

TOSHIBA MACHINE SCARA robot series
NEW LITE models THL Series

THL 300

- **Low cost**
Excellent performance at affordable prices.
- **Improved weight capacity and allowable inertia**
Expanded applicability of multi-hand with improved weight capacity and allowable inertia.
- **Energy-efficient**
Up to 20% reduction in required power-supply capacity compared with our previous models. Low-power consumption robots ideal for energy conservation era.

Robot Specifications



Model	THL300	
Type	Horizontal multi-joint	
No. of controlled axes	4	
Arm length	300mm (125mm+175mm)	
Working envelope	Axis 1	±125°
	Axis 2	±145°
	Axis 3 (Z-axis)	0~160mm
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	660°/s
	Axis 2	660°/s
	Axis 3 (Z-axis)	1120mm/s
	Axis 4 (Z-axis rotation)	1500°/s
	Composite	5.1m/s
Cycle time (with 2kg load) *2	0.48s	
Maximum payload mass	5kg	
Allowable moment of inertia	0.05kg·m ²	
Positioning repeatability *3	X-Y	±0.01mm
	Z (Axis 3)	±0.015mm
	Axis θ (Z-axis rotation)	±0.007°
Hand wiring	8 inputs/8 outputs	
Hand pneumatic joints *4	φ4 ×3 pcs	
Position detection	Absolute	
Robot controller cable	3.5m	
Power capacity	0.7kVA	
Mass	12kg	

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

*2 : When the environment temperature is constant 20°C. Positioning repeatability accuracy in one-direction movement. Not absolute positioning accuracy.

*3 : Horizontal 300mm, vertical 25mm, round-trip. Continuous operation is not possible beyond the effective load ratio.

*4 : Pneumatic joints are provided on the base. Please refer to the drawings for the details of the pneumatic joints. Pipes to be are provided by the customers.

Controller Specifications



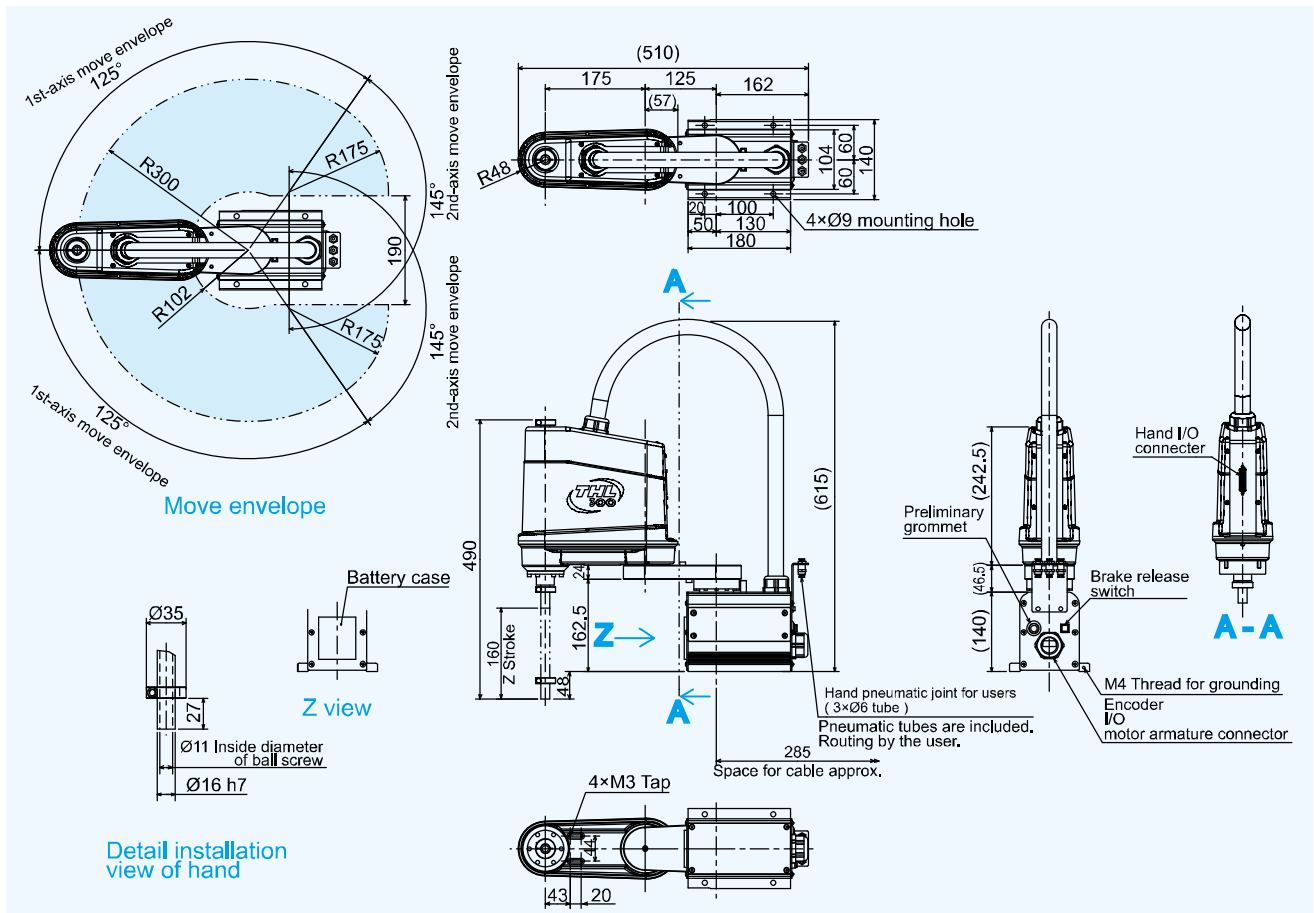
Controller
TSL3000

TEACH PENDANT(OPTION)

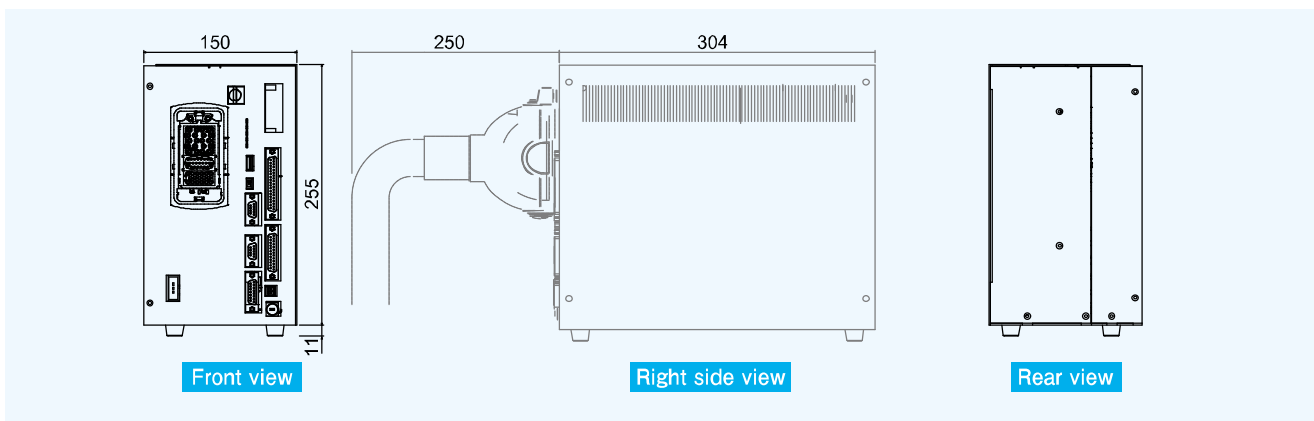
Model	TSL3000
No. of controlled axes	4 axes
Motion modes	PTP, CP(Continuous Path ; Linear, Circular), Short-Cut, Arch Motion
Storage capacity	Approx. Total: 6400 point + 12800 steps 1 program : 2000 point + 3000 steps
No. of registrable programs	Maximum 256
Programming language	SCOL(similar to BASIC)
Teaching unit (Option)	Teach pendant TP1000 (Cable length 5m, 3-point enable switch)
External I/O signals	8 inputs / 8 outputs(Plus or minus common selectable)
Hand control signals	8 inputs / 8 outputs
External operation signal	Input : cycle operation mode, start, stop, (13 signals) output : Servo ON, emergency stop, etc. (10 signals)
Serial communication ports	RS232C : 2 ports
Other functions	Torque control, Interruptive functions, self-diagnosis, I/O control and communications during motion, Coordinate calculations, Built-in PLC, etc.
Power supply	Single phase AC190V~250V , 50/60Hz(±1Hz)
Outer Dimensions and Mass	150(W)×256(H)×304(D)[mm] , 6.5kg
PC Software for Programming Support(Optional)	TSPC : Program editor, teaching, remote operation, etc.
Option	I/O extension, Field-network (CC-Link, Devive-Net, Profibus) *5

*5:CC-Link is a registered trademark of CC-Link Partner Association.
DeviceNet is registered trademark of ODVA.
Profibus is a registered trademark of Profibus User Organization.

THL300 [External View]



TSL3000 [External View]



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URL:<http://www.toshiba-machine.co.jp/en/product/robot/index.html>
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<http://www.tmrobotics.co.uk>



Before operating the industrial robot, read through and completely understand the instruction manuals.

■ The contents included in this catalog are subject to change without prior notice to reflect improvements.

TOSHIBA MACHINE SCARA robot series
NEW LITE models THL Series

THL 400

- **Low cost**
Excellent performance at affordable prices.
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Expanded applicability of multi-hand with improved weight capacity and allowable inertia.
- **Energy-efficient**
Up to 20% reduction in required power-supply capacity compared with our previous models. Low-power consumption robots ideal for energy conservation era.

Robot Specifications



Model	THL400	
Type	Horizontal multi-joint	
No. of controlled axes	4	
Arm length	400mm (225mm+175mm)	
Working envelope	Axis 1	±125°
	Axis 2	±145°
	Axis 3 (Z-axis)	0~160mm
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	660°/s
	Axis 2	660°/s
	Axis 3 (Z-axis)	1120mm/s
	Axis 4 (Z-axis rotation)	1500°/s
	Composite	6.3m/s
Cycle time (with 2kg load) *2	0.47s	
Maximum payload mass	5kg	
Allowable moment of inertia	0.05kg·m ²	
Positioning repeatability *3	X-Y	±0.01mm
	Z (Axis 3)	±0.015mm
	Axis θ (Z-axis rotation)	±0.007°
Hand wiring	8 inputs/8 outputs	
Hand pneumatic joints *4	φ4 ×3 pcs	
Position detection	Absolute	
Robot controller cable	3.5m	
Power capacity	0.7kVA	
Mass	13kg	

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

*2 : When the environment temperature is constant 20°C. Positioning repeatability accuracy in one-direction movement. Not absolute positioning accuracy.

*3 : Horizontal 300mm, vertical 25mm, round-trip. Continuous operation is not possible beyond the effective load ratio.

*4 : Pneumatic joints are provided on the base. Please refer to the drawings for the details of the pneumatic joints. Pipes to be provided by the customers.

Controller Specifications



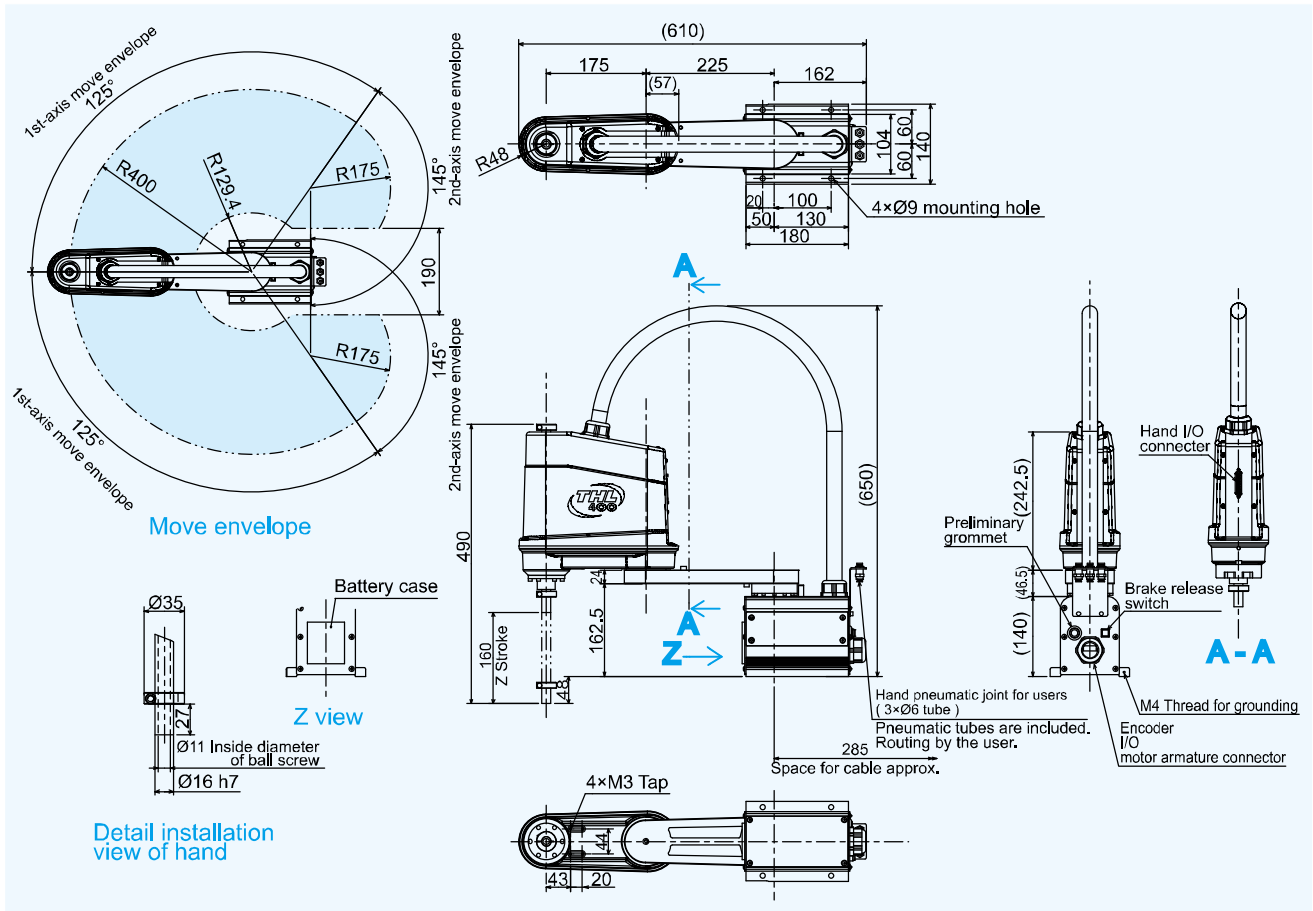
Controller
TSL3000

TEACH PENDANT(OPTION)

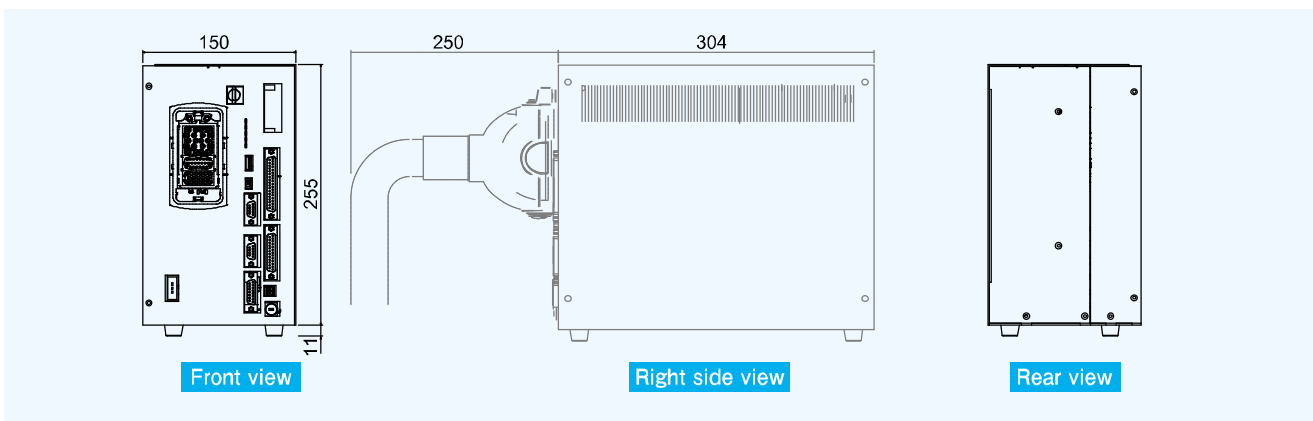
Model	TSL3000
No. of controlled axes	4 axes
Motion modes	PTP, CP(Continuous Path ; Linear, Circular), Short-Cut, Arch Motion
Storage capacity	Approx. Total: 6400 point + 12800 steps 1 program : 2000 point + 3000 steps
No. of registrable programs	Maximum 256
Programming language	SCOL(similar to BASIC)
Teaching unit (Option)	Teach pendant TP1000 (Cable length 5m, 3-point enable switch)
External I/O signals	8 inputs / 8 outputs(Plus or minus common selectable)
Hand control signals	8 inputs / 8 outputs
External operation signal	Input : cycle operation mode, start, stop, (13 signals) output : Servo ON, emergency stop, etc, (10 signals)
Serial communication ports	RS232C : 2 ports
Other functions	Torque control, Interruptive functions, self-diagnosis, I/O control and communications during motion, Coordinate calculations, Built-in PLC, etc.
Power supply	Single phase AC190V~250V , 50/60Hz(±1Hz)
Outer Dimensions and Mass	150(W)×256(H)×304(D)[mm] , 6.5kg
PC Software for Programming Support(Optional)	TSPC : Program editor, teaching, remote operation, etc.
Option	I/O extension, Field-network (CC-Link, Devive-Net, Profibus)*5

*5:CC-Link is a registered trademark of CC-Link Partner Association.
DeviceNet is registered trademark of ODVA.
Profibus is a registered trademark of Profibus User Organization.

THL400 [External View]



TSL3000 [External View]



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TOSHIBA MACHINE

SCARA ROBOT

THL SERIES



SCARA Robot
THL500



SCARA Robot
THL600

SCARA Robot
THL700



Controller
TSL3000

TOSHIBA MACHINE SCARA robot series

NEW **LITE** models

THL Series

Low cost

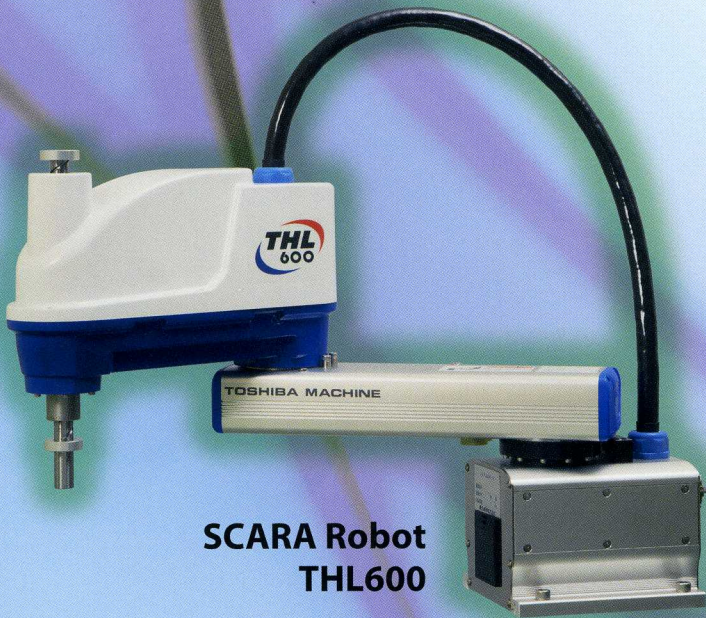
Adequate performance at affordable prices!

Light-weight

Up to 50% lighter than our previous models!
Capable of reducing environmental impact

Energy-efficient

Up to 50% reduction in required power supply capacity compared with our previous models!
Low-power consumption robots ideal for energy conservation era



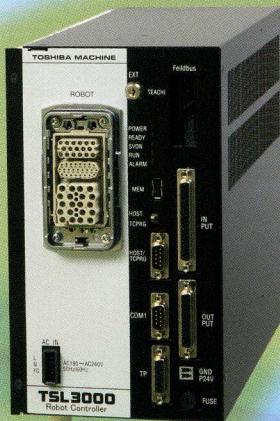
SCARA Robot
THL600



SCARA Robot
THL500



SCARA Robot
THL700



Controller
TSL3000

THL Series Specifications

Model		THL500	THL600	THL700
Type		Horizontal multi-joint	Horizontal multi-joint	Horizontal multi-joint
No. of controlled axes		4	4	4
Arm length		500mm (200mm+300mm)	600mm (300mm+300mm)	700mm (400mm+300mm)
Working Envelope	Axis 1	±125°	±125°	±125°
	Axis 2	±145°	±145°	±145°
	Axis 3(Z-axis)	0~150mm(Option:300mm)	0~150mm(Option:300mm)	0~150mm(Option:300mm)
	Axis 4(Z-axis rotation)	±360°	±360°	±360°
Maximum*1 Speed	Axis 1	450°/s	450°/s	450°/s
	Axis 2	450°/s	450°/s	450°/s
	Axis 3(Z-axis)	2000mm/s	2000mm/s	2000mm/s
	Axis 4(Z-axis rotation)	1700°/s	1700°/s	1700°/s
	Composite	6.3m/s	7.1m/s	7.9m/s
Cycle time(with 2kg load)*2		0.45s	0.45s	0.50s
Maximum Payload Mass		10kg(Ratings:2kg)	10kg(Ratings:2kg)	10kg(Ratings:2kg)
Allowable Moment of Inertia		0.2kg·m ²	0.2kg·m ²	0.2kg·m ²
Positioning*3 Repeatability	X-Y	±0.01mm	±0.01mm	±0.01mm
	Z(Axis 3)	±0.015mm	±0.015mm	±0.015mm
	Axis θ (Z-axis rotation)	±0.007°	±0.007°	±0.007°
Hand wiring		8 inputs / 8 outputs	8 inputs / 8 outputs	8 inputs / 8 outputs
Hand piping		□6 ×3 pcs	□6 ×3 pcs	□6 ×3 pcs
Position detection		Absolute	Absolute	Absolute
Robot controller cable		3.5m	3.5m	3.5m
Mass		22kg	23kg	24kg

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

*2 : When the environment temperature is constant 20°C. Positioning repeatable accuracy in one-direction movement. Not absolute positioning accuracy.

*3 : Horizontal 300 mm, vertical 25mm, round-trip. Continuous operation is not possible beyond the effective load ratio.

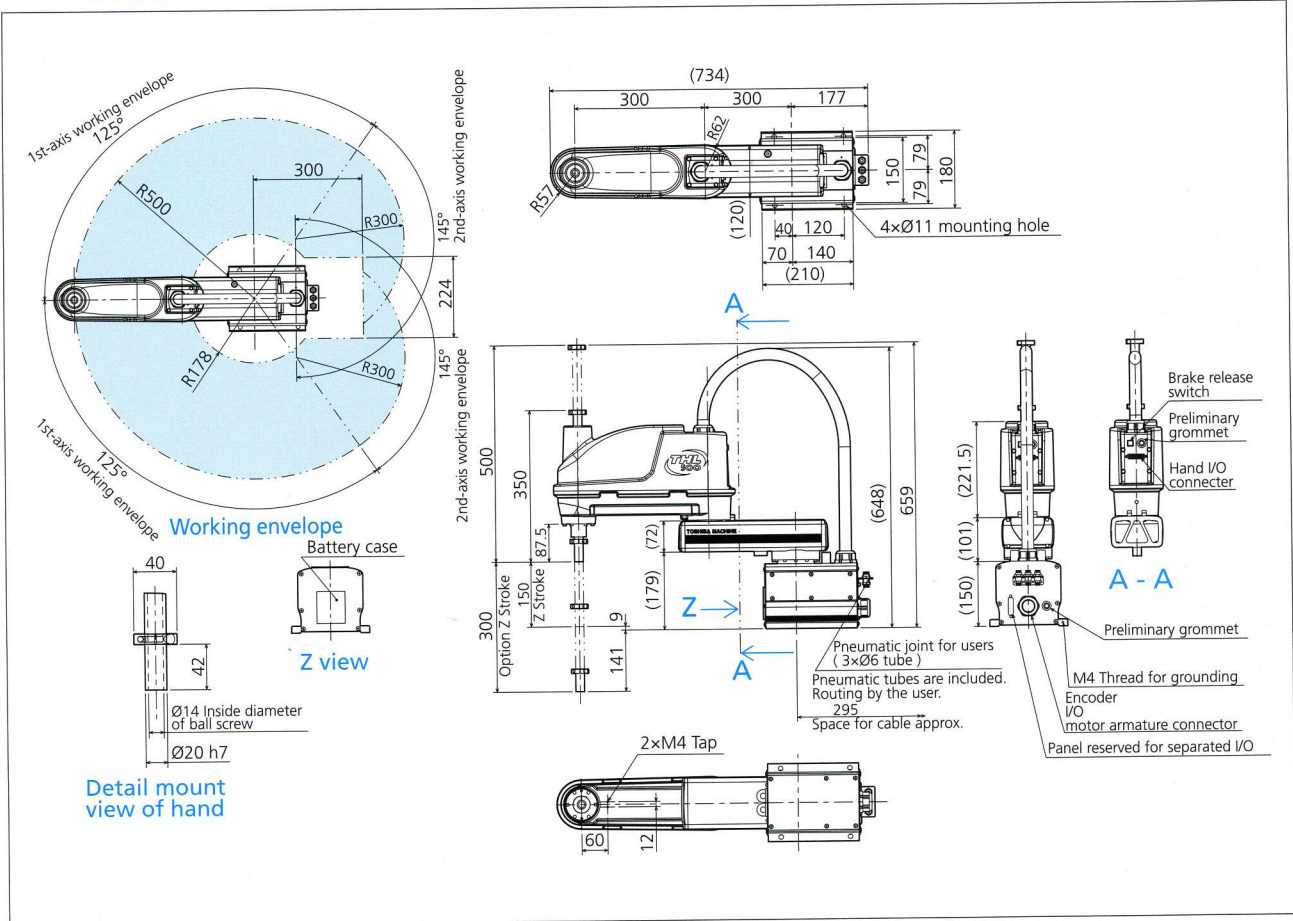
TSL3000 Specifications

Model	TSL3000
No. of Controlled Axes	4 axes
Motion Modes	PTP, CP(Continuous Path ; Linear, Circular), Short-Cut, Arch Motion
Storage Capacity	Approx. Total: 6400 point + 12800 steps 1 program : 2000 point + 3000 steps
No. of Registrable Programs	Maximum 256
Programming Language	SCOL(similar to BASIC)
Teaching Unit (Option)	Teach pendant TP1000 (Cable length 5m, 3-point enable switch)
External I/O Signals	8 inputs / 8 outputs(Plus or minus common selectable)
Hand Control Signals	8 inputs / 8 outputs
External Operation Signal	Input : cycle operation mode, start, stop. (13 signals) output : Servo ON, emergency stop, etc. (10 signals)
Serial Communication Ports	RS232C : 2 ports
Other functions	Torque control, Interruptive functions, self-diagnosis, I/O control and communications during motion, Coordinate calculations, Built-in PLC, etc.
Power Supply	Single phase AC190V~250V , 50/60Hz(±1Hz)
Power Capacity	1.5kVA
Outer Dimensions and Mass	150(W)×256(H)×304(D)[mm] , 6.5kg
PC Software for Programming Support (Option)	TSPC : Program editor, teaching, remote operation, etc.
Option	I/O extension, Field-network (CC-Link, Devive-Net, Profibus)*4

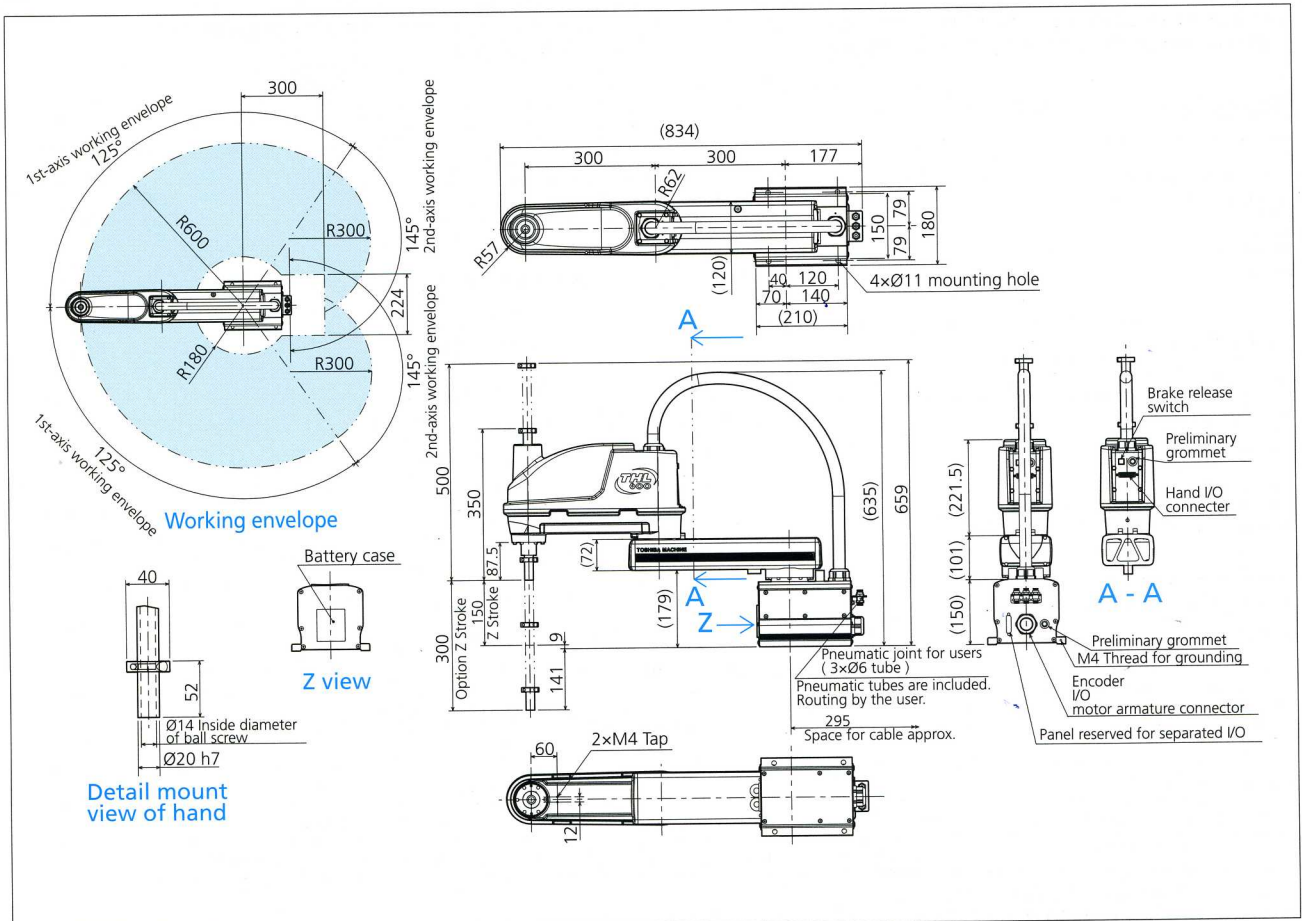
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DeviceNet is registered trademark of ODVA. Profibus is a registered trademark of Profibus User Organization.

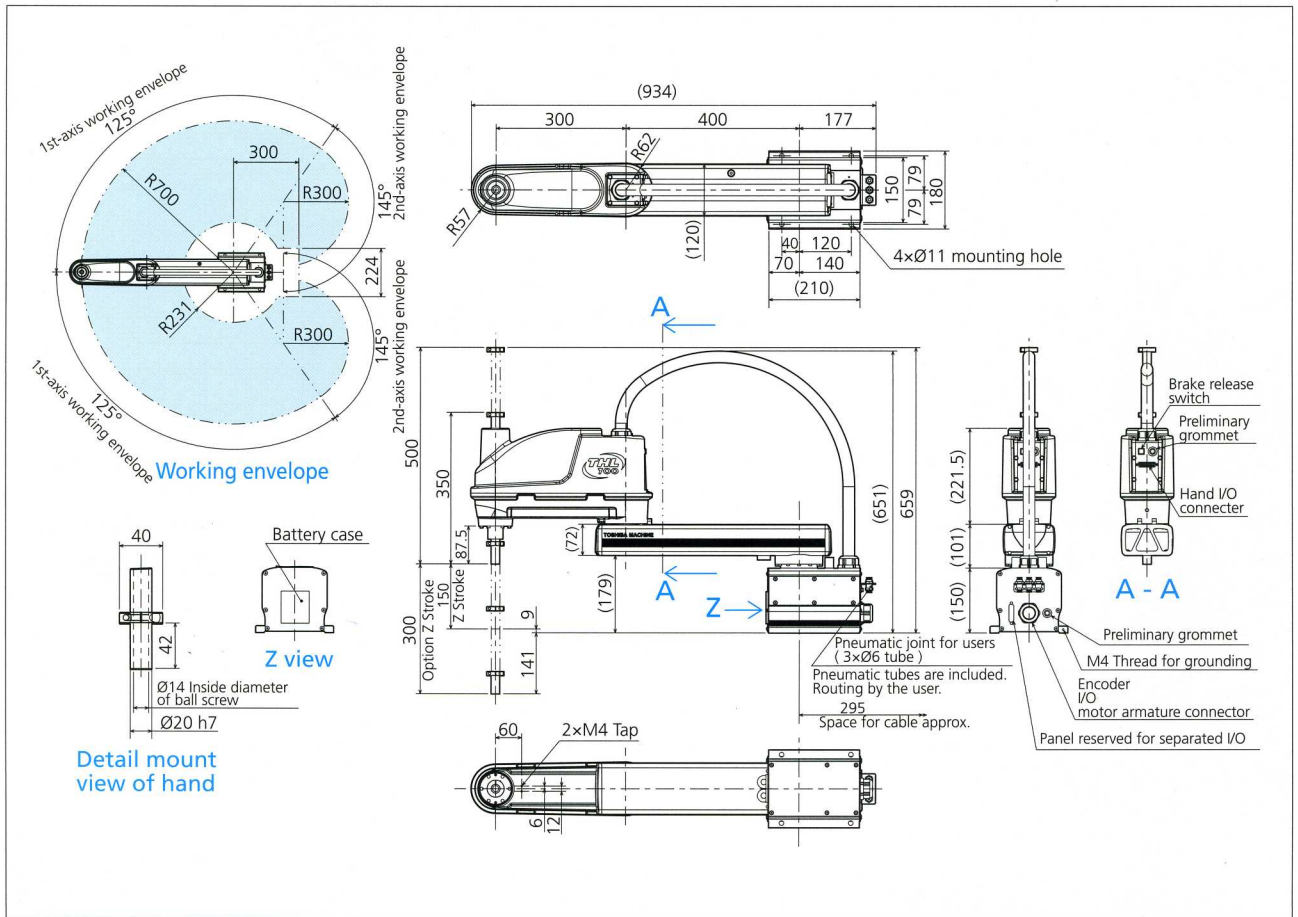
THL500



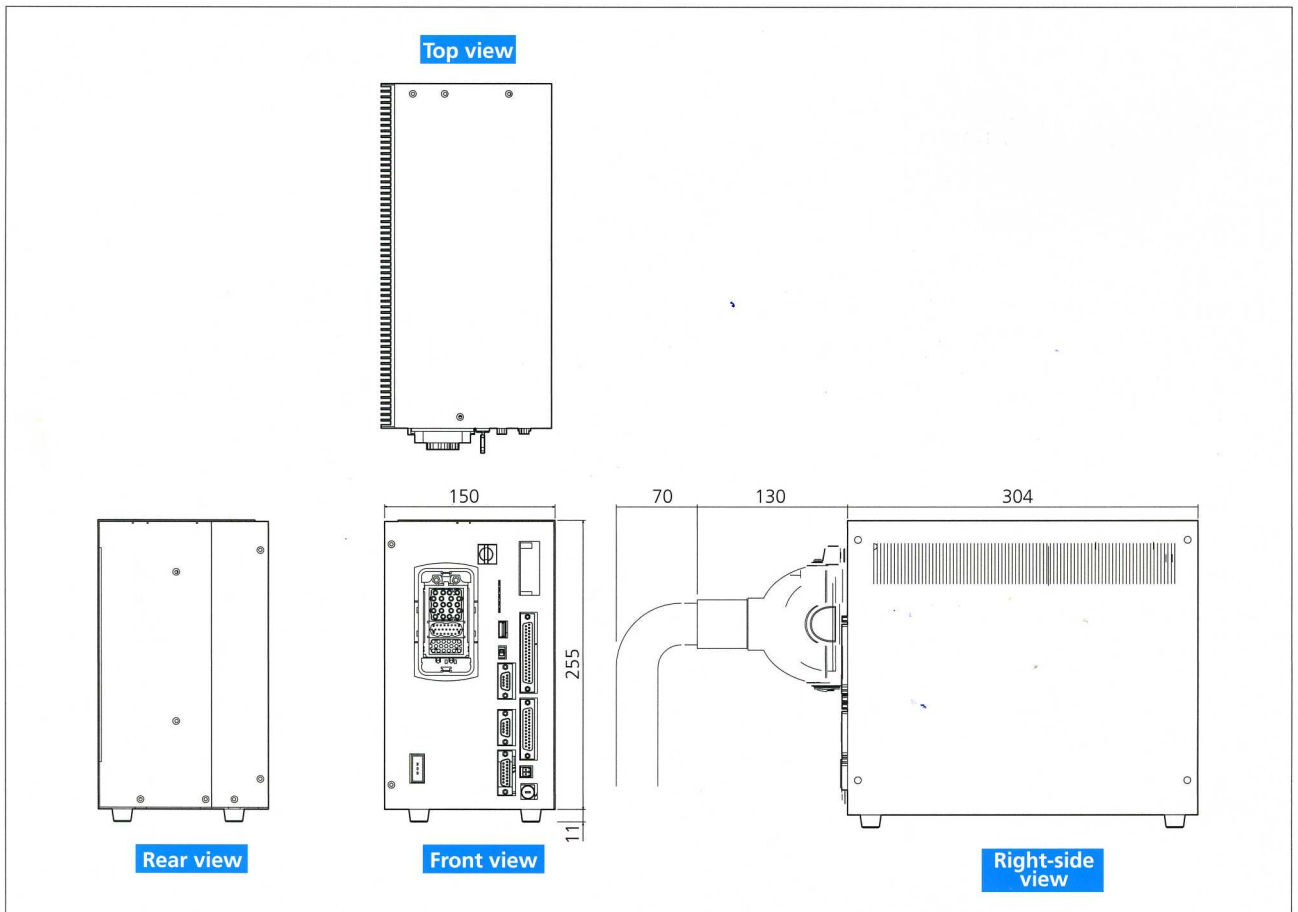
THL600



THL700

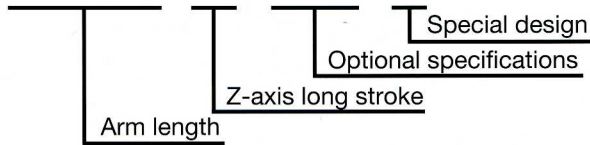


TSL3000



Order model code

TH650A-Z-CR-S



Cleanroom : CR (0.3 μm), CRB (0.1 μm)
 Ceiling-mount type : T
 With cap : C
 With protective bellows : B
 Water-proof (IP65) : IP

Model	TH180	TH250A	TH350A	TH450
Arm length (1st arm + 2nd arm)	180 mm (70+110)	250 mm (125+125)	350 mm (225+125)	450 mm (200+250)
Working Envelope	Axis 1	±120°	±115°	±120°
	Axis 2	±140°	±140°	±145°
	Axis 3	120 mm	120 mm	120 mm
	Axis 4	150 mm / 300 mm	120 mm	120 mm
Maximum Speed	Axis 1	533°/s	540°/s	337.5°/s
	Axis 2	480°/s	540°/s	540°/s
	Axis 3	1013 mm/s	1120 mm/s	1120 mm/s
	Axis 4	1186°/s	1143°/s	1143°/s
	Composite	2.6 m/s	3.53 m/s	3.24 m/s
Standard Cycle Time	0.35 s (With 1 kg load) *1	0.41 s (With 1 kg load) *2	0.41 s (With 1 kg load) *2	0.33 s (With 1 kg load) *2
Maximum Payload Mass	2 kg	3 kg	3 kg	5 kg
Allowable Moment of Inertia	0.01 kg · m ² *3	0.017 kg · m ² *3	0.017 kg · m ² *3	0.05 kg · m ² *3
Positioning Repeatability *4	X · Y	±0.01 mm	±0.01 mm	±0.01 mm
	Z	±0.01 mm	±0.01 mm	±0.01 mm
	Axis 4	±0.005°	±0.005°	±0.005°
Wiring and Pneumatic Piping for Hand	5 Inputs / 4 Outputs, φ 4 × 4 pcs.			
Cable Length	3 m (optional: max. 10 m)	3 m (optional: max. 10 m)	3 m (optional: max. 10 m)	5 m (optional: max. 25 m)
Mass	9 kg	14 kg	14 kg	27 kg
Controller	TS1000	TS1000	TS1000	TS2000

Model	TH550	TH650A	TH850A	TH1050A
Arm length (1st arm + 2nd arm)	550 mm (300+250)	650 mm (300+350)	850 mm (350+500)	1050 mm (550+500)
Working Envelope	Axis 1	±120°	±160°	±160°
	Axis 2	±145°	±143°	±145°
	Axis 3	150 mm / 300 mm	200 mm / 400 mm	200 mm / 400 mm
	Axis 4	±360°	±360°	±360°
Maximum Speed	Axis 1	375°/s	340°/s	300°/s
	Axis 2	600°/s	600°/s	420°/s
	Axis 3	2000 mm/s	2050 mm/s	2050 mm/s
	Axis 4	2000°/s	1700°/s	1200°/s
	Composite	6.21 m/s	7.52 m/s	8.13 m/s
Standard Cycle Time	0.33 s (With 2 kg load) *2	0.31 s (With 2 kg load) *2	0.39 s (With 2 kg load) *2	0.39 s (With 2 kg load) *2
Maximum Payload Mass	5 kg	10 kg	20 kg	20 kg
Allowable Moment of Inertia	0.05 kg · m ² *3	0.1 kg · m ² *3	0.2 kg · m ² *3	0.2 kg · m ² *3
Positioning Repeatability *4	X · Y	±0.01 mm	±0.01 mm	±0.01 mm
	Z	±0.01 mm	±0.01 mm	±0.01 mm
	Axis 4	±0.005°	±0.004°	±0.004°
Wiring and Pneumatic Piping for Hand	5 Inputs / 4 Outputs, φ 4 × 4 pcs.		5-Inputs / 4 Outputs, φ 6 × 4 pcs.	
Cable Length	5 m (optional: max. 25 m)	5 m (optional: max. 25 m)	5 m (optional: max. 25 m)	5 m (optional: max. 25 m)
Mass	29 kg	52 kg	76 kg	80 kg
Controller	TS2000	TS2100	TS2100	TS2100

Standard cycle time motion pattern (coarse positioning)

*1: Horizontal 100 mm, vertical 25 mm, round-trip
 *2: Horizontal 300 mm, vertical 25 mm, round-trip
 Continuous operation is not possible beyond the effective load ratio.

Allowable moment of inertia

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

Positioning repeatability

*4: When the environmental temperature is constant.

TS Series Controllers

Controller

TS1000



TS2000



TS2100



Teach pendant

TP1000



Optional

Controller Specifications

Model	TS1000	TS2000	TS2100
No. of Controlled Axes	Standard 4 axes (Maximum 5 axes: TS2000/TS2100)		
Motion Modes	PTP (point-to-point), CP (Continuous Path; Linear, Circular), Short-Cut, Arch Motion		
Position Detection	Absolute Encoders		
Storage Capacity	Approx. Total: 6400 points + 12800 steps 1 program: 2000 points + 3000 steps		
No. of Registrable Programs	Maximum 256 (247 user files + 9 system files)		
Programming Language	SCOL (similar to BASIC)		
Teaching Unit	Teach pendant TP1000: Cable length 5 m / Programming support PC software TSPC also available		
External I/O Signals	16 inputs / 16 outputs 8 / 8 can be assigned to system signals.	31+7 inputs / 22+10 outputs 7 / 10 can be assigned to system signals.	
Hand Control Signals	5 inputs / 4 outputs		
External Operation Signal	Input: cycle operation mode, start, stop, program reset, etc. Output: Servo ON, operation ready, fault, etc.		
Serial Communication Ports	RS232C: 2 ports		
Power Supply and Capacity	Single phase, AC190 V ~ 250 V, 50/60 Hz, 1.1 kVA	Single phase, AC190 V ~ 250 V, 50/60 Hz, 2.3 kVA	Three-phase, AC190 V ~ 250 V, 50/60 Hz, 3.5 ~ 4.4 kVA
Outer Dimensions and Mass	170W×290H×280D (mm) / 10 kg	290W×230H×280D (mm) / 12 kg	420W×230H×300D (mm) / 16 kg
Other Functions	Interruption processing, robot motion ON signal, communication processing, arithmetic operation, torque limit, PLC, self-diagnosis, etc.		
PC Software for Programming Support (optional)	TSPC: Program editor, teaching, remote operation: TSPRGOS: PLC sequence program creation (Supporting OS: Windows2000, WindowsXP)		
Options	Conveyor synchronization (not supported by TS1000), Additional I/O, I/O cable, position data latch function, smooth (constant speed) function, separated operation panel, network (Ethernet: Not supported by TS1000, CC-Link, DeviceNet, Profibus), CE-compliant		

- Windows is a registered trademark of Microsoft Corporation in the U.S.A.
- Ethernet is a registered trademark of XEROX Corp. in the U.S.A.
- CC-Link is a registered trademark of CC-Link Partner Association.

- DeviceNet is a registered trademark of ODVA.
- Profibus is a registered trademark of Profibus User Organization.

Compact SCARA robot TH350A

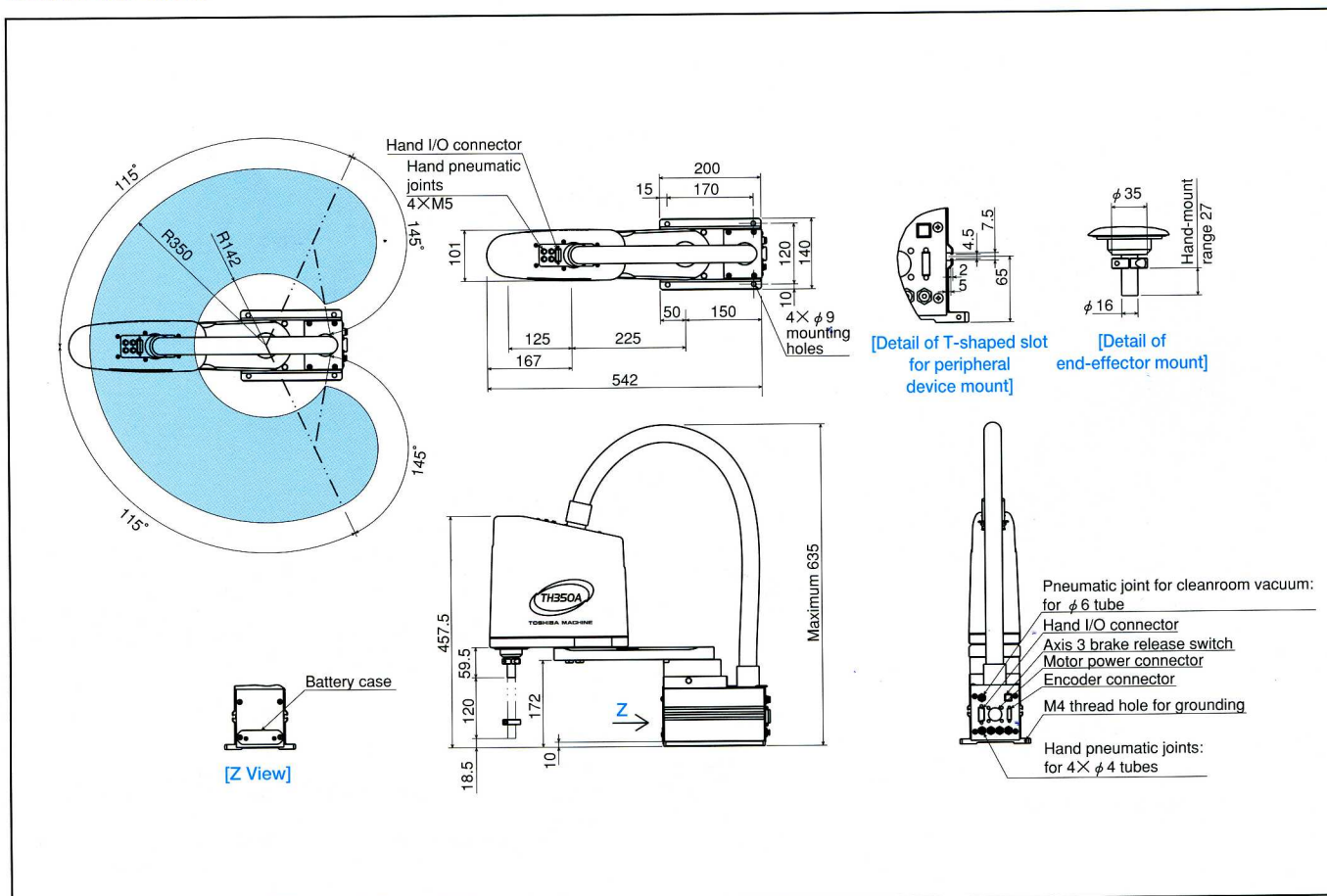
TH350A



Model	TH350A	
Type	Horizontal multi-joint	
Cleanliness (optional)	Class 10 (0.1 μm / 0.3 μm)	
No. of controlled axes	4	
Arm length	350 mm (225 mm+125mm)	
Working envelope	Axis 1	$\pm 115^\circ$
	Axis 2	$\pm 145^\circ$
	Axis 3 (Z-axis)	120 mm
	Axis 4 (Z-axis rotation)	$\pm 360^\circ$
Maximum speed	Axis 1	337.5°/s
	Axis 2	540°/s
	Axis 3 (Z-axis)	1120 mm/s
	Axis 4 (Z-axis rotation)	1143°/s
	Composite	3.24 m/s
Standard cycle time (with 1 kg load)	0.41 s	
Maximum payload mass	3 kg	
Allowable moment of inertia	0.017 kgm ² *3	
Positioning X-Y	± 0.01 mm *4	
repeatability	Axis 3 (Z-axis)	± 0.01 mm *4
	Axis 4 (Z-axis rotation)	$\pm 0.005^\circ$ *4
Hand wiring	5 inputs / 4 outputs	
Hand piping	4 pcs. ($\phi 4$)	
Robot controller cable	3 m (optional: max. 10 m)	
Mass	14 kg	

For *1, *2, *3 and *4, see page 5.

External view



High-Speed and High-Precision SCARA Robot TH450

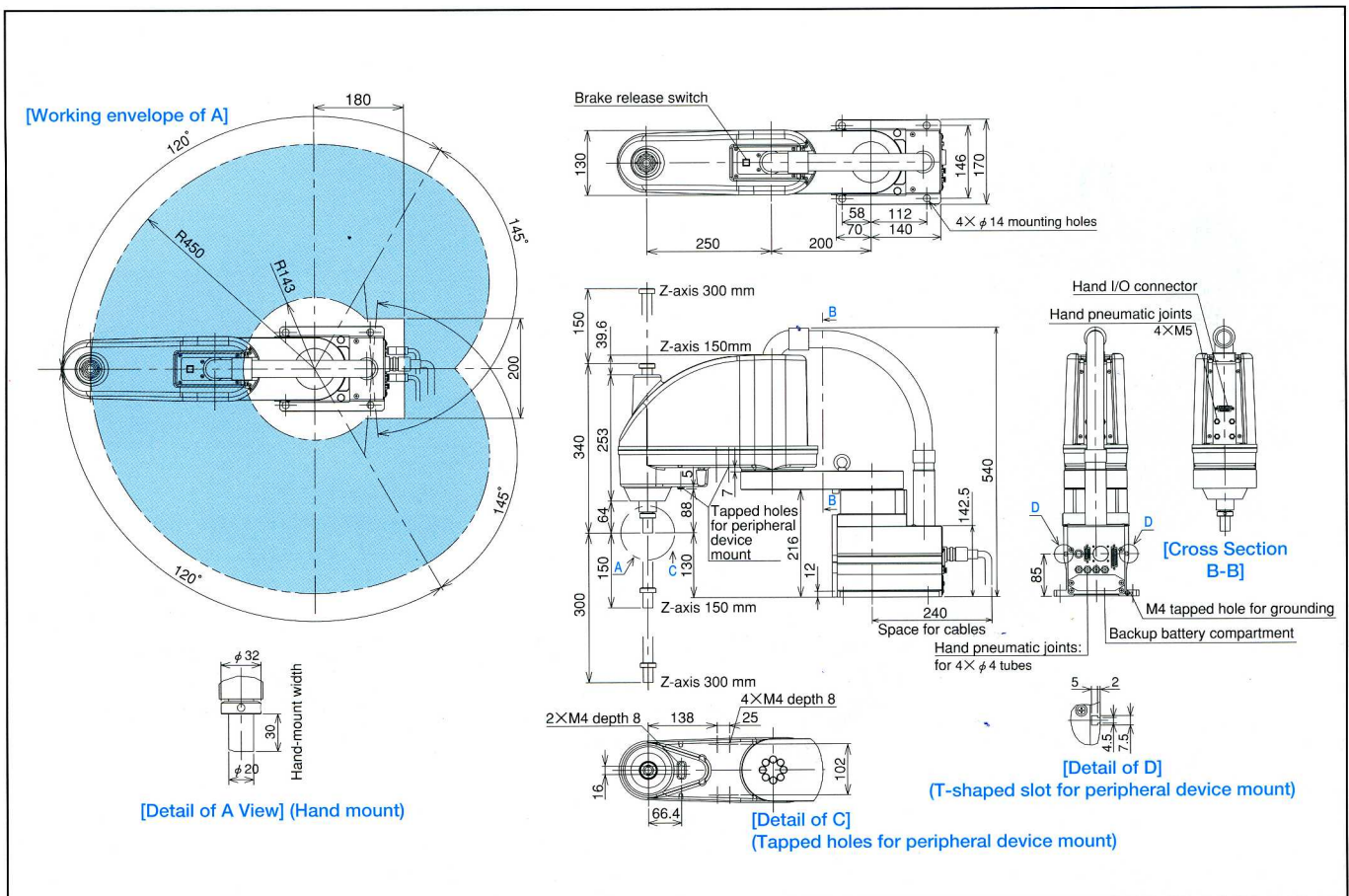
TH450



Model	TH450	
Type	Horizontal multi-joint	
No. of controlled axes	4	
Arm length	450 mm (200 mm+250 mm)	
Working envelope	Axis 1	$\pm 120^\circ$
	Axis 2	$\pm 145^\circ$
	Axis 3 (Z-axis)	150 mm (optional: 300 mm)
	Axis 4 (Z-axis rotation)	$\pm 360^\circ$
Maximum speed	Axis 1	$600^\circ / s$
	Axis 2	$600^\circ / s$
	Axis 3 (Z-axis)	2000 mm/ s
	Axis 4 (Z-axis rotation)	2000 $^\circ / s$
	Composite	7.33 m/ s
Standard cycle time (with 2 kg load)	0.33 s *1	
Maximum payload mass	5 kg	
Allowable moment of inertia	0.05 kgm ² *2	
Positioning repeatability	X-Y	± 0.01 mm *3
	Axis 3 (Z-axis)	± 0.01 mm *3
	Axis 4 (Z-axis rotation)	$\pm 0.005^\circ$ *3
Hand wiring	5 inputs / 4 outputs	
Hand piping	4 pcs. ($\phi 4$)	
Position detection	Absolute	
Robot controller cable	5 m (optional: max. 25 m)	
Mass	27 kg	

For *1, *2, *3 and *4, see page 5.

External view



High-Speed and High-Precision SCARA Robot TH550

TH550



Model	TH550	
Type	Horizontal multi-joint	
No. of controlled axes	4	
Arm length	550 mm (300 mm+250 mm)	
Working envelope	Axis 1	$\pm 120^\circ$
	Axis 2	$\pm 145^\circ$
	Axis 3 (Z-axis)	150 mm (optional: 300 mm)
	Axis 4 (Z-axis rotation)	$\pm 360^\circ$
Maximum speed	Axis 1	$375^\circ / s$
	Axis 2	$600^\circ / s$
	Axis 3 (Z-axis)	$2000 \text{ mm} / s$
	Axis 4 (Z-axis rotation)	$2000^\circ / s$
	Composite	$6.21 \text{ m} / s$
Standard cycle time (with 2 kg load)	0.33 s *1	
Maximum payload mass	5 kg	
Allowable moment of inertia	0.05 kgm ² *2	
Positioning repeatability	X-Y	$\pm 0.01 \text{ mm}$ *3
	Axis 3 (Z-axis)	$\pm 0.01 \text{ mm}$ *3
	Axis 4 (Z-axis rotation)	$\pm 0.005^\circ$ *3
Hand wiring	5 inputs / 4 outputs	
Hand piping	4 pcs. ($\phi 4$)	
Position detection	Absolute	
Robot controller cable	5 m (optional: max. 25 m)	
Mass	29 kg	

For *1, *2, *3 and *4, see page 5.

External view

