

Shibaura Machine's New Series SCARA robot

# THE400

## Shibaura Machine's NEW model SCARA robot THE400

-Suitable for assembly and inspection process of electronics equipment and automobile components where precision is required.

-Accurate movement trajectory. High speed operation and high load performance are achieved.

(Cycle time 0.39 second (with 2 kg load). Maximum payload 5 kg. Allowable moment of inertia 0.06 kgm<sup>2</sup>),

-A new model SCARA robot with thoroughly-redesigned mechanism and control functions.



Controller  
TSL3000



Optional Controller  
TSL3000E

Teach Pendant  
(Optional)



TP1000



TP3000

### Robot Specifications

Model		THE400
Type		Horizontal multi-joint
No. of controlled axes		4
Arm length		400 mm (225 mm + 175 mm)
Working envelope	Axis 1	±130 deg
	Axis 2	±145 deg
	Axis 3 (Z-axis)	0~160 mm
	Axis 4 (Z-axis rotation)	±360 deg
Maximum speed*1	Axis 1	672 deg/sec
	Axis 2	780 deg/sec
	Axis 3 (Z-axis)	1,120 mm/sec
	Axis 4 (Z-axis rotation)	1,800 deg/sec
	Composite (Axis 1 and 2 composite)	7.0 m/sec
Maximum payload mass*1		5 kg
Standard cycle time (with 2 kg load)*2		0.39 sec
Allowable moment of inertia*1		0.06 kgm <sup>2</sup>
Positioning repeatability*3	X-Y	±0.01 mm
	Z (axis 3)	±0.01 mm
	C (axis 4, rotation)	±0.007 deg
Hand wiring*4		8 inputs and 8 outputs
Hand pneumatic joint*4		Provided by user
Position detection		Absolute
Robot controller cable		3.5 m
Power supply		2.6 kVA
Mass		15 kg

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

\*2 : Horizontal 300 mm, vertical 25 mm, round-trip with coarse positioning. Continuous operation is not possible beyond the effective load ratio.

\*3 : Positioning repeatability accuracy in one-direction movement, when the environmental temperature and robot temperature are constant. It is not the absolute positioning accuracy. Positioning repeatability for X-Y and C are for when Z-axis is at the upper-most position. Trajectory accuracy is not ensured.

\*4 : Optional design duct for hand wiring and tubing is planned.

### Controller Specifications

Model		TSL3000
No. of Controlled Axes		4
Motion Mode		PTP (point-to-point), CP (continuous path; Linear, Circular), Short-Cut, Arch Motion
Storage capacity		Total: Approx. 6,400 points + 12,800 steps 1 program: Approx. 2,000 points + 3,000 steps
No. of registrable Programs		Max. 256 (247 User files, 9 System files)
Teaching Unit (Optional)		Teach Pendant TP1000, TP3000
Programming by PC Software TSAssist		Programming by PC Software TSAssist
External input/output signals		8 inputs and 8 outputs
External operation signals	Input	Program selection, start, stop, program reset, etc.
	Output	Servo ON, operation ready, fault, cycle stop, etc.
Communication port		RS232C 1 port (HOST or TCP/RG) RS232C 1 port (General-purpose "COM1") RS4285 1 port (for I/O expansion) RS422 1 port (for TP1000) Ethernet
Other functions and designs		Torque control, Interruptive functions, self-diagnosis, I/O control and communications during motion, Coordinate calculations, Built-in PLC, Fan-less design etc.
Power supply		Single-phase, 190 to 240V AC, 50/60 Hz
Outer dimensions and mass*5		150 (W) × 266 (H) × 304 (D) mm, 7 kg
PC Software (Optional)		TSAssist : Robot Programming assist tool High-performance 3D simulation, program editor, teaching function, etc. TC-WORX : PLC programming
Optional specifications*6		I/O signal polarity ("N-type" or "P-type"), I/O extension, Field network (PROFIBUS, DeviceNet, CC-Link, EtherNet/IP, EtherCAT, PROFINET)

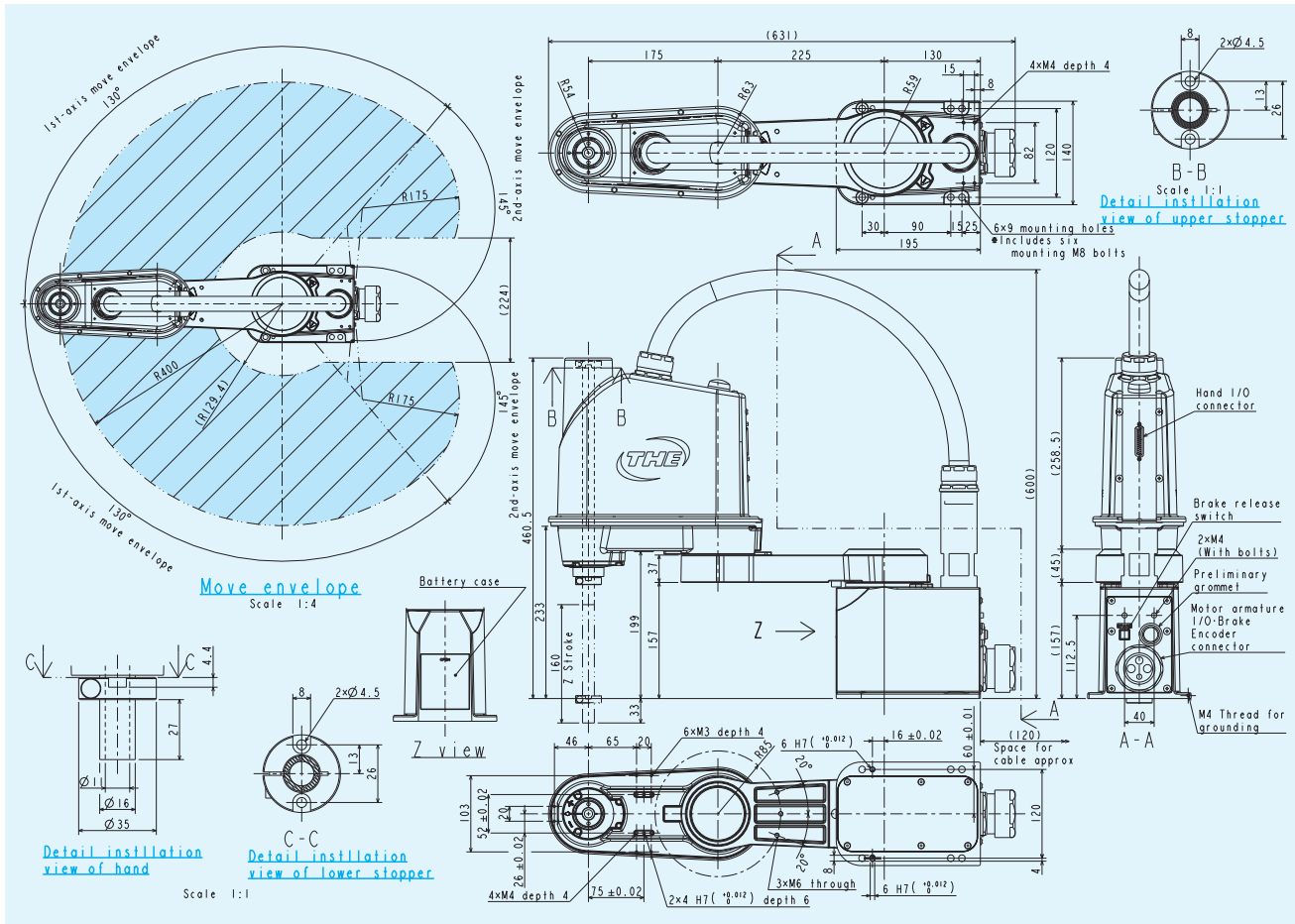
### Optional Controller Specifications

Model		TSL3000E
Storage capacity		Total: Approx. 12,800 points + 25,600 steps 1 program: Approx. 2,000 points + 3,000 steps
Outer dimensions and mass*5		320 (W) × 266 (H) × 304 (D) mm, 13 (kg)
Optional specifications for TSL3000E		High-speed input signal, conveyor synchronization, CE compliance

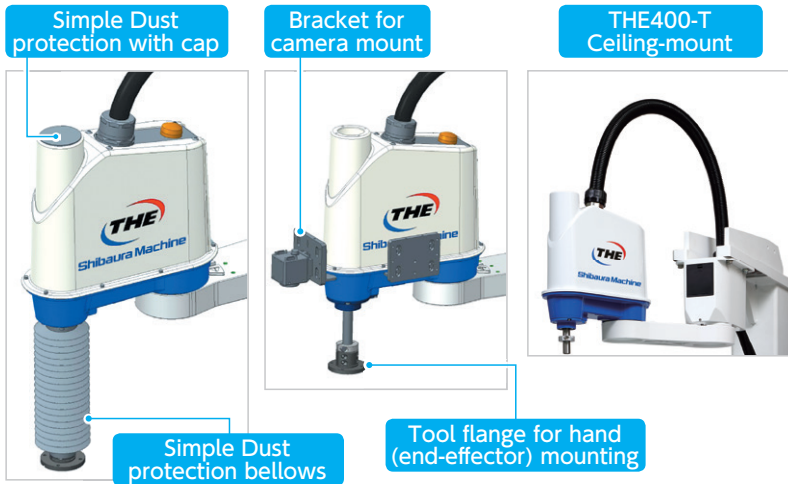
\*5 : Height values include rubber feet. Space clearance is required for cable routing etc. Please inquire us about the full details of dimensions.

\*6 : 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 and EtherNet/IP are registered trademarks of ODVA. PROFIBUS and PROFINET are registered trademarks of PROFIBUS User Organization. EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

THE400 [External View]



Optional Specifications



- Simple Dust protection with cap and bellows
- Tool flange for hand (end-effector) mounting
- Bracket for vision camera mounts
- Hollow shaft ball screw spline for wiring
- Robot-controller cable customized length
- Ceiling-mounted
- Movable robot-controller cable
- Robot Programming Assist Tool TSAssist

(Planned)

- Simple Cleanroom Design
  - IP (Dust- and splash-proof) Design
  - Duct for hand wiring and tubing
  - Built-in LAN cable for hand wiring
- Specifications and images are under development and may change.

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SM20093-1000-EI  
 Printed in Japan

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