rated 2 kg)	5 kg (rated 2 kg)	10 kg (rated 2 kg)
Positioning repeatability *3	X-Y	±0.01 mm	±0.01 mm	±0.01 mm
	Axis Z (Axis 3)	±0.015 mm	±0.015 mm	±0.015 mm
	Axis C (Axis 4)	±0.007 deg	±0.007 deg	±0.007 deg
Mass		12 kg	13 kg	22 kg
Connectable controller		TSL3000, TSL3000E	TSL3000, TSL3000E	TSL3000, TSL3000E
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)		7.1 m/sec	7.9 m/sec	4.3 m/sec
Standard cycle time (with 2 kg load)*1		0.45 sec	0.50 sec	0.47 sec
Maximum payload mass *2		10 kg (rated 2 kg)	10 kg (rated 2 kg)	10 kg (rated 2 kg)
Positioning repeatability *3	X-Y	±0.01 mm	±0.01 mm	±0.02 mm
	Axis Z (Axis 3)	±0.015 mm	±0.015 mm	±0.015 mm
	Axis C (Axis 4)	±0.007 deg	±0.007 deg	±0.007 deg
Mass		23 kg	24 kg	33 kg
Connectable controller		TSL3000, TSL3000E	TSL3000, TSL3000E	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)		4.6 m/sec	5.0 m/sec	5.7 m/sec
Standard cycle time (with 2 kg load)*1		0.48 sec	0.48 sec	0.58 sec
Maximum payload mass *2		10 kg (rated 2 kg)	10 kg (rated 2 kg)	10 kg (rated 2 kg)
Positioning repeatability *3	X-Y	±0.02 mm	±0.02 mm	±0.05 mm
	Axis Z (Axis 3)	±0.015 mm	±0.015 mm	±0.03 mm
	Axis C (Axis 4)	±0.007 deg	±0.007 deg	±0.014 deg
Mass		35 kg	37 kg	40 kg
Connectable controller		TSL3000, TSL3000E	TSL3000, TSL3000E	TSL3000, TSL3000E

*1: Continuous operation is not possible beyond the effective load ratio. Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning.
*2: Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.
*3: Positioning repeatable accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. The specification value may be exceeded depending on moving pattern, load mass and offset amount. Positioning repeatability for X-Y and C are for when Z-axis is at the uppermost position. Trajectory accuracy is not ensured.
*4: 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)	1120 mm/sec
	Axis 4 (Axis C)	1500 deg/sec
	Composite (Axis 1 and 2 composite)	5.1 m/sec
Standard cycle time [*1]		0.48 sec (with 2 kg load)
Maximum payload mass [*2]		5 kg (rated 2 kg)
Allowable moment of inertia [*2]		0.05 kg·m^2
Positioning repeatability [*3]	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 [*4]		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 13.

External View

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

Working envelope

Detail view of EOAT

Z view

A

A

Z

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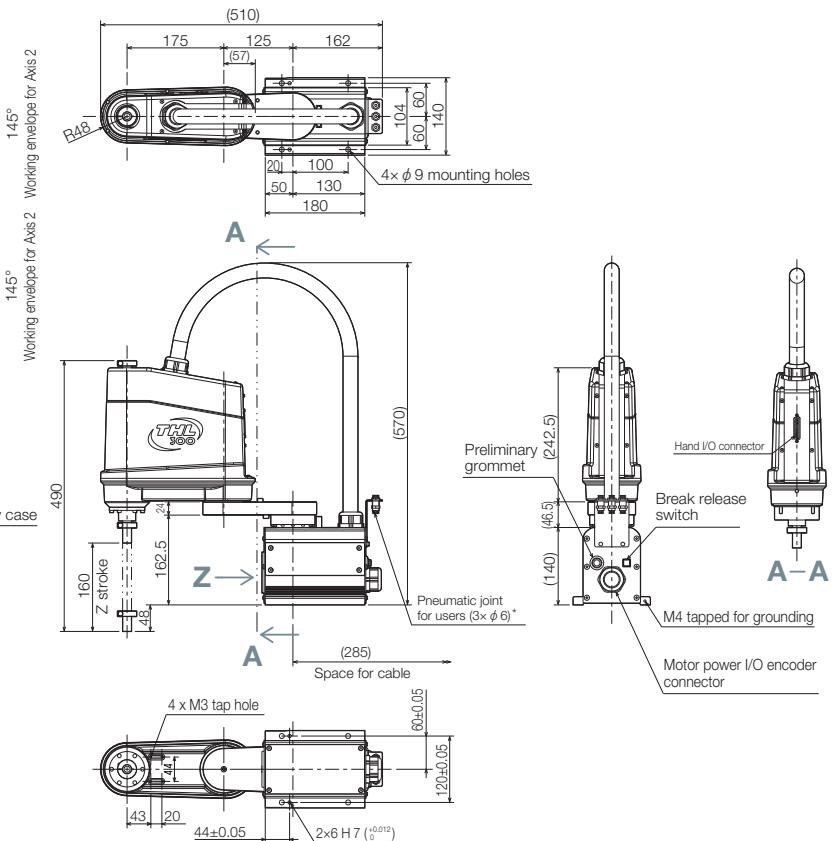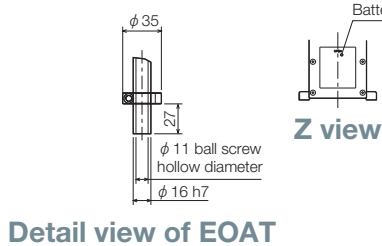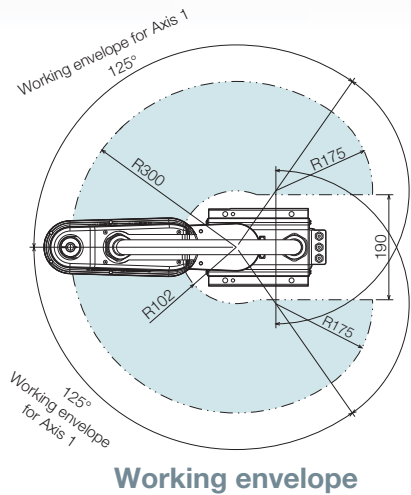
CAD Download URL   https://www.shibaura-machine.co.jp/en/product/robot/download.html

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)	1120 mm/sec
	Axis 4 (Axis C)	1500 deg/sec
	Composite (Axis 1 and 2 composite)	6.3 m/sec
Standard cycle time [1]		0.47 sec (with 2 kg load)
Maximum payload mass [2]		5 kg (rated 2 kg)
Allowable moment of inertia [2]		0.05 kg·m^2
Positioning repeatability [3]	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 [4]		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 13.

External View

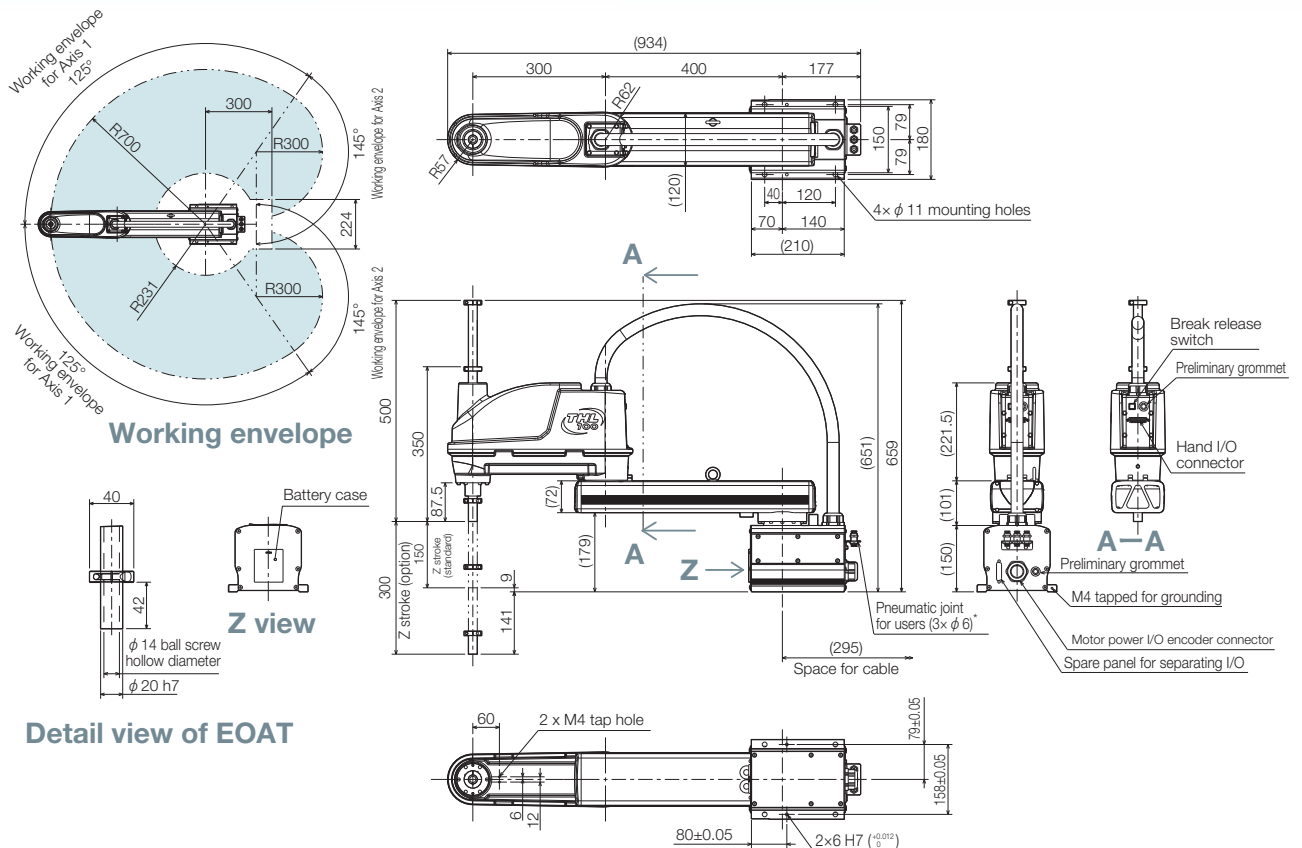* The air tubes are packed, which need to be installed by the user.

Working envelope

Z view

Detail view of EOAT

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

THL500

Model		THL500
Arm length (1st Arm + 2nd Arm)		500 mm (200 mm+300 mm)
Working envelope	Axis 1	±125 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~150 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	450 deg/sec
	Axis 2	450 deg/sec
	Axis 3 (Axis Z)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	6.3 m/sec
Standard cycle time [*1]		0.45 sec (with 2 kg load)
Maximum payload mass [*2]		10 kg (rated 2 kg)
Allowable moment of inertia [*2]		0.2 kg·m^2
Positioning repeatability [*3]	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 [*4]		ϕ6 x 3 pcs
Robot controller cable		3.5 m
Power supply		1.4 kVA
Mass		22 kg
Connectable controller		TSL3000, TSL3000E

For *1 to *4 please see page 13.

External View

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

Working envelope

Z view

Detail view of EOAT

ϕ 14 ball screw hollow diameter
ϕ 20 h7

Battery case

Break release switch
Preliminary grommet
Hand I/O connector

A — A

Preliminary grommet
M4 tapped for grounding
Motor power I/O encoder connector
Spare panel for separating I/O

Pneumatic joint for users (3× ϕ 6) *
Space for cable

2 x M4 tap hole
2×6 H7 $\left(^{+0.012}_{0}\right)$

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

THL600

Model		THL600
Arm length (1st Arm + 2nd Arm)		600 mm (300 mm+300 mm)
Working envelope	Axis 1	±125 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~150 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	450 deg/sec
	Axis 2	450 deg/sec
	Axis 3 (Axis Z)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	7.1 m/sec
Standard cycle time [1]		0.45 sec (with 2 kg load)
Maximum payload mass [2]		10 kg (rated 2 kg)
Allowable moment of inertia [2]		0.2 kg·m^2
Positioning repeatability [3]	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 [4]		ϕ6 x 3 pcs
Robot controller cable		3.5 m
Power supply		1.4 kVA
Mass		23 kg
Connectable controller		TSL3000, TSL3000E

For *1 to *4 please see page 13.

External View

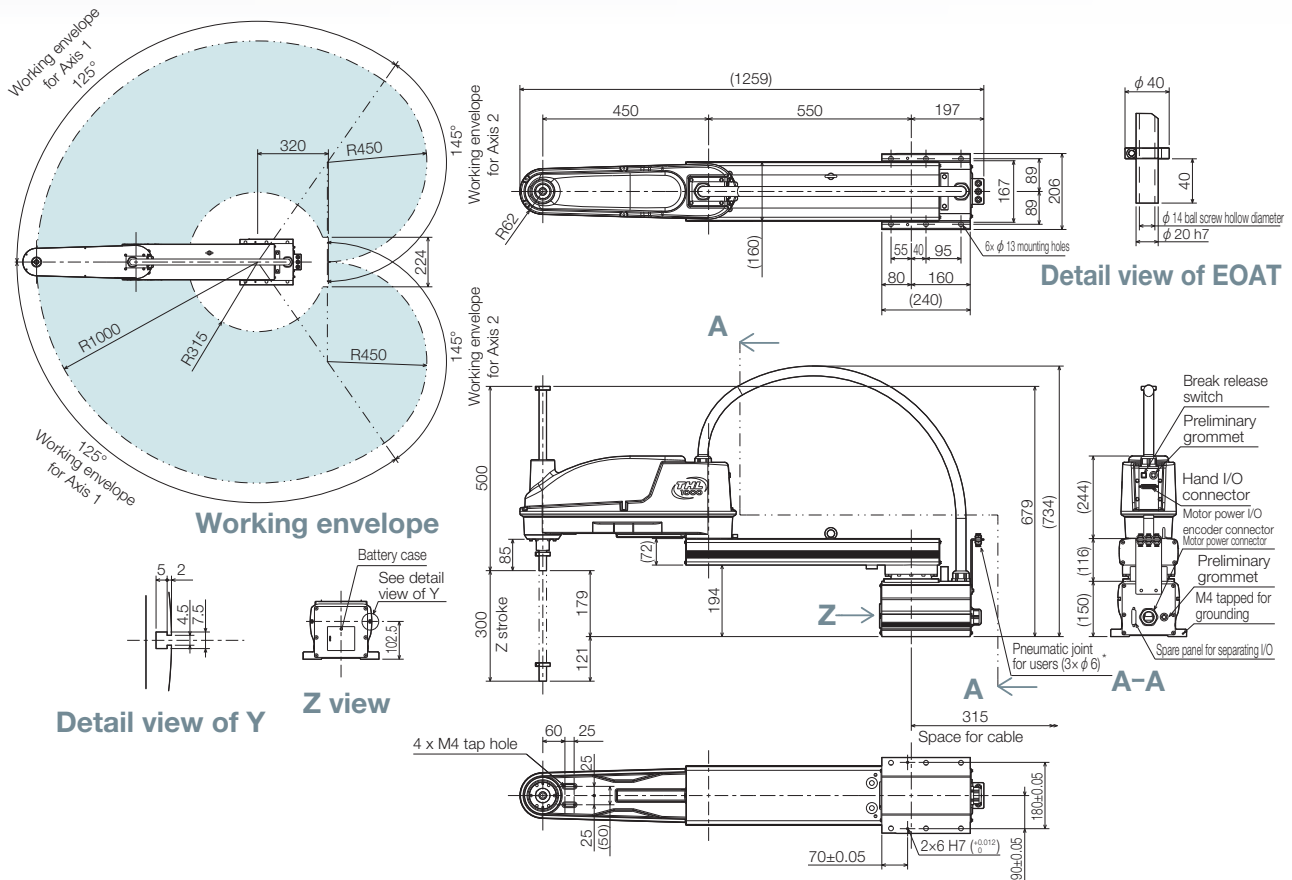* The air tubes are packed, which need to be installed by the user.

Working envelope

Z view

Battery case

Detail view of EOAT

40

52

ϕ 14 ball screw hollow diameter

ϕ 20 h7

A

A—A

Break release switch

Preliminary grommet

Hand I/O connector

Preliminary grommet

M4 tapped for grounding

Pneumatic joint for users (3× ϕ 6)*

Motor power I/O encoder connector

Spare panel for separating I/O

Space for cable

2 x M4 tap hole

2×6 H7 ($^{+0.012}_{0}$)
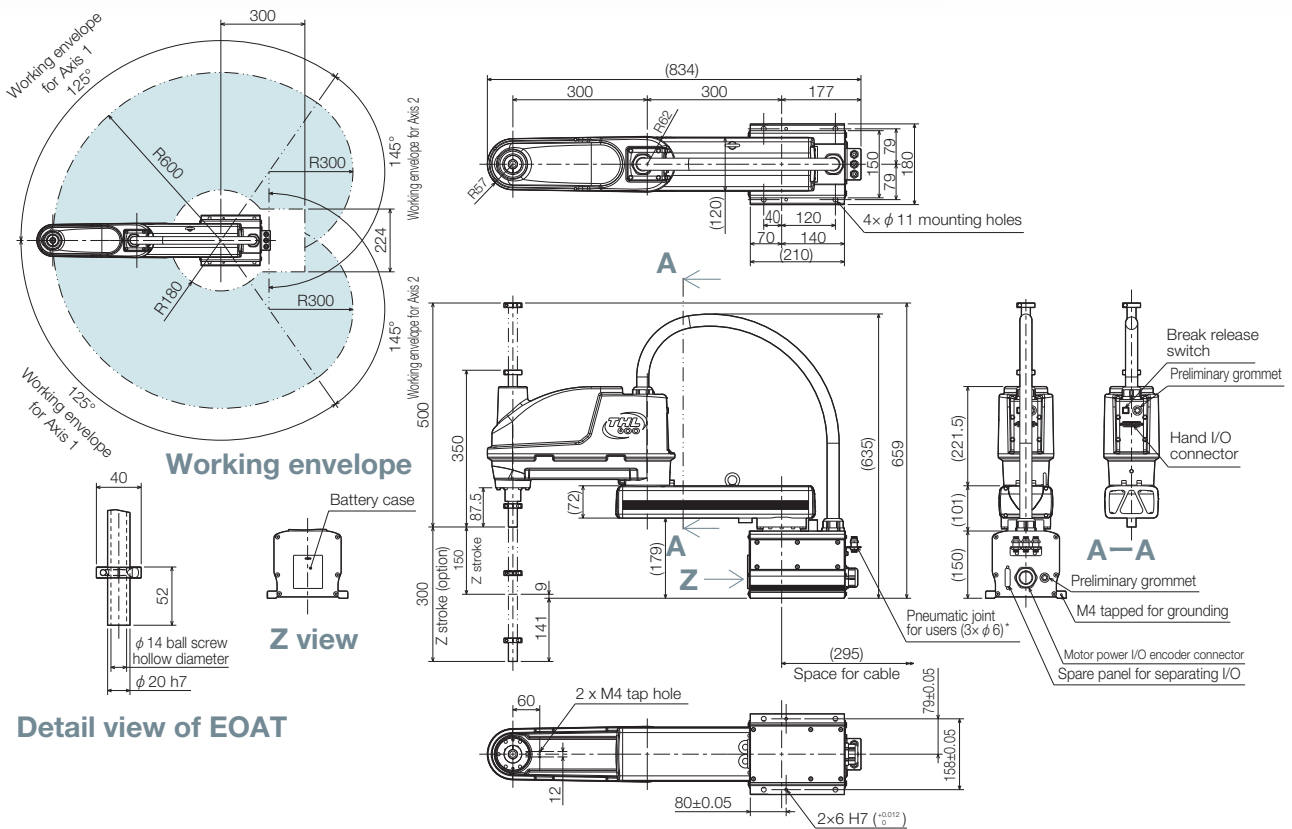
THL700

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)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	7.9 m/sec
Standard cycle time [*1]		0.50 sec (with 2 kg load)
Maximum payload mass [*2]		10 kg (rated 2 kg)
Allowable moment of inertia [*2]		0.2 kg·m²
Positioning repeatability [*3]	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 [*4]		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 13.

External View

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

Working envelope

Z view

Detail view of EOAT

A—A

Break release switch
Preliminary grommet
Hand I/O connector
Preliminary grommet
M4 tapped for grounding
Motor power I/O encoder connector
Spare panel for separating I/O
Pneumatic joint for users (3× ϕ 6) *
Space for cable

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

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)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	4.3 m/sec
Standard cycle time [*1]		0.47 sec (with 2 kg load)
Maximum payload mass [*2]		10 kg (rated 2 kg)
Allowable moment of inertia [*2]		0.2 kg·m^2
Positioning repeatability [*3]	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 [*4]		ϕ6 x 3 pcs
Robot controller cable		3.5 m
Power supply		1.4 kVA
Mass		33 kg
Connectable controller		TSL3000, TSL3000E

For *1 to *4 please see page 13.

External View

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

Working envelope

Detail view of Y **Z view**

Detail view of EOAT

A—A

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

THL900

Model		THL900
Arm length (1st Arm + 2nd Arm)		900 mm (450 mm+450 mm)
Working envelope	Axis 1	±125 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~300 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	187.5 deg/sec
	Axis 2	217.5 deg/sec
	Axis 3 (Axis Z)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	4.6 m/sec
Standard cycle time [1]		0.48 sec (with 2 kg load)
Maximum payload mass [2]		10 kg (rated 2 kg)
Allowable moment of inertia [2]		0.2 kg·m²
Positioning repeatability [3]	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 [4]		ϕ6 x 3 pcs
Robot controller cable		3.5 m
Power supply		1.4 kVA
Mass		35 kg
Connectable controller		TSL3000, TSL3000E

For *1 to *4 please see page 13.

External View

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

Working envelope

Detail view of Y

Z view

Detail view of EOAT

A—A
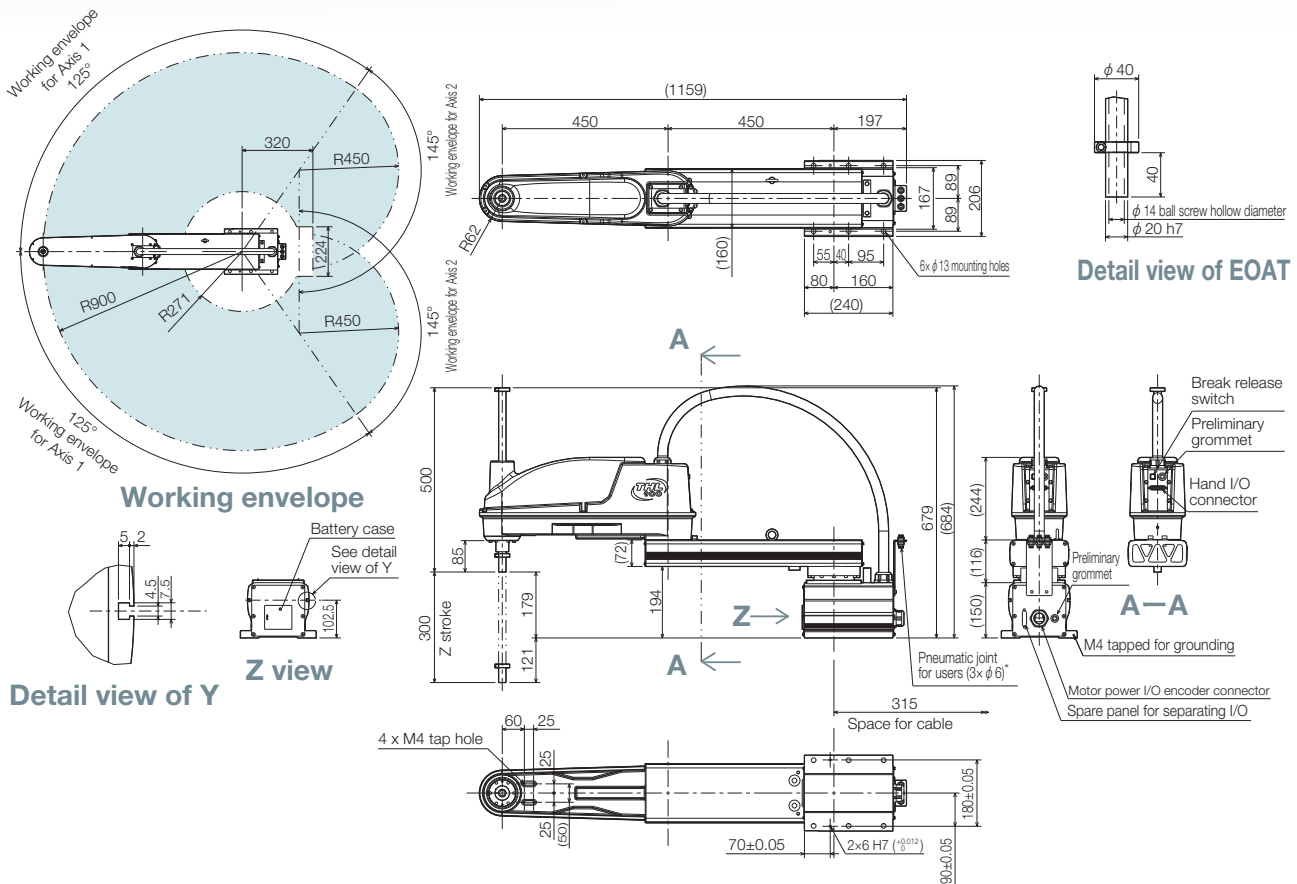
THL1000

Model		THL1000
Arm length (1st Arm + 2nd Arm)		1000 mm (550 mm+450 mm)
Working envelope	Axis 1	±125 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~300 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	187.5 deg/sec
	Axis 2	217.5 deg/sec
	Axis 3 (Axis Z)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	5.0 m/sec
Standard cycle time [1]		0.48 sec (with 2 kg load)
Maximum payload mass [2]		10 kg (rated 2 kg)
Allowable moment of inertia [2]		0.2 kg·m^2
Positioning repeatability [3]	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 [4]		φ6 x 3 pcs
Robot controller cable		3.5 m
Power supply		1.4 kVA
Mass		37 kg
Connectable controller		TSL3000, TSL3000E

For [1] to [4] please see page 13.

External View

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

Working envelope

Detail view of Y

Z view

Detail view of EOAT

A–A

THL1200

Model		THL1200
Arm length (1st Arm + 2nd Arm)		1200 mm (750 mm+450 mm)
Working envelope	Axis 1	±125 deg
	Axis 2	±155 deg
	Axis 3 (Axis Z)	0~300 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	187.5 deg/sec
	Axis 2	217.5 deg/sec
	Axis 3 (Axis Z)	2000 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	5.7 m/sec
Standard cycle time [*1]		0.58 sec (with 2 kg load)
Maximum payload mass [*2]		10 kg (rated 2 kg)
Allowable moment of inertia [*2]		0.2 kg·m^2
Positioning repeatability [*3]	X-Y	±0.05 mm
	Axis Z(Axis 3)	±0.03 mm
	Axis C(Axis 4)	±0.014 deg
Hand wiring		8 inputs and 8 outputs
Hand pneumatic joint [*4]		ϕ6 x 3 pcs
Robot controller cable		3.5 m
Power supply		1.4 kVA
Mass		40 kg
Connectable controller		TSL3000, TSL3000E

For *1 to *4 please see page 13.

External View

Working envelope

Working envelope for Axis 1 125°
Working envelope for Axis 2
(430) R450
(342)
R1200
R991
R450
125° Working envelope for Axis 1

Detail view of EOAT

(1454)
450 750 192
R62
(160)
(167) 89 89 206
55 40 95
80 160
(240)
6×ϕ13 mounting holes
ϕ40
40
ϕ14 ball screw hollow diameter
ϕ20

Cable duct
A
After the installation, remove eyebolt.
Z
A
500
85
(72)
300 Z stroke
179
121
194
678.5
(855)
164 (151)
Space for cable
Spare panel for separating I/O

Cross section A−A
Break release switch
Pneumatic joint for users (3×M5)
Hand I/O connector
Pneumatic joint for users (3×ϕ6)
M4 tapped for grounding
Preliminary grommet
Motor power I/O Brake encoder connector
(224)
(116)
(150)

Detail view of Y
*two locations
(Detail view of T-shaped slot for peripheral device mount)
5 2
4.5
7.5
Battery case
See detail view of Y
102.5

Z view

4 x M4 tap hole
60 25
25
50
25
70±0.05
90±0.05
180±0.05
2×6 H7

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.

◄Protective bellows for Z-Axis(B)

Z-axis upper cap (C)▶

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.

| THL300, THL400 | THL500, THL600, THL700, THL800, THL900, THL1000 |

Optional cable lengths

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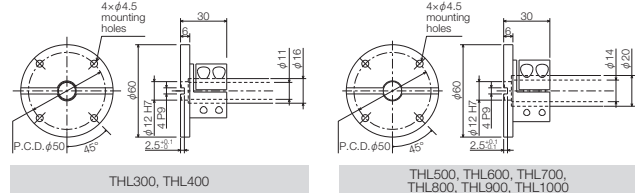
Order model code

EX. THL 300 - Z - SC - E - S

● Arm length
300~1200

● No.1

No symbol	No option (standard)
Z	Z-Axis long stroke (Z)

● No.2

No symbol	No option (standard)
B	Protective bellows for Z-Axis
C	Z-axis upper cap (C)
SC	Simple cleanroom specification
IP6X	Dust-proof specification (IP6X)
T	Ceiling-mount type
LH	Low height design

● No.3

No symbol	No special marking (standard)
E	CE Marking
K	KCs Marking

● No.4

No symbol	No other options (standard)
S	Special specification

Option table

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

Type	No.	Symbol	THL300, 400	THL500, 600, 700	THL800~1000	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		T	O (THL400 only)	○	○	△
Low height design		LH	×	△ (THL600~THL700)	O (THL1000 only)	△
No special marking (standard)	3	No symbol	○	○	○	○
CE Marking		E	○	○	○	○
KCs Marking		K	○	○	○	△
No other options (standard)	4	No symbol	○	○	○	○
Special specification		S	△	△	△	△

TH Series

Wide variety of arm lengths

Wide variety of arm lengths (180 mm to 1200 mm)
You can select the best robot for your application

High payload mass

Maximum payload mass 20 kg
Parts handling such as automobile components

High speed and high accuracy

Fast cycle time (maximum: 0.30 sec)
Suitable for mass production of precision parts

Order model code

TH 450A - Z - B - E - S

- Arm length
- Z-Axis long stroke
- E: CE Marking / K: KCs Marking
- Special specification
- Option: B: Z With protective bellows, C: With cap, CRB: Cleanroom specification, IP65: IP65 Dust-proof, T: Ceiling-mount type.

TH180

TH250A

TH350A

TH450A

TH550A

TH650A

TH850A

TH1050A

TH1200A

Model		TH180	TH250A	TH350A
Arm length (1st Arm + 2nd Arm)		180 mm (70 mm+110 mm)	250 mm (125 mm+125 mm)	350 mm (225 mm+125 mm)
Maximum speed (Axis 1 and 2 composite)		2.6 m/sec	3.53 m/sec	3.24 m/sec
Standard cycle time (with 2 kg load)[1]		0.35 sec	0.41 sec	0.41 sec
Maximum payload mass [2]		2 kg (rated 1 kg)	3 kg (rated 1 kg)	3 kg (rated 1 kg)
Positioning repeatability [3]	X-Y	±0.01 mm	±0.01 mm	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm	±0.01 mm	±0.01 mm
	Axis C (Axis 4)	±0.005 deg	±0.005 deg	±0.005 deg
Mass		9 kg	14 kg	14 kg
Connectable controller		TS3000, TS3000E	TS3000, TS3000E	TS3000, TS3000E
Model		**TH450A**	**TH550A**	**TH650A**
Arm length (1st Arm + 2nd Arm)		450 mm (200 mm+250 mm)	550 mm (300 mm+250 mm)	650 mm (300 mm+350 mm)
Maximum speed (Axis 1 and 2 composite)		7.3 m/sec	6.2 m/sec	7.52 m/sec
Standard cycle time (with 2 kg load)[1]		0.30 sec	0.30 sec	0.31 sec
Maximum payload mass [2]		5 kg (rated 2 kg)	5 kg (rated 2 kg)	10 kg (rated 2 kg)
Positioning repeatability [3]	X-Y	±0.01 mm	±0.01 mm	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm	±0.01 mm	±0.01 mm
	Axis C (Axis 4)	±0.005 deg	±0.005 deg	±0.004 deg
Mass		26 kg	28 kg	52 kg
Connectable controller		TS3000, TS3000E	TS3000, TS3000E	TS3100, TS3100E
Model		**TH850A**	**TH1050A**	**TH1200A**
Arm length (1st Arm + 2nd Arm)		850 mm (300 mm+550 mm)	1050 mm (550 mm+500 mm)	1200 mm (700 mm+500 mm)
Maximum speed (Axis 1 and 2 composite)		8.13 m/sec	9.15 m/sec	7.9 m/sec
Standard cycle time (with 2 kg load)[1]		0.39 sec	0.39 sec	0.57 sec
Maximum payload mass [2]		20 kg (rated 5 kg)	20 kg (rated 5 kg)	20 kg (rated 5 kg)
Positioning repeatability [3]	X-Y	±0.01 mm	±0.01 mm	±0.03 mm
	Axis Z (Axis 3)	±0.01 mm	±0.01 mm	±0.02 mm
	Axis C (Axis 4)	±0.004 deg	±0.004 deg	±0.005 deg
Mass		76 kg	80 kg	83 kg
Connectable controller		TS3100, TS3100E	TS3100, TS3100E	TS3100, TS3100E

[1]: Continuous operation is not possible beyond the effective load ratio.
Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning (with 1 kg load for TH250A and TH350A). With 1 kg load, horizontal 100 mm, vertical 25 mm for TH180.
[2]: Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.
[3]: Positioning repeatable accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy The specification value may be exceeded depending on moving pattern, load mass and offset amount. Positioning repeatability for X-Y and C are for when Z-axis is at the uppermost position. Trajectory accuracy is not ensured.

TH180

Model		TH180
Arm length (1st Arm + 2nd Arm)		250 mm (70 mm+110 mm)
Working envelope	Axis 1	±120 deg
	Axis 2	±140 deg
	Axis 3 (Axis Z)	0~120 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	533 deg/sec
	Axis 2	480 deg/sec
	Axis 3 (Axis Z)	1013 mm/sec
	Axis 4 (Axis C)	1186 deg/sec
	Composite (Axis 1 and 2 composite)	2.6 m/sec
Standard cycle time [1]		0.35 sec (with 1 kg load)
Maximum payload mass [2]		2 kg (rated 1 kg)
Allowable moment of inertia [2]		0.01 kg·m^2
Positioning repeatability [3]	X-Y	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.005 deg
Hand wiring		5 inputs and 4 outputs
Hand pneumatic joint		ϕ4 x 4 pcs
Robot controller cable		3 m
Power supply		0.5 kVA
Mass		9 kg
Connectable controller		TS3000, TS3000E

For [1] to [3] please see page 25.

External View

Working envelope

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

Detail view of A (EOAT)

Detail view of B
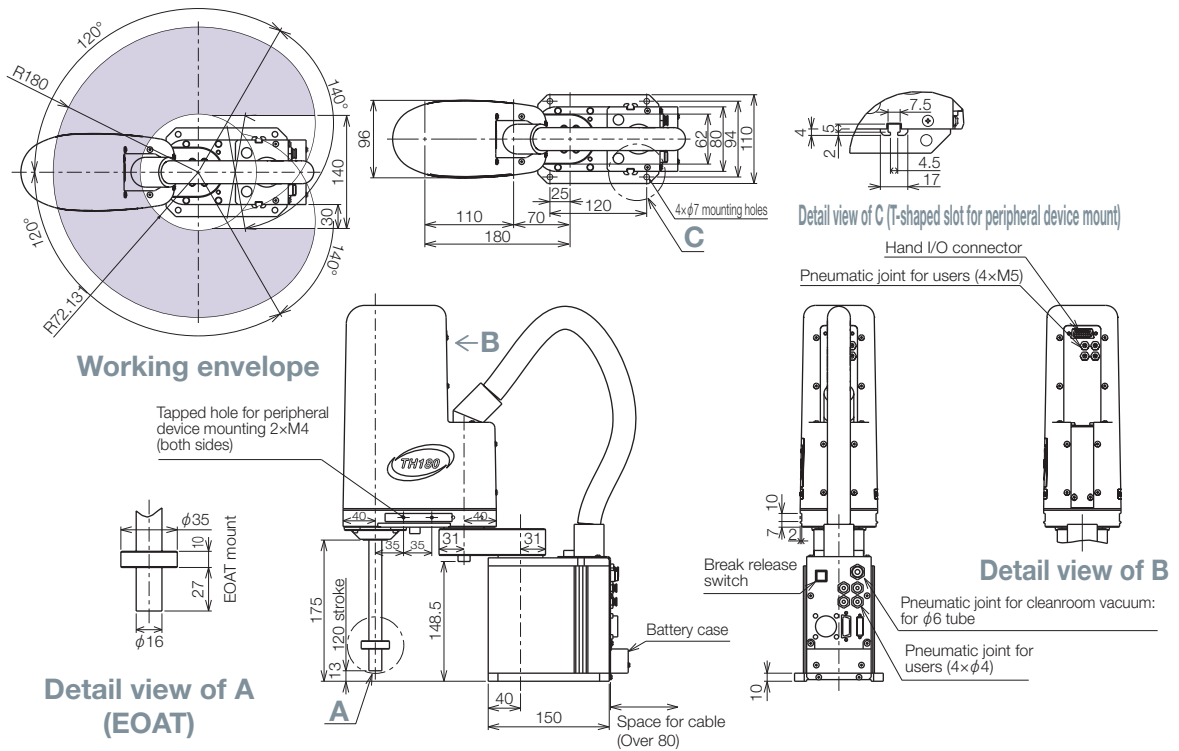
TH250A

Model		TH250A
Arm length (1st Arm + 2nd Arm)		250 mm (125 mm+125 mm)
Working envelope	Axis 1	±115 deg
	Axis 2	±140 deg
	Axis 3 (Axis Z)	0~120 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	540 deg/sec
	Axis 2	540 deg/sec
	Axis 3 (Axis Z)	1120 mm/sec
	Axis 4 (Axis C)	1143 deg/sec
	Composite (Axis 1 and 2 composite)	3.53 m/sec
Standard cycle time [*1]		0.41 sec (with 1 kg load)
Maximum payload mass [*2]		3 kg (rated 1 kg)
Allowable moment of inertia [*2]		0.017 kg·m²
Positioning repeatability [*3]	X-Y	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.005 deg
Hand wiring		5 inputs and 4 outputs
Hand pneumatic joint		ϕ4 x 4 pcs
Robot controller cable		3 m
Power supply		0.9 kVA
Mass		14 kg
Connectable controller		TS3000, TS3000E

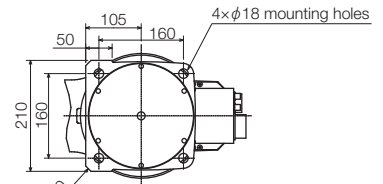For *1 to *3 please see page 25.

External View

Working envelope

Z view

Detail view of T-shaped slot for peripheral device mount

Detail view of EOAT

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

TH350A

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

For *1 to *3 please see page 25.

External View

Working envelope

115° R350 R142 145° 145° 115°

Z view

Battery case

Hand I/O connector
Pneumatic joint for users (4×M5)

200 170 15
101
120 140
125 225
167
50 150
542
4×ϕ9 mounting holes

Detail view of T-shaped slot for peripheral device mount

4.5 7.5 65

Detail view of EOAT

ϕ35 Space for EOAT 27 ϕ16

457.5 59.5 120 172 18.5 10

Z

Maximum 635

Space for cable (Over 80)

Pneumatic joint for cleanroom vacuum: for ϕ6 tube
Hand I/O connector
Break release switch for Axis 3
Motor power connector
Encoder connector
M4 tapped for grounding
Pneumatic joint for users (4×ϕ4)

TH450A

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

For [1] to [3] please see page 25.
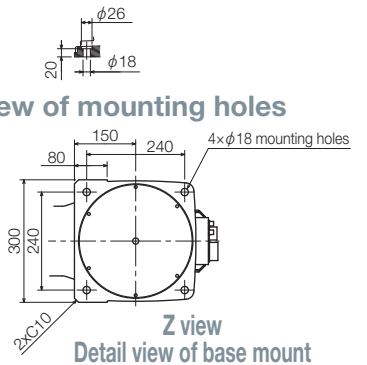
External View

Working envelope

Detail view of T-shaped slot for peripheral device mount

Detail view of A

Z view

Detail view of EOAT

THE Series

THL series

TH/THP Series

Controller/Teach pendant

TH550A

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

For *1 to *3 please see page 25.

External View

Working envelope

Detail view of EOAT

Detail view of T-shaped slot for peripheral device mount

Z view
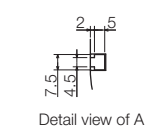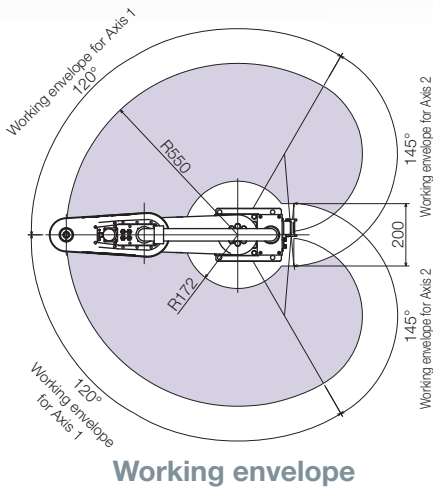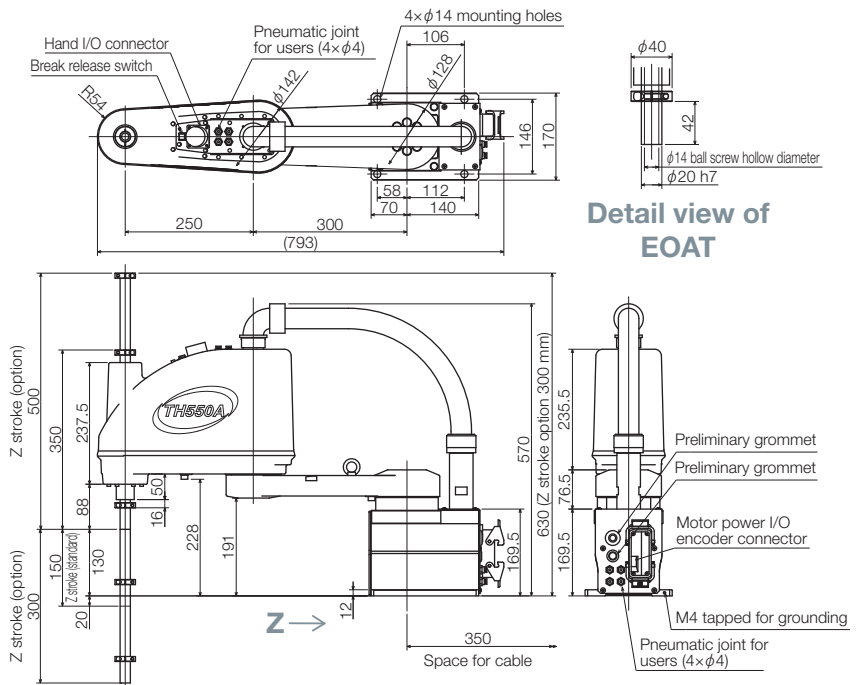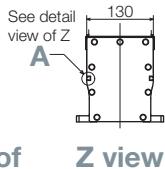
TH650A

Model		TH650A
Arm length (1st Arm + 2nd Arm)		650 mm (300 mm+350 mm)
Working envelope	Axis 1	±160 deg
	Axis 2	±143 deg
	Axis 3 (Axis Z)	0~200 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	340 deg/sec
	Axis 2	600 deg/sec
	Axis 3 (Axis Z)	2050 mm/sec
	Axis 4 (Axis C)	1700 deg/sec
	Composite (Axis 1 and 2 composite)	7.52 m/sec
Standard cycle time [1]		0.31 sec (with 2 kg load)
Maximum payload mass [2]		10 kg (rated 2 kg)
Allowable moment of inertia [2]		0.1 kg·m^2
Positioning repeatability [3]	X-Y	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.004 deg
Hand wiring		5 inputs and 4 outputs
Hand pneumatic joint		ϕ6 x 4 pcs
Robot controller cable		5 m
Power supply		3.5 kVA
Mass		52 kg
Connectable controller		TS3100, TS3100E
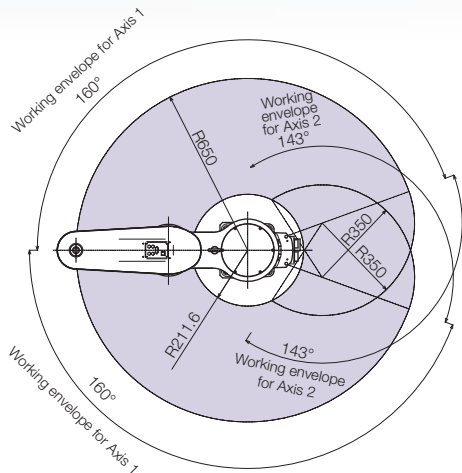
For *1 to *3 please see page 25.

External View
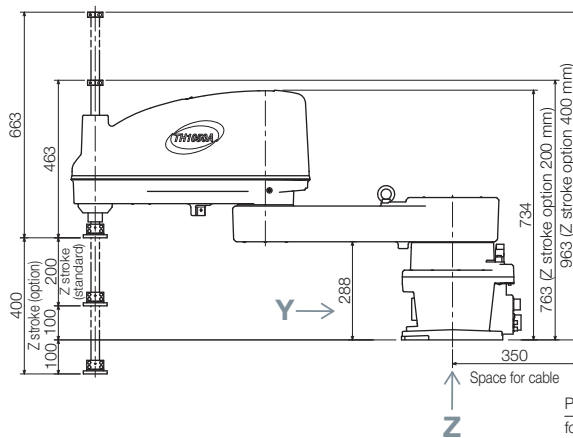

Working envelope

Detail view of mounting holes

Detail view of base mount

Detail view of EOAT

ϕ18 ball screw hollow diameter

Battery case

Y view

Z

Y →

Space for cable

Hand I/O connector panel

Encoder connector
Hand I/O connector
Pneumatic joint for users (4×ϕ6)
Motor power connector
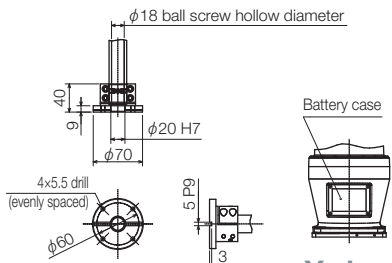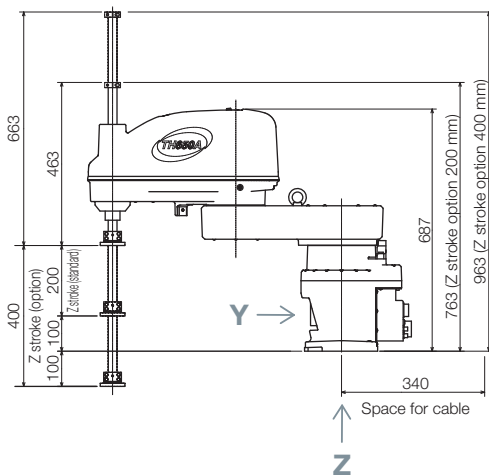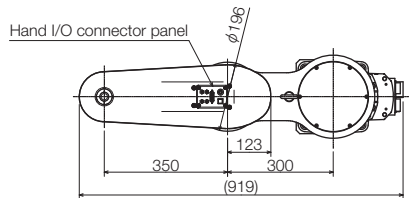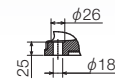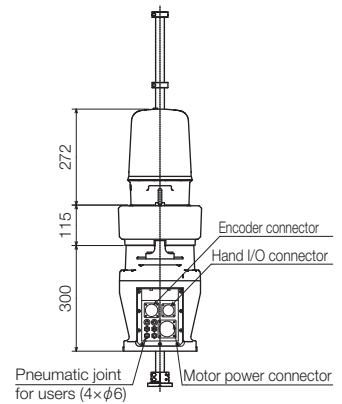
TH850A

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

For [1] to [3] please see page 25.

External View

Working envelope

Working envelope for Axis 1 160°
Working envelope for Axis 2 145°
R850
R500
R500
R292.9
145°
Working envelope for Axis 2
160°
Working envelope for Axis 1

Detail view of EOAT

φ18 ball screw hollow diameter
40
9
φ20 H7
φ70
4×5.5 drill (evenly spaced)
φ60
5 P9
3

Y view

Battery case

Hand I/O connector panel
φ193
R71
500
130.5
350
(1122)

Detail view of mounting holes

φ26
φ18
20

150
240
80
300
240
4×φ18 mounting holes
2-C10

Z view
Detail view of base mount

663
463
400
Z stroke (option) 100, 100, 200
z stroke (standard) 200
734
288
350
Space for cable
763 (Z stroke option 200 mm)
963 (Z stroke option 400 mm)
Y →
Z

316
132
286
Encoder connector
Hand I/O connector
Pneumatic joint for users (4×φ6)
Motor power connector

TH1050A

Model		TH1050A
Arm length (1st Arm + 2nd Arm)		1050 mm (550 mm+500 mm)
Working envelope	Axis 1	±160 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~200 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	300 deg/sec
	Axis 2	420 deg/sec
	Axis 3 (Axis Z)	2050 mm/sec
	Axis 4 (Axis C)	1200 deg/sec
	Composite (Axis 1 and 2 composite)	9.15 m/sec
Standard cycle time [*1]		0.39 sec (with 2 kg load)
Maximum payload mass [*2]		20 kg (rated 5 kg)
Allowable moment of inertia [*2]		0.2 kg·m^2
Positioning repeatability [*3]	X-Y	±0.01 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.004 deg
Hand wiring		5 inputs and 4 outputs
Hand pneumatic joint		ϕ6 x 4 pcs
Robot controller cable		5 m
Power supply		4.4 kVA
Mass		80 kg
Connectable controller		TS3100, TS3100E
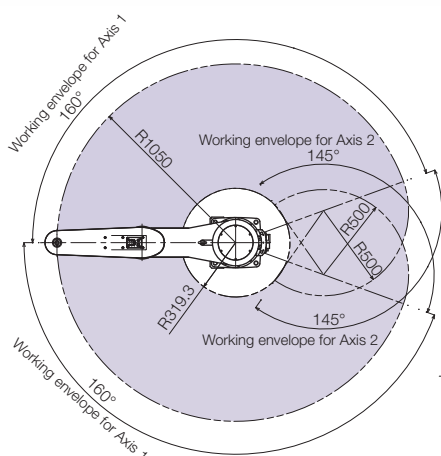
For *1 to *3 please see page 25.

External View

Working envelope

Detail view of EOAT

Y view

Z

Y→

Detail view of mounting holes

Z view
Detail view of base mount

Hand I/O connector panel
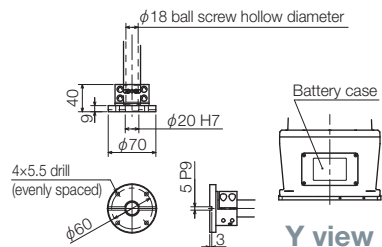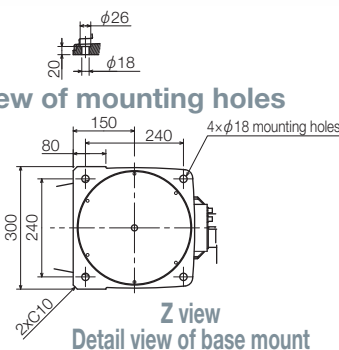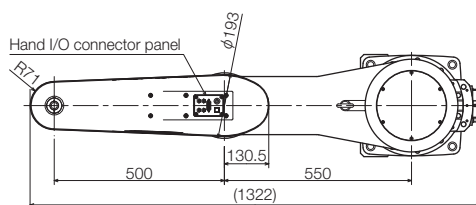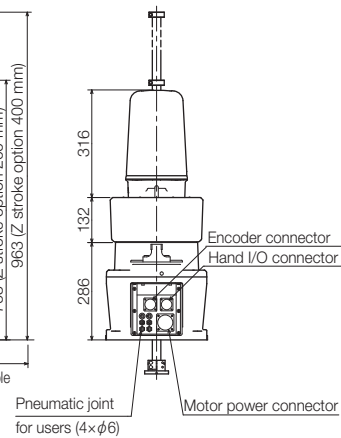
TH1200A

Model		TH1200A
Arm length (1st Arm + 2nd Arm)		1200 mm (700 mm+500 mm)
Working envelope	Axis 1	±160 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~200 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	240 deg/sec
	Axis 2	330 deg/sec
	Axis 3 (Axis Z)	1800 mm/sec
	Axis 4 (Axis C)	1000 deg/sec
	Composite (Axis 1 and 2 composite)	7.9 m/sec
Standard cycle time *1		0.57 sec (with 2 kg load)
Maximum payload mass *2		20 kg (rated 5 kg)
Allowable moment of inertia *2		0.2 kg·m²
Positioning repeatability *3	X-Y	±0.03 mm
	Axis Z (Axis 3)	±0.02 mm
	Axis C (Axis 4)	±0.005 deg
Hand wiring		5 inputs and 4 outputs
Hand pneumatic joint		φ6 x 4 pcs
Robot controller cable		5 m
Power supply		4.4 kVA
Mass		83 kg
Connectable controller		TS3100, TS3100E

For *1 to *3 please see page 25.

External View

Working envelope

Detail view of mounting holes

Z view
Detail view of base mount

Detail view of EOAT

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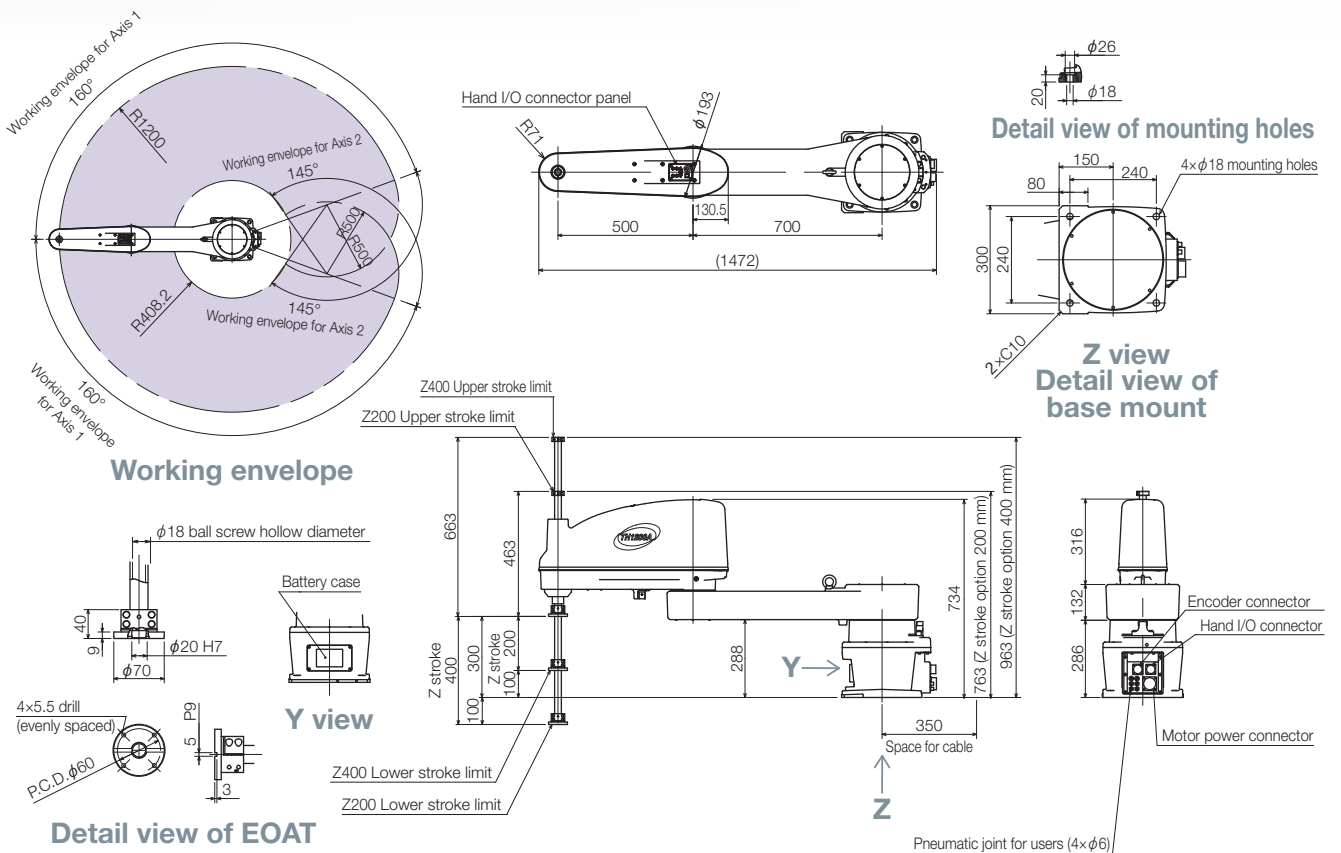
CAD Download URL   https://www.shibaura-machine.co.jp/en/product/robot/download.html

THP Series

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

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

Order model code

THP 550 - Z - B - E - S

Arm length
Z-Axis long stroke
E: CE Marking
K: KCs Marking
Special specification

Option | B: Z With protective bellows, C: With cap, CRB: Cleanroom specification, IP65: IP65 Dust-proof, T: Ceiling-mount type

THP550

THP700

Model		THP550	THP700
Arm length (1st Arm + 2nd Arm)		550 mm (300 mm+250 mm)	700 mm (350 mm+350 mm)
Maximum speed (Axis 1 and 2 composite)		6.21 m/sec	7.8 m/sec
Standard cycle time [*1]		0.29 sec (with 1 kg load)	0.345 sec (with 2 kg load)
Maximum payload mass [*2]		2 kg (rated 1 kg)	10 kg (rated 2 kg)
Positioning repeatability [*3]	X-Y	±0.015 mm	±0.03 mm
	Axis Z (Axis 3)	±0.01 mm	±0.02 mm
	Axis C (Axis 4)	±0.02 deg	±0.02 deg
Mass		26 kg	57 kg
Connectable controller		TS3000, TS3000E	TS3100, TS3100E

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

THP550

Model		THP550
Arm length (1st Arm + 2nd Arm)		550 mm (300 mm+250 mm)
Working envelope	Axis 1	±120 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~150 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	375 deg/sec
	Axis 2	600 deg/sec
	Axis 3 (Axis Z)	2000 mm/sec
	Axis 4 (Axis C)	2000 deg/sec
	Composite (Axis 1 and 2 composite)	6.21 m/sec
Standard cycle time [1]		0.29 sec (with 1 kg load)
Maximum payload mass [2]		2 kg (rated 1 kg)
Allowable moment of inertia [2]		0.01 kg·m^2
Positioning repeatability [3]	X-Y	±0.015 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.02 deg
Hand wiring		8 inputs and 8 outputs
Hand pneumatic joint		ϕ4 x 4 pcs
Robot controller cable		5 m
Power supply		2.3 kVA
Mass		26 kg
Connectable controller		TS3000, TS3000E

For [1] to [3] please see page 25.

External View

Working envelope

Detail view of EOAT

Detail view of T-shaped slot for peripheral device mount

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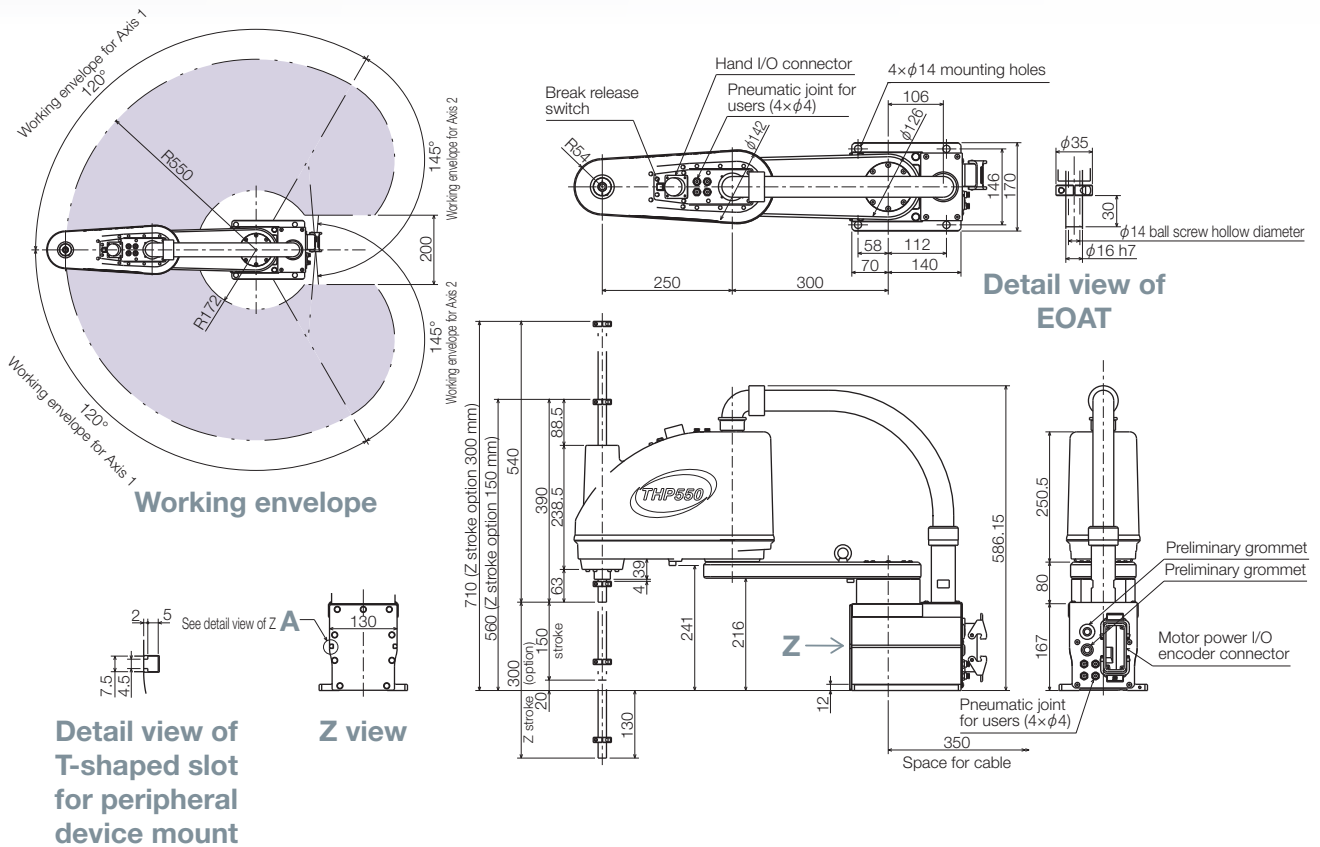
CAD Download URL https://www.shibaura-machine.co.jp/en/product/robot/download.html

THP700

Model		THP700
Arm length (1st Arm + 2nd Arm)		700 mm (350 mm+350 mm)
Working envelope	Axis 1	±120 deg
	Axis 2	±145 deg
	Axis 3 (Axis Z)	0~150 mm
	Axis 4 (Axis C)	±360 deg
Maximum speed	Axis 1	340 deg/sec
	Axis 2	600 deg/sec
	Axis 3 (Axis Z)	2050 mm/sec
	Axis 4 (Axis C)	1800 deg/sec
	Composite (Axis 1 and 2 composite)	7.8 m/sec
Standard cycle time [1]		0.345 sec (with 2 kg load)
Maximum payload mass [2]		10 kg (rated 2 kg)
Allowable moment of inertia [2]		0.1 kg·m^2
Positioning repeatability [3]	X-Y	±0.015 mm
	Axis Z (Axis 3)	±0.01 mm
	Axis C (Axis 4)	±0.01 deg
Hand wiring		8 inputs and 8 outputs
Hand pneumatic joint		ϕ6 x 4 pcs
Robot controller cable		5 m
Power supply		4.8 kVA
Mass		57 kg
Connectable controller		TS3100, TS3100E
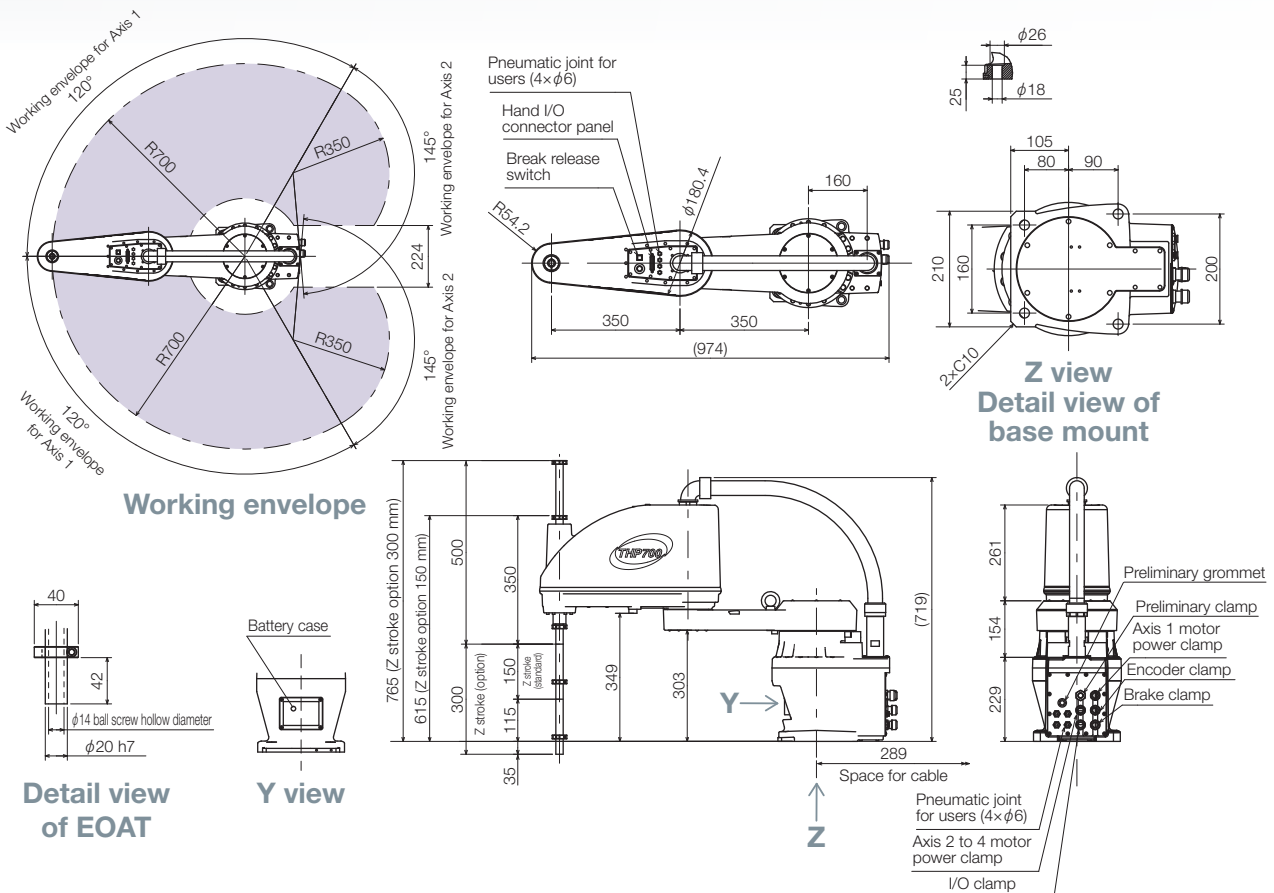
For *1 to *3 please see page 25.

External View

Working envelope

Detail view of EOAT

Y view

Z view
Detail view of base mount

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

Z-Axis long stroke (Z)

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

Standard specification

Z-Axis long stroke

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.

Protective bellows for Z-axis (B)

Z-axis upper cap (C)

Cleanroom specification (CRB/CR)

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

Order model code
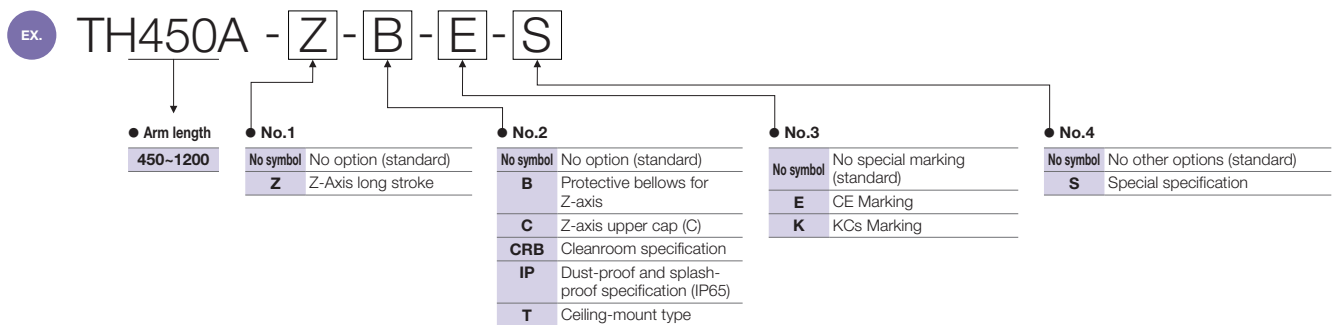
EX. TH450A - Z - B - E - S

● **Arm length**

450~1200

● **No.1**

No symbol	No option (standard)
Z	Z-Axis long stroke

● **No.2**

No symbol	No option (standard)
B	Protective bellows for Z-axis
C	Z-axis upper cap (C)
CRB	Cleanroom specification
IP	Dust-proof and splash-proof specification (IP65)
T	Ceiling-mount type

● **No.3**

No symbol	No special marking (standard)
E	CE Marking
K	KCs Marking

● **No.4**

No symbol	No other options (standard)
S	Special specification

Dust-proof and splash-proof specification (IP)

Dust-proof and splash-proof specification equivalent to IP65. (Does not allow dust intrusion and prevents the robot from the harmful effects of splashing water.)
*Limitation of acceleration/deceleration rates. Please contact us for more details.

Ceiling-mount type (T)

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

Optional cables length

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

Tool flange for end effector mounting

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

4×ϕ4.5 mounting holes

ϕ60

ϕ11 ϕ16

ϕ12 H7 4 P9

30

6

2.5$^{+0.1}_{-0}$

P.C.D.ϕ50 45°

TH180, TH250A, TH350A, THP550

4×ϕ4.5 mounting holes

ϕ60

ϕ14 ϕ20

ϕ12 H7 4 P9

30

6

2.5$^{+0.1}_{-0.1}$

P.C.D.ϕ50 45°
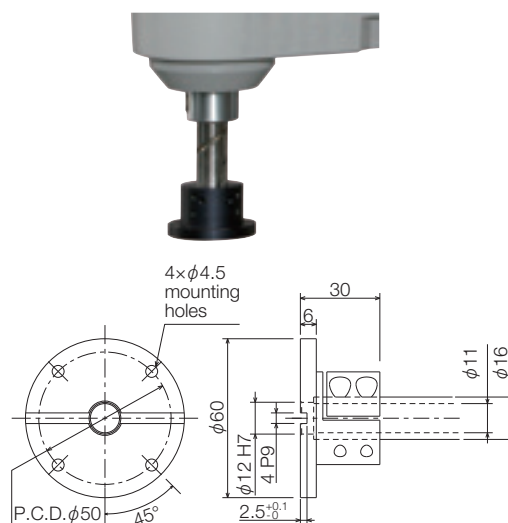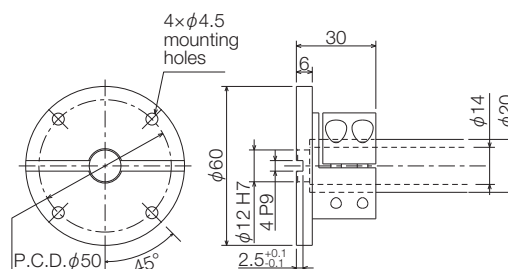
TH450A, TH550A, THP700

Option table

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

Type	No.	Symbol	TH450A, TH550A	TH650A	TH850A, TH1050A, TH1200A
No option (standard)	1	No symbol	○	○	○
Z-Axis long stroke		Z	○ (300 mm)	○ (400 mm)	○ (400 mm)
No option (standard)	2	No symbol	○	○	○
Protective bellows for Z-axis		B	○	○	○
Z-axis upper cap (C)		C	○	○	○
Cleanroom specification		CRB	○	○	○
Dust-proof and splash-proof specification (IP65)		IP	○	○	○
Ceiling-mount type		T	○	○	○ (TH1050A only)
No special marking (standard)	3	No symbol	○	○	○
CE Marking		E	○	○	○
KCs Marking		K	△	△	○
No other options (standard)	4	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

Order model code

EX. TS5000 - [M] [S] - [HR] - [IO] - [CC] - [CV]

● **Power board capacity**

M	THE/THA-equivalent power board

● **OS type**

S	(SCARA) 4-axis System

● **Hand I/O**

HR	Hand I/O is built in the robot (8 inputs and 8 outputs)

● **Extended I/O**

No symbol	Without expansion I/O
IO	With expansion I/O

● **Fieldbus**

No symbol	Without fieldbus
CC	CC-Link
DN	DeviceNet
PB	PROFIBUS
IP	EtherNet/IP
PN	PROFINET

● **Conveyor tracking synchronization function**

No symbol	Without conveyor tracking synchronization function
CV	With conveyor tracking synchronization function

Improvement in synchronized control and tracking precision by enhanced servo performances.

Faster control cycle results in improved synchronized control and tracking precision (position control cycle is three times faster than the previous model). This enables more sensitive control during the robot's fast movements and improves its performance in such aspects as locus precision and vibration suppression.
Acceleration auto adjustment function (SPURT function) - acceleration rate is increased when the load stress to the motor and reduction gear is low. This contributes to a shorter cycle time.

Improved communication performance and IoT fast data communication

Enhanced communication capabilities with Gigabit Ethernet. Real-time transmission of internal data is possible.
Enhanced Ethernet communication for better functionality.
Easy to use by most popular communication standard.
Simultaneous communication by 8 general-purpose ports (IP1~8) and dedicated ports (motion command port, monitor port, periodic communication port, etc.) is possible and improves operation efficiency. Ready to meet the requirement for taking part in a "heavy-edge" system, as improves precision in AI vibration analysis and data collection for predictive and preventative maintenance.

Enhanced robot programming language

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

The compact controller contributes to a smaller control panel

The small and high performance controller features a new CPU with improved functionality.
All the connectors are on the front side. Its size and installation area are approximately 2/3 smaller than the existing model (TS3100). The compact controller contributes to a smaller control panel.
The fan-less design reduces maintenance.

Increase in user file capacity

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

Other features

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

Model		TS5000
Number of controlled axes		4 axis
Program language		SCOL2 (Original language)
Movement command		PTP (point to point), CP (Continuous Path:Liner,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	Memory	Maximum: 512 Use files: 502 System files: 10
	Auxiliary memory	Maximum: 512 Use files: 512
Maximum number of program lines		Per program, Teaching points: 5,000 points Program part: 5,000 lines
I/O signals	General	8 inputs and 8 outputs
	System	13 input signals Program selection, start, stop, program reset, etc. 9 output signals Servo on, emergency stop, fault, etc.
Communication port		Ethernet: 8 ports
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) ×350 (D) mm [2]
Mass		11 kg
Teach Pendant (optional)		Teach Pendant: TP5000, TP1000 [3]
Connectable robot		THE600

*1: Please see specification table for power capacity of each robot
*2: Height (H) includes the rubber legs. Please secure the space for cable wiring.
*3: A convertor cable is necessary in order to connect with TP1000. TP3000 is not compatible. TP3000 is not compatible.

TSL3000
TSL3000E

TS3000, TS3000E
TS3100, TS3100E

TSL3000

TSL3000E

TS3000, TS3000E

TS3100, TS3100E

Model	TSL3000	TSL3000E
Number of controlled axes	4 axis	
Program language	SCOL (Original language)	
Movement command	PTP (point to point), CP (Continuous Path: Liner,Circular), short-cut, arch motion	
Memory	0.5 MB	
Auxiliary memory	USB memory	
Number of programs that can be stored	Maximum: 256 Use files: 243 System files: 13	
Maximum number of program lines	Per program, Teaching points: 2000 points Program part: 3000 lines	
I/O signals — General	8 inputs and 8 outputs	
I/O signals — System	13 input signals: Program selection, start, stop, program reset, etc. 9 output signals: Servo on, emergency stop, fault, etc.	
Communication port	RS-232C: 1 port (COM1) general	
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	150 (W) ×266 (H) × 304 (D) mm[*2]	320 (W) ×266 (H) × 304 (D) mm[*2]
Mass	7 kg	13 kg
Teach Pendant (optional)	Teach Pendant :TP1000, TP3000	
Connectable robot	THL series THE400	

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

Model	TS3000, TS3000E	TS3100, TS3100E
Number of controlled axes	4 axis	6 axis
Program language	SCOL (Original language)	
Movement command	PTP (point to point), CP (Continuous Path:Liner,Circular), short-cut, arch motion	
Memory	1.5 MB	
Auxiliary memory	USB memory	
Number of programs that can be stored	Maximum: 256 Use files: 243 System files: 13	
Maximum number of program lines	Per program, Teaching points: 2000 points Program part: 3000 lines	
I/O signals — General	32 inputs and 32 outputs	
I/O signals — System	13 input signals: Program selection, start, stop, program reset, etc. 9 output signals: Servo on, emergency stop, fault, etc.	
Communication port	RS-232C: 1 port (COM1) general	
Power supply[*1] — Main power supply	Single phase AC200 V to 240 V 50/60 Hz	
Power supply for I/O signals	DC24 V (over 100 W)	
Outer dimensions	290 (W) ×241 (H) × 298 (D) mm[*2]	420 (W) ×241 (H) × 298 (D) mm[*2]
Mass	13 kg	17 kg
Teach Pendant (optional)	Teach Pendant :TP1000, TP3000	
Connectable robot	TH180, TH250A TH350A, TH450A TH550A, THP550	TH650A, TH850A, TH1050A, TH1200A, THP700

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

Please see website for details

■ **TSL3000, TSL3000E**
https://www.shibaura-machine.co.jp/en/product/robot/lineup/th/tsl3000.html
■ **TS3000**
https://www.shibaura-machine.co.jp/en/product/robot/lineup/th/ts3000.html
■ **TS3100**
https://www.shibaura-machine.co.jp/en/product/robot/lineup/th/ts3100.html

TSL3000, TSL3000E   TS3000   TS3100

TP5000

Improved operability

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

Ease of handling and operation.

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

Model	TP5000
Display devices	7-Inch, wide TFT LCD
Input method	Touch-Sensitive Operator panel
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

TP3000

Model	TP3000
Input method	Graphic operation keyboard
Mass	520 g (except cable)
Outer dimensions	226 (W) × 162 (H) × 55 (D) mm
Cable length	5 m
Protection level	IP65
Connectable controller	TSL3000, TSL3000E, TS3000, TS3000E, TS3100, TS3100E

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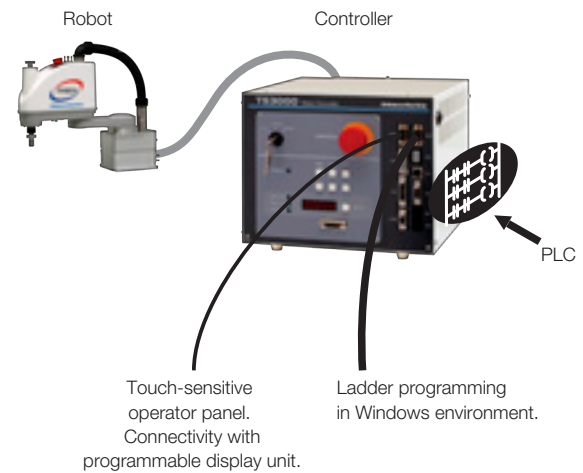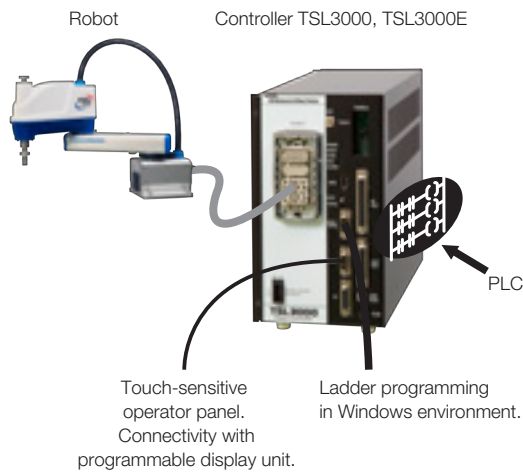- Equipped with language association function
- Outline function

Please see website for details
https://www.shibaura-machine.co.jp/en/product/robot/lineup/tv/TP3000.html

TP1000

Model	TP1000
Input method	Button
Mass	600 g (except cable)
Outer dimensions	133 (W) × 255 (H) × 48 (D) mm
Cable length	5 m
Connectable controller	TSL3000, TSL3000E, TS3000, TS3000E, TS3100, TS3100E

Built-in PLC TCmini

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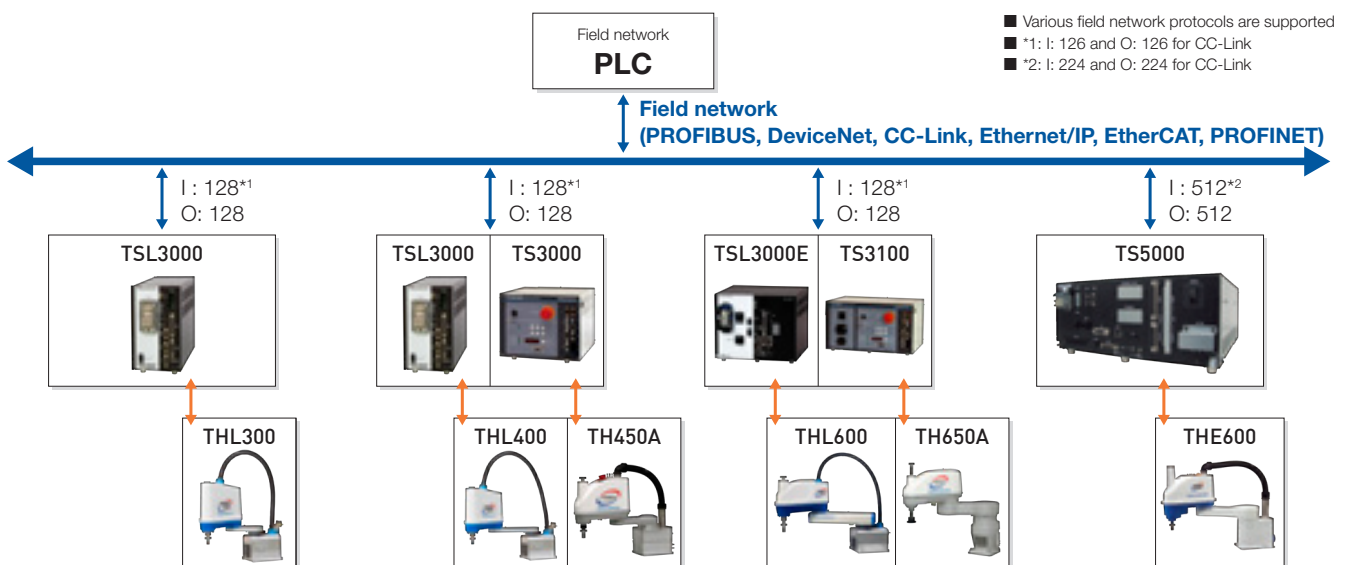
[Features and advantages]

· TCmini controls input/output signals of standard I/O, extension I/O and touch-sensitive panel by ladder program and exchanges data with robot program.

· Address of I/O can be changed, and contributes to flexible system design.

Robot   Controller TSL3000, TSL3000E

PLC

Touch-sensitive operator panel. Connectivity with programmable display unit.

Ladder programming in Windows environment.

Robot   Controller

PLC

Touch-sensitive operator panel. Connectivity with programmable display unit.

Ladder programming in Windows environment.

Industrial networks

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

Field network
PLC

■ Various field network protocols are supported
■ *1: I: 126 and O: 126 for CC-Link
■ *2: I: 224 and O: 224 for CC-Link

Field network
(PROFIBUS, DeviceNet, CC-Link, Ethernet/IP, EtherCAT, PROFINET)

I : 128*1
O: 128

I : 128*1
O: 128

I : 128*1
O: 128

I : 512*2
O: 512

TSL3000

TSL3000   TS3000

TSL3000E   TS3100

TS5000

THL300

THL400   TH450A

THL600   TH650A

THE600

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.
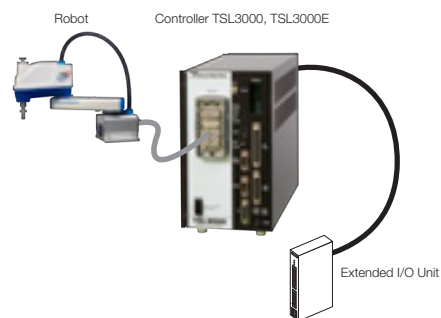
Robot 1   Robot 2   Robot 3

Vision Sensor
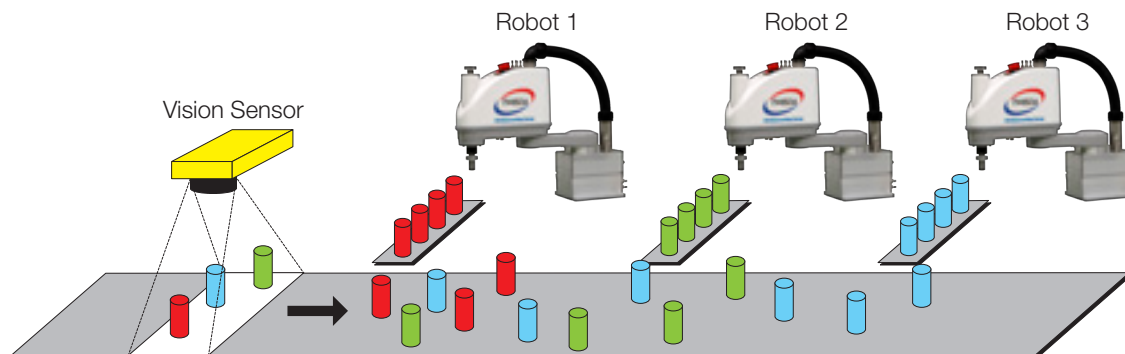
CE Marking
KCs Marking

Applicable to each marking

Extended I/O Unit

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

Robot   Controller TSL3000, TSL3000E

Extended I/O Unit

I/O Extension via Serial Communication Remote location (maximum 400 m). (Maximum 28 Outputs / 20 Inputs) ×2

Additional axis

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

Option table

		TS5000	TSL3000	TSL3000E	TS3000	TS3000E	TS3100	TS3100E
Built-in PLC TCmini		1 k word 2 ms	1 k word 5 ms	1 k word 5 ms	1 k word 5 ms	1 k word 5 ms	1 k word 5 ms	1 k word 5 ms
Industrial network[1]	CC-Link	◯	◯	◯	◯	◯	◯	◯
	DeviceNet	◯	◯	◯	◯	◯	◯	◯
	PROFIBUS	◯	◯	◯	◯	◯	◯	◯
	EtherNet/IP	◯	◯	◯	◯	◯	◯	◯
	EtherCAT	×	◯	◯	◯	◯	◯	◯
	PROFINET	◯	◯	◯	◯	◯	◯	◯
Vision + Conveyor Synchronization		◯	×	◯	◯	◯	◯	◯
CE Marking		under development	×	◯	×	◯	×	◯
KCs Marking		×	◯	◯	×	◯	×	◯
Additional axis		×	×	×	◯	◯	◯	◯
Extended I/O Unit		◯	◯	◯	◯	◯	◯	◯

*1 : 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.

Robot Programming Assist Tool

TSAssist
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 programing 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**
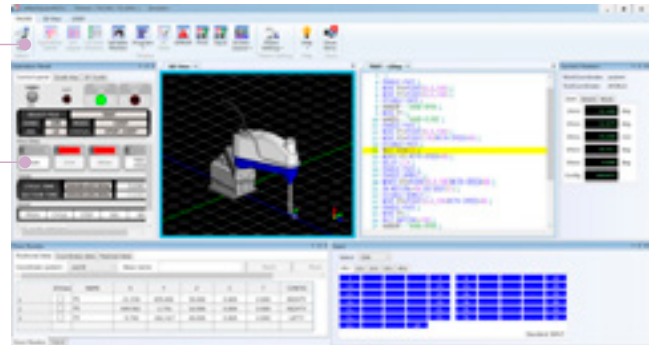
High Performance 3D Simulation

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
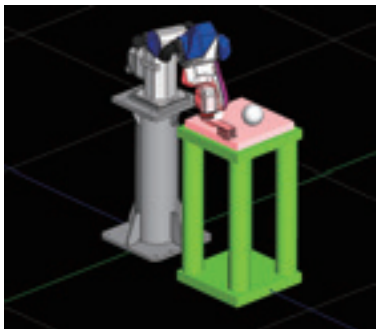
These functions enable the accurate and high quality estimation of robot-automation processes. From simple outline simulation to detailed simulation closer to actual machine implementation, TSAssist helps with all phases of the robot automation system life cycle, from initial "sketch," planning, proposal, 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.
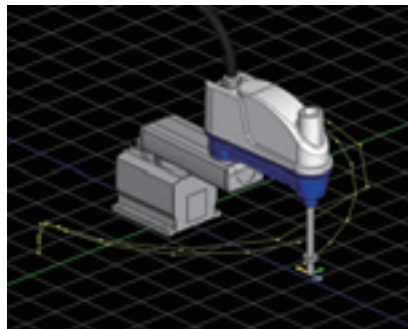
* USB license key (sold separately) is required to use the high performance 3D simulation.
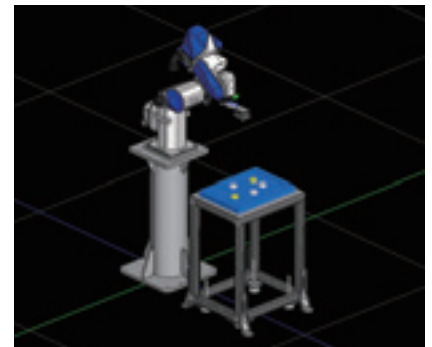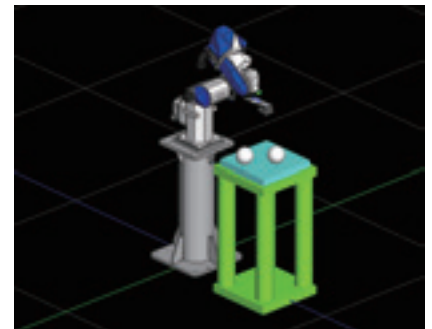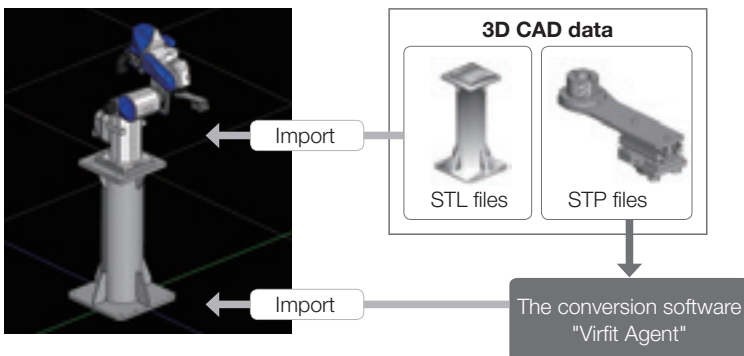

- **Interference check**

- **Locus display**

- **Placing simple work pieces**

- **Loading 3D CAD data**

3D CAD data

Import

STL files   STP files

Import

The conversion software "Virfit Agent"

- **Multi-angle view**
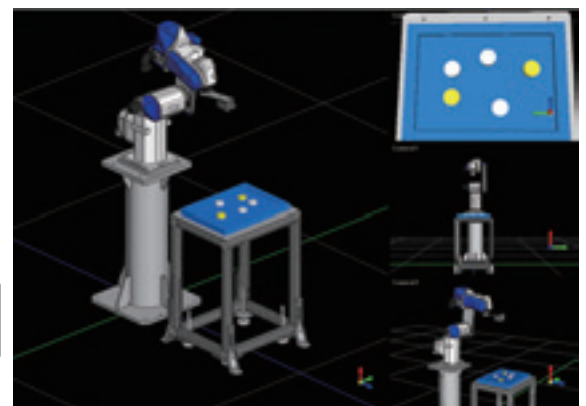
- **Timer (cycle time measurement)**
- **Saving 3D simulation to a video file**

Highly Functional Program Editor

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

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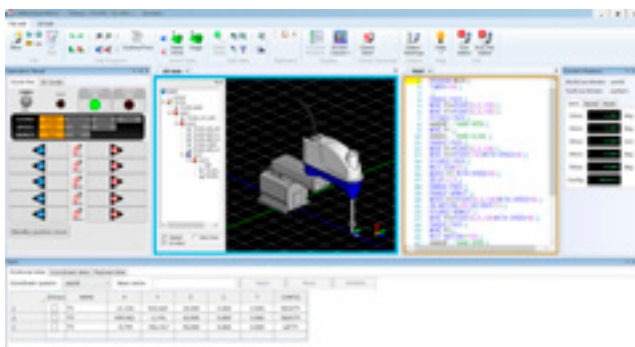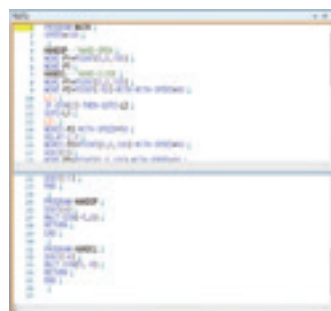

■ **Robot language input support (keyword suggestions)**
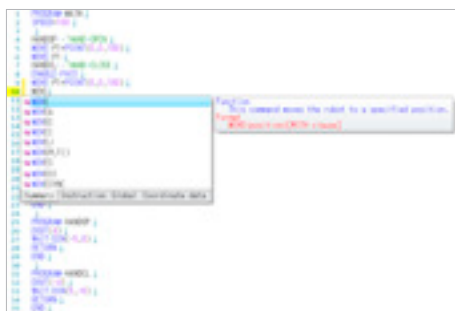
■ **Outline display**

■ **Split display**

■ **Point data editor's sort, search and filter functions**

■ **3D editor mode enables robot guidance and teaching by mouse**

Operating environment

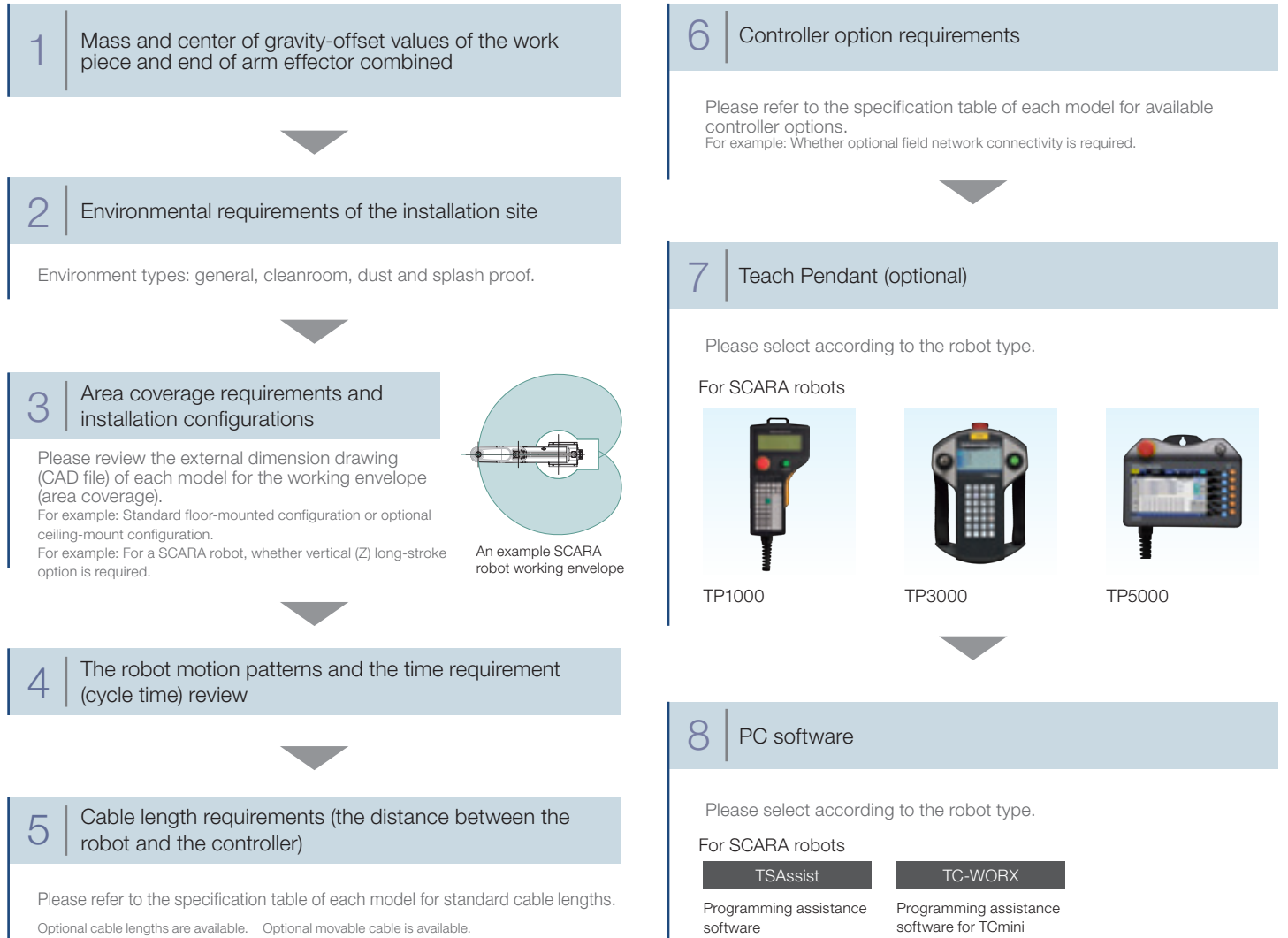| OS	Windows7 / 8.1 / 10 (32/64bit)
CPU	Intel Core I series or newer than Intel Core2 Quad
Memory	More than 2 GB recommended
Monitor	Screen resolution 1024×768 (WXGA) or higher *1366×768 (FEXGA) is recommended
HDD	More than 1 GB free hard drive space
Graphics (display)	NVIDIA GeForce series, Quadro series, Intel HD Graphics 4000 or newer recommended DirectX 9.0c ready More than 64 MB graphics memory recommended 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:

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

▼

2 Environmental requirements of the installation site

Environment types: general, cleanroom, dust and splash proof.

▼

3 Area coverage requirements and installation configurations

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

An example SCARA robot working envelope

▼

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

▼

5 Cable length requirements (the distance between the robot and the controller)

Please refer to the specification table of each model for standard cable lengths.

Optional cable lengths are available.　Optional movable cable is available.

6 Controller option requirements

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

▼

7 Teach Pendant (optional)

Please select according to the robot type.

For SCARA robots

TP1000　　　　　TP3000　　　　　TP5000

▼

8 PC software

Please select according to the robot type.
For SCARA robots

TSAssist	TC-WORX
Programming assistance software	Programming assistance software for TCmini (simple PLC)

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

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