TOSHIBA MACHINE

Wide Variations, Fast Motion, and Heavy Duty

SCARA ROBOT TH SERIES

Compact SCARA Robot	TH180, TH250A, TH350A
High-Speed and High-Precision SCARA Robot	TH450, TH550
High Payload Mass SCARA Robot	TH650A, TH850A, TH1050A

Catalog TH0026-CJD-01

The TH series, Flexible and Fast Manoeuvre of Time-Space

SCARA ROBOT

**High-performance evolution in Horizontal multi-joint type robot, TH series.
Eight arm-length varieties with distinctive characteristics and featuring many convenient functionalities to suit a broad range of applications.**

Full line-up: From small to large range to meet a wide range of applications.

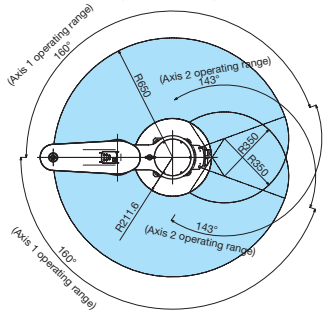
Model	Arm length	Z-axis stroke	Max. payload mass	Model	Arm length	Z-axis stroke	Max. payload mass
TH180	180 mm	120 mm	2 kg	TH550	550 mm	150 mm	5 kg
TH250A	250 mm	120 mm	3 kg	TH650A	650 mm	200 mm	10 kg
TH350A	350 mm	120 mm	3 kg	TH850A	850 mm	200 mm	20 kg
TH450	450 mm	150 mm	5 kg	TH1050A	1050 mm	200 mm	20 kg

High speed: Fast motion for improved efficiency.

Model	Standard cycle time	Load	Max. speed (Composite)	Model	Standard cycle time	Load	Max. speed (Composite)
TH180	0.35 s	1 kg	2.6 m/s	TH550	0.33 s	2 kg	6.21 m/s
TH250A	0.41 s	1 kg	3.53 m/s	TH650A	0.31 s	2 kg	7.52 m/s
TH350A	0.41 s	1 kg	3.24 m/s	TH850A	0.39 s	2 kg	8.13 m/s
TH450	0.33 s	2 kg	7.33 m/s	TH1050A	0.39 s	2 kg	9.15 m/s

Wide Working Envelope

Working envelopes are widened to maximum to allow for maximum freedom in system layout.



Working Envelope of TH650A

Cleanroom Specification (Optional)

Class 10 (0.3 μm)
TH180-CR/TH250A-CR/
TH350A-CR/TH650A-CR
Class 10 (0.1 μm)
TH250A-CRB/TH350A-CRB/
TH650A-CRB/TH850A-CRB/
TH1050A-CRB

Diversity in Standard Features

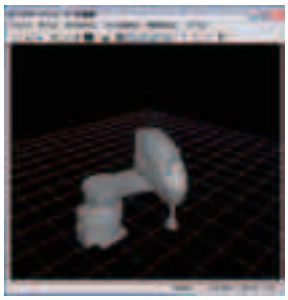
- Wiring and piping for user-side devices:
  Wiring and piping for end-effector control are built in the arm.
- Z-axis brake release switch:
  The Z-axis brake release switch is located on the arm for quick, one-touch operation.
- 7-segment display:
  Error code, program step number, customized data such as process count are displayed on the controller operation panel.
- Torque control:
  Compliant to external force or obstruction, to protect workpieces and end-effectors, and for press-in work.
- Constant speed:
  Constant speed along the motion path. Effective in such applications as sealing.
- Multi-task:
  Robot motion program and I/O signals (peripheral) handling are executed in parallel, for more interactions and better time efficiency.
- PLC function:
  A built-in PLC to control peripheral equipment and touch-sensitive panel connection.

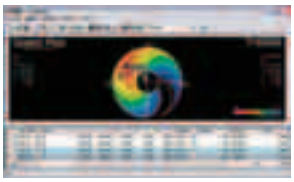
Field Networks (optional)

Various field network protocols are available, for high-speed communication and resulting in reductions in wiring.
For the Ethernet (not supported by TS1000), CC-Link, DeviceNet and Profibus, please request for detailed manuals.

Supportive Software

- TSPC: Programming Support
  Program editor, grammar and syntax check, and file transfer; simple operations such as program selection and execution; Real time monitors of variables and I/O status; and 3D simulation.
- TSLayout: Layout Review
  Guiding to optimizing system layout that results in the high-speed operation.
- TCPRGOS: Ladder Program Creation for Built-in PLC





Convenient Optional Features

- Z-axis Related Options

(1) Long stroke
Standard 150 mm → 300 mm
Standard 200 mm → 400 mm
(2) Cap: TH450 ~ TH1050A
(3) Protective bellows: TH650A ~ TH1050A

- Ceiling-Mount Configuration

Effective use of space is possible:
TH350A ~ TH650A

- Tool flange for end-effector mount:
TH180 ~ TH550
- I/O Related Options

(1) Additional I/O unit:
28 inputs and 20 outputs per unit, up to two units.
(2) I/O cables: For standard and additional I/Os, 6 m-long each

- Controller Related Options

(1) Separated operation panel: The operation panel can be installed, separated from the robot controller, using a dedicated cable (3 m- or 5 m-long). The connector panel can also be separated.
(2) Side brackets: for rack-mount.

- Cable Length

(1) Between robot and controller
H180 ~ TH350A: Standard 3 m→
Maximum 10 m
TH450 ~ TH1050A: Standard 5 m→
Maximum 25 m

- Conveyor Synchronization Functions

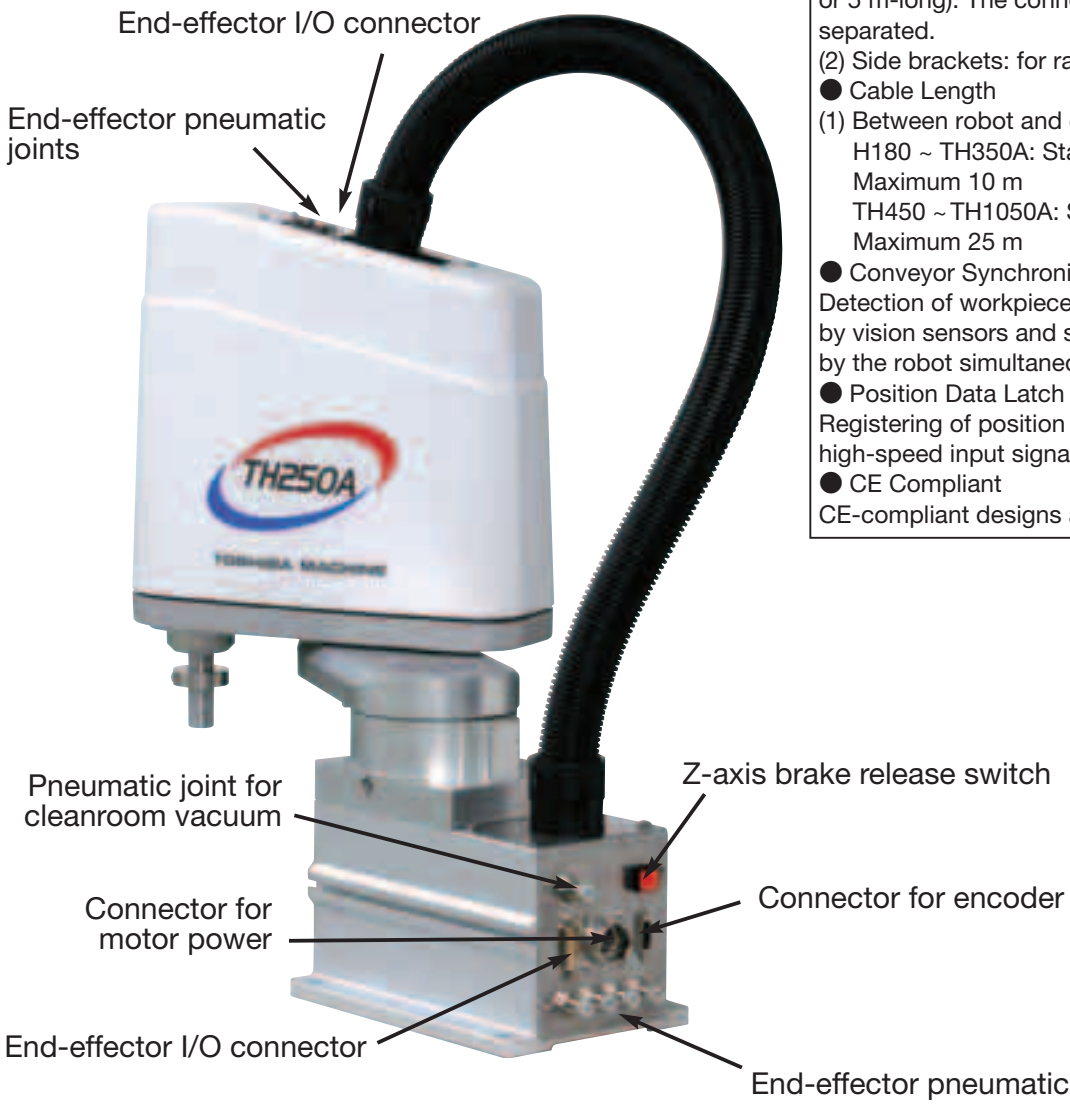
Detection of workpieces on moving conveyors by vision sensors and synchronized handling by the robot simultaneously.

- Position Data Latch Function

Registering of position data at the instant of high-speed input signal.

- CE Compliant

CE-compliant designs are available.



TH Series Lineup

Compact SCARA Robot

TH180

- Arm Length 180 mm
- Z-Axis Stroke 120 mm
- Maximum Payload Mass 2 kg

TH250A

- Arm Length 250 mm
- Z-Axis Stroke 120 mm
- Maximum Payload Mass 3 kg

TH350A

- Arm Length 350 mm
- Z-Axis Stroke 120 mm
- Maximum Payload Mass 3 kg

High-Speed and High-Precision SCARA Robot

TH450

- Arm Length 450 mm
- Z-Axis Stroke 150/300 mm
- Maximum Payload Mass 5 kg

TH550

- Arm Length 550 mm
- Z-Axis Stroke 150/300 mm
- Maximum Payload Mass 5 kg

High Payload Mass SCARA Robot

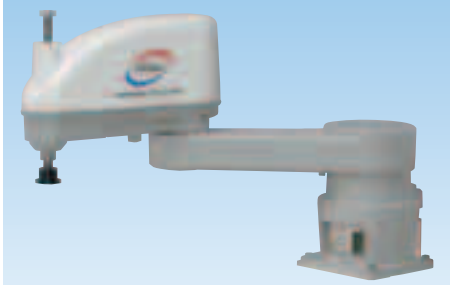
TH650A

- Arm Length 650 mm
- Z-Axis Stroke 200/400 mm
- Maximum Payload Mass 10 kg

TH850A

- Arm Length 850 mm
- Z-Axis Stroke 200/400 mm
- Maximum Payload Mass 20 kg

TH1050A



- Arm Length 1050 mm
- Z-Axis Stroke 200/400 mm
- Maximum Payload Mass 20 kg

Order model code

TH650A-Z-CR-S

- Arm length
- Z-axis long stroke
- Optional specifications
- Special design

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°	±115°	±120°
	Axis 2	±140°	±140°	±145°	±145°
	Axis 3	120 mm	120 mm	120 mm	150 mm / 300 mm
	Axis 4	±360°	±360°	±360°	±360°
Maximum Speed	Axis 1	533°/s	540°/s	337.5°/s	600°/s
	Axis 2	480°/s	540°/s	540°/s	600°/s
	Axis 3	1013 mm/s	1120 mm/s	1120 mm/s	2000 mm/s
	Axis 4	1186°/s	1143°/s	1143°/s	2000°/s
	Composite	2.6 m/s	3.53 m/s	3.24 m/s	7.33 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・m² *3	0.017 kg・m² *3	0.017 kg・m² *3	0.05 kg・m² *3
Positioning Repeatability *4	X・Y	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm
	Z	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm
	Axis 4	±0.005°	±0.005°	±0.005°	±0.005°
Wiring and Pneumatic Piping for Hand		5 Inputs / 4 Outputs, φ4 ×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°	±160°
	Axis 2	±145°	±143°	±145°	±145°
	Axis 3	150 mm / 300 mm	200 mm / 400 mm	200 mm / 400 mm	200 mm / 400 mm
	Axis 4	±360°	±360°	±360°	±360°
Maximum Speed	Axis 1	375°/s	340°/s	300°/s	300°/s
	Axis 2	600°/s	600°/s	420°/s	420°/s
	Axis 3	2000 mm/s	2050 mm/s	2050 mm/s	2050 mm/s
	Axis 4	2000°/s	1700°/s	1200°/s	1200°/s
	Composite	6.21 m/s	7.52 m/s	8.13 m/s	9.15 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・m² *3	0.1 kg・m² *3	0.2 kg・m² *3	0.2 kg・m² *3
Positioning Repeatability *4	X・Y	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm
	Z	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm
	Axis 4	±0.005°	±0.004°	±0.004°	±0.004°
Wiring and Pneumatic Piping for Hand		5 Inputs / 4 Outputs, φ4×4 pcs.	5 Inputs / 4 Outputs, φ6 ×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.

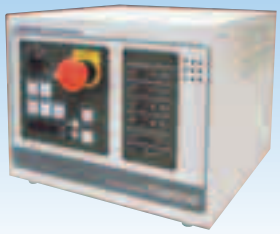
■Positioning repeatability

*4: When the environmental temperature is constant.

Controller

TS1000

TS2000



TS2100

Teach pendant

TP1000

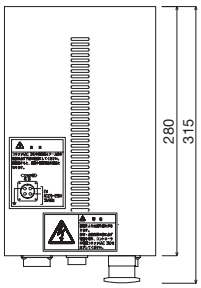
Optional

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 TCPRGOS: 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		

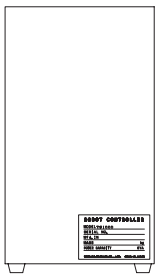
TS1000

Top view

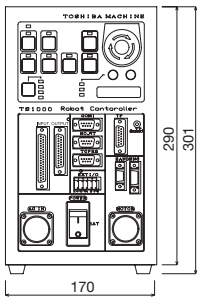


Space for controller ventilation
Upward direction: 100 mm or more
Left and right side direction: 50 mm or more

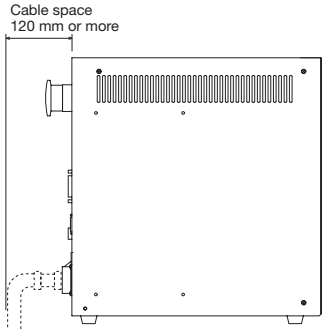
Rear view



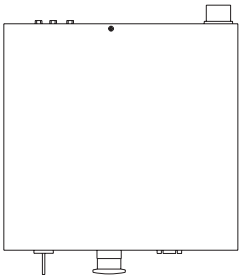
Front view



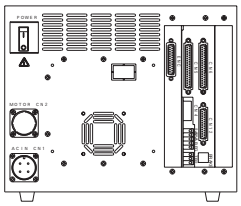
Right-side view



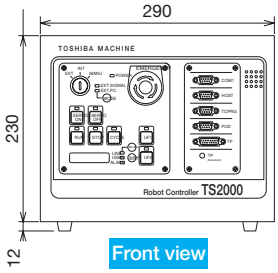
TS2000



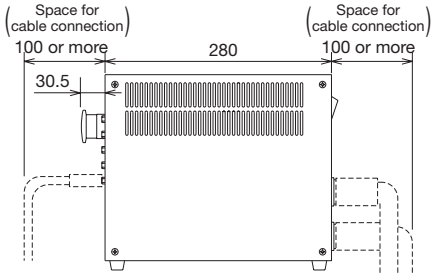
Top view



Rear view

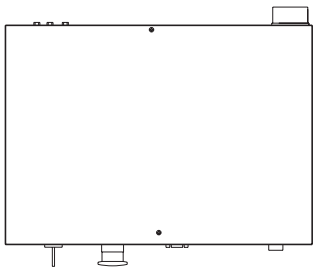


Front view

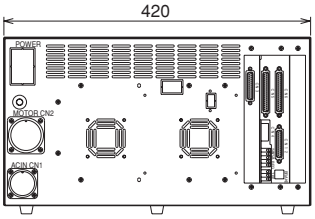


Right-side view

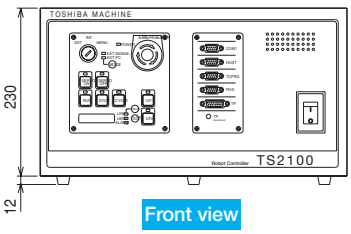
TS2100



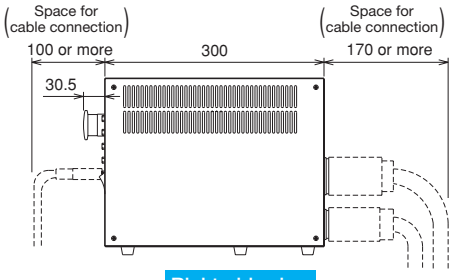
Top view



Rear view



Front view



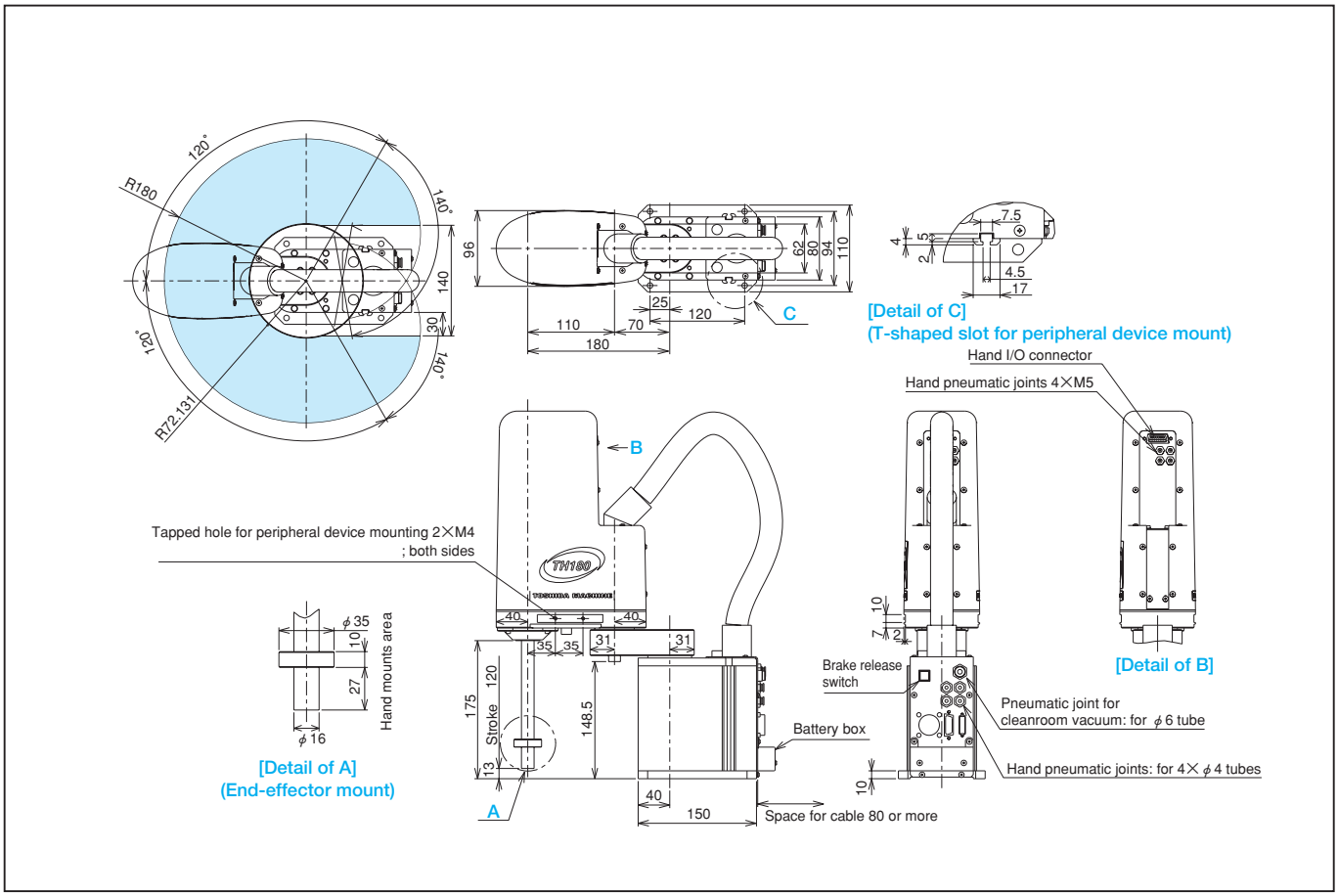
Right-side view

TH180

Model		TH180
Type		Horizontal multi-joint type
Cleanliness (optional)		Class 10 (0.3 μm)
No. of controlled axes		4
Arm length		180 mm (70 mm+110 mm)
Working envelope	Axis 1	±120°
	Axis 2	±140°
	Axis 3 (Z-axis)	120 mm
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	533°/s
	Axis 2	480°/s
	Axis 3 (Z-axis)	1013 mm/s
	Axis 4 (Z-axis rotation)	1186°/s
	Composite	2.6 m/s
Standard cycle time (with 1 kg load)		0.35 s
Maximum payload mass		2 kg
Allowable moment of inertia		0.01 kgm^2 *3
Positioning repeatability	X-Y	±0.01 mm *4
	Axis 3 (Z-axis)	±0.01 mm *4
	Axis 4 (Z-axis rotation)	±0.005° *4
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (ϕ4)
Robot controller cable		3 m (optional: maximum 10 m)
Mass		9 kg

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

External view

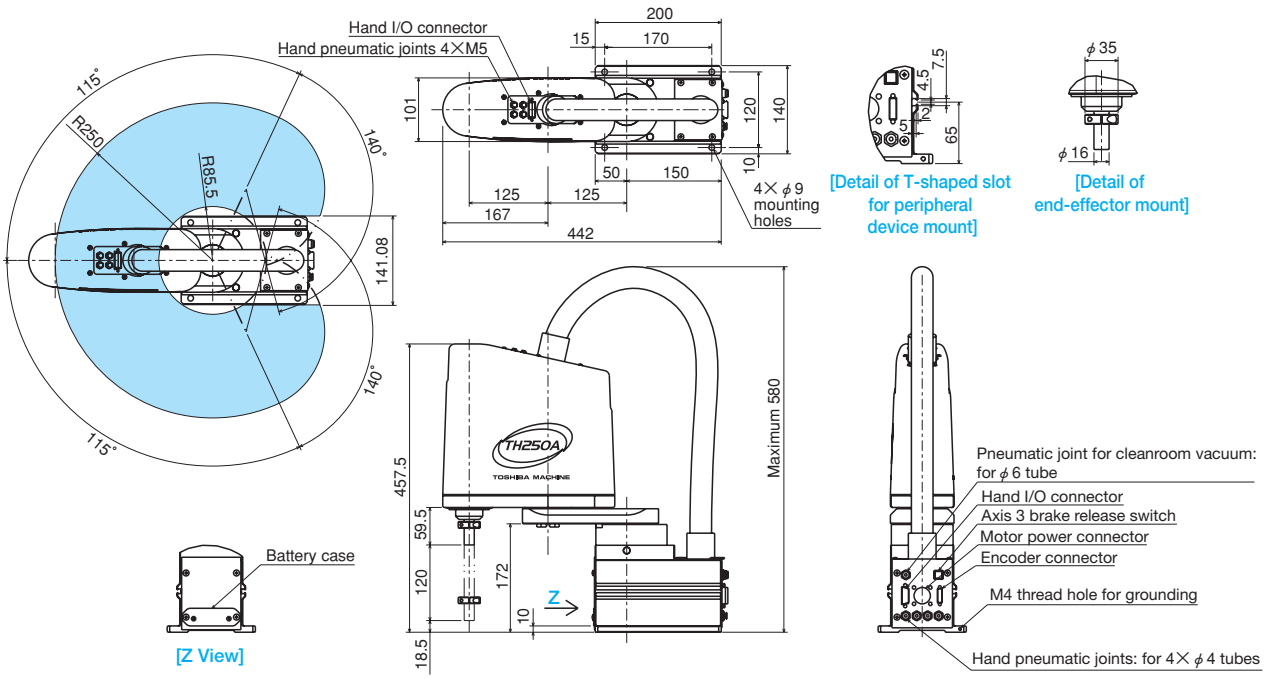


TH250A

Model		TH250A
Type		Horizontal multi-joint
Cleanliness (optional)		Class 10 (0.1 μm / 0.3 μm)
No. of controlled axes		4
Arm length		250 mm (125 mm+125 mm)
Working envelope	Axis 1	±115°
	Axis 2	±140°
	Axis 3 (Z-axis)	120 mm
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	540°/s
	Axis 2	540°/s
	Axis 3 (Z-axis)	1120 mm/s
	Axis 4 (Z-axis rotation)	1143°/s
	Composite	3.53 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 repeatability	X-Y	±0.01 mm *4
	Axis 3 (Z-axis)	±0.01 mm *4
	Axis 4 (Z-axis rotation)	±0.005° *4
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (φ4)
Robot controller cable		3 m (optional: max. 10 m)
Mass		14 kg

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

External view

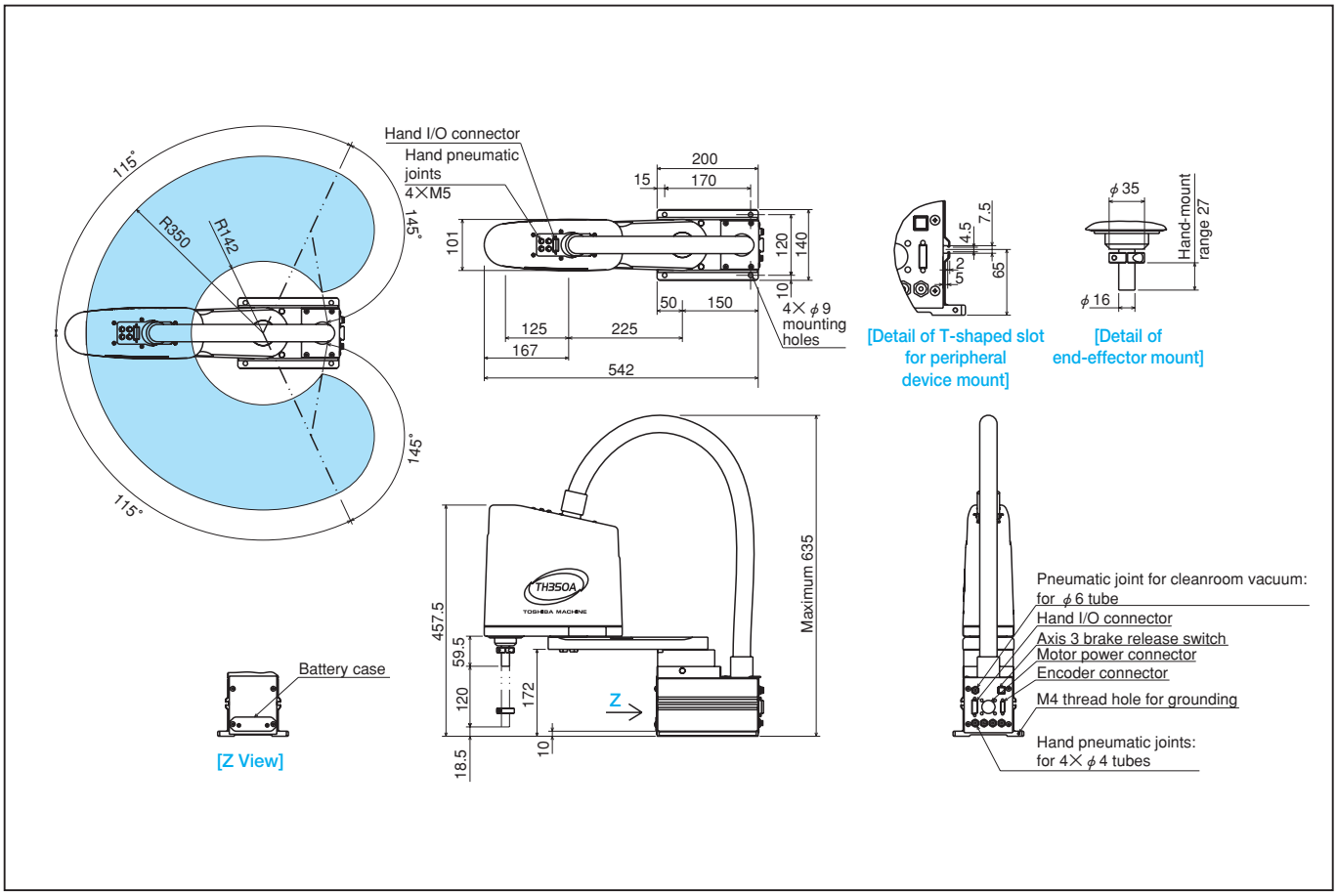


TH350A

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	±115°
	Axis 2	±145°
	Axis 3 (Z-axis)	120 mm
	Axis 4 (Z-axis rotation)	±360°
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 repeatability	X-Y	±0.01 mm *4
	Axis 3 (Z-axis)	±0.01 mm *4
	Axis 4 (Z-axis rotation)	±0.005° *4
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (φ4)
Robot controller cable		3 m (optional: max. 10 m)
Mass		14 kg

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

External view

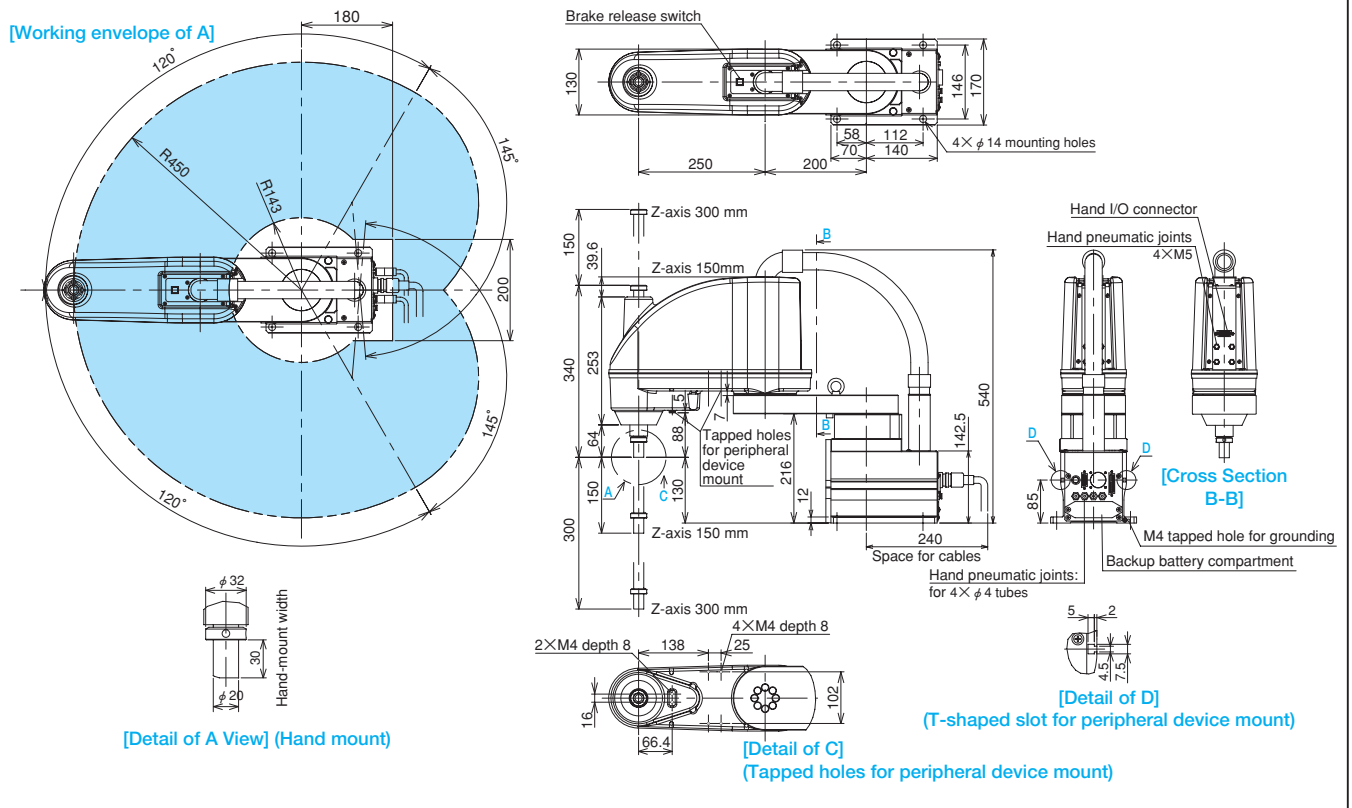


TH450

Model		TH450
Type		Horizontal multi-joint
No. of controlled axes		4
Arm length		450 mm (200 mm+250 mm)
Working envelope	Axis 1	±120°
	Axis 2	±145°
	Axis 3 (Z-axis)	150 mm (optional: 300 mm)
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	600°/ s
	Axis 2	600°/ s
	Axis 3 (Z-axis)	2000 mm/ s
	Axis 4 (Z-axis rotation)	2000°/ 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)	±0.005° *3
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (ϕ4)
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

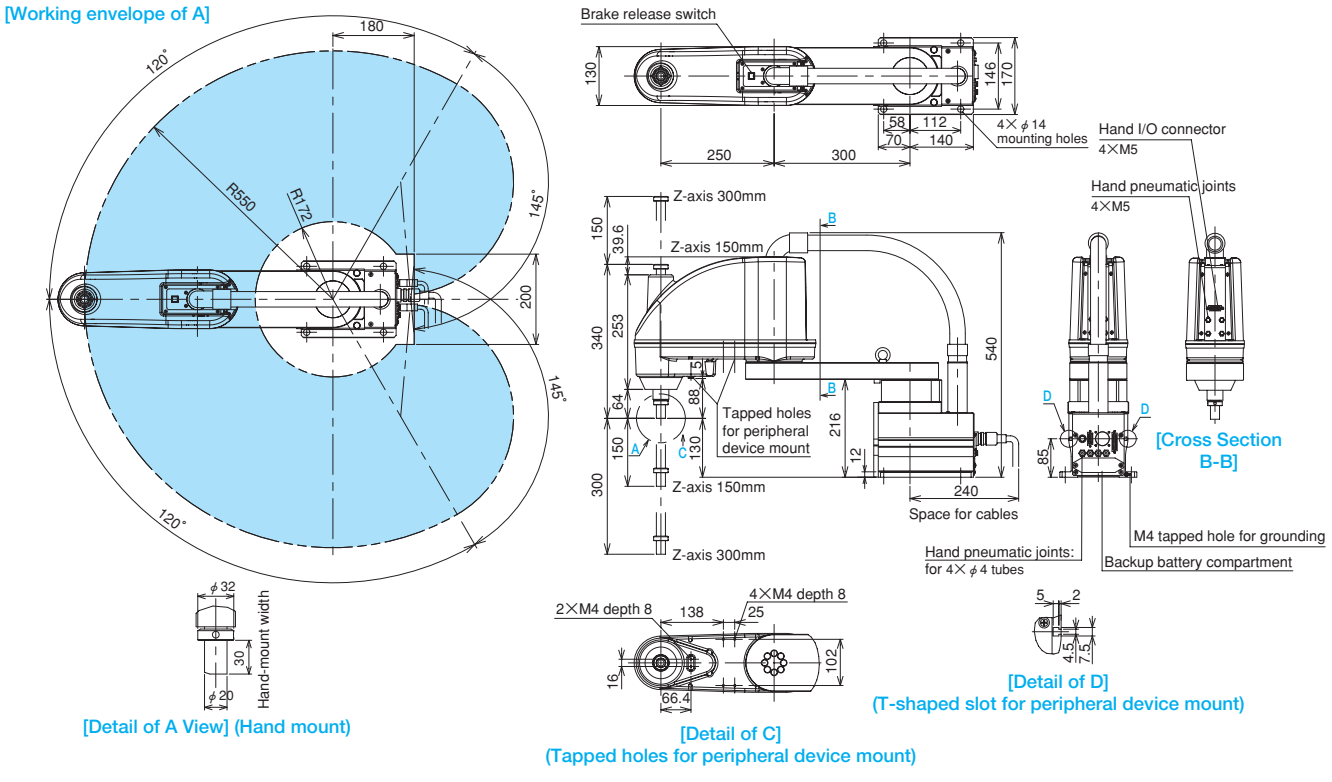


TH550

Model		TH550
Type		Horizontal multi-joint
No. of controlled axes		4
Arm length		550 mm (300 mm+250 mm)
Working envelope	Axis 1	±120°
	Axis 2	±145°
	Axis 3 (Z-axis)	150 mm (optional: 300 mm)
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	375°/ s
	Axis 2	600°/ s
	Axis 3 (Z-axis)	2000 mm/ s
	Axis 4 (Z-axis rotation)	2000°/ s
	Composite	6.21 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)	±0.005° *3
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (ϕ4)
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

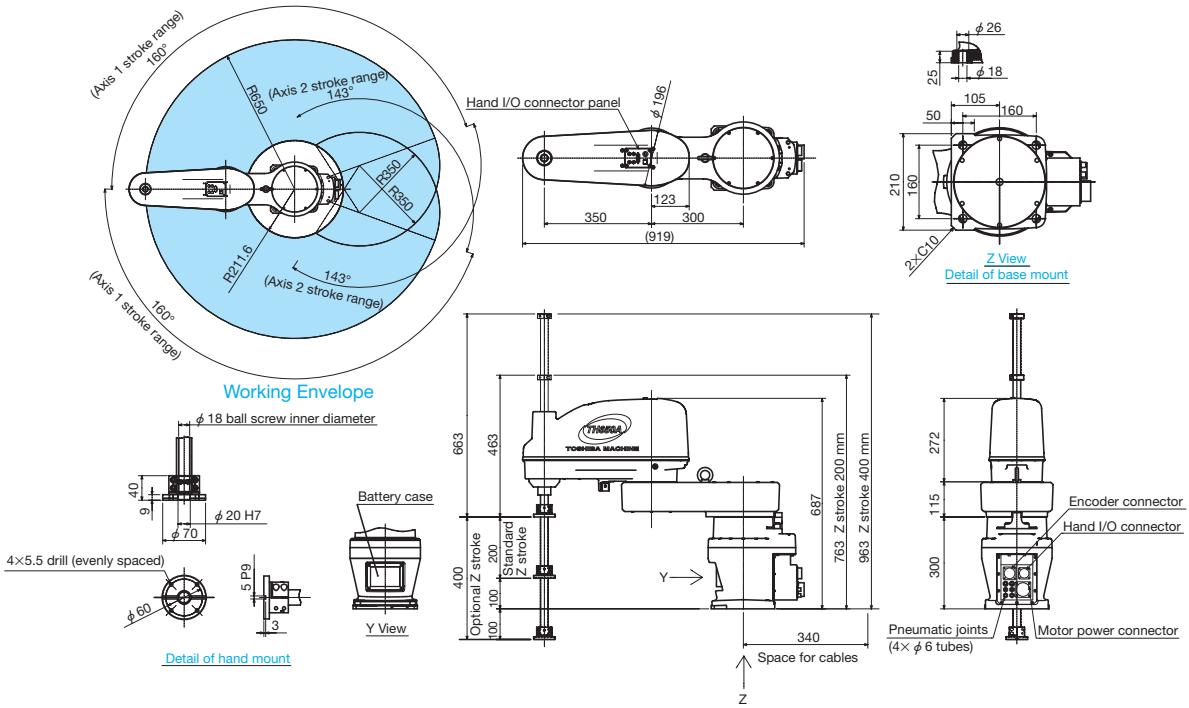


TH650A

Model		TH650A
Type		Horizontal multi-joint
Cleanliness (optional)		Class 10 (0.1 μm)
No. of controlled axes		4
Arm length		650 mm (300 mm+350 mm)
Working envelope	Axis 1	±160°
	Axis 2	±143°
	Axis 3 (Z-axis)	200 mm (optional: 400 mm)
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	340°/ s
	Axis 2	600°/ s
	Axis 3 (Z-axis)	2050 mm/ s
	Axis 4 (Z-axis rotation)	1700°/ s
	Composite	7.52 m/ s
Standard cycle time (with 2 kg load)		0.31 s
Maximum payload mass		10 kg
Allowable moment of inertia		0.1 kgm^2 *3
Positioning repeatability	X-Y	±0.01 mm *4
	Axis 3 (Z-axis)	±0.01 mm *4
	Axis 4 (Z-axis rotation)	±0.004° *4
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (ϕ6)
Position detection		Absolute
Robot controller cable		5 m (optional: max. 25 m)
Mass		52 kg

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

External view

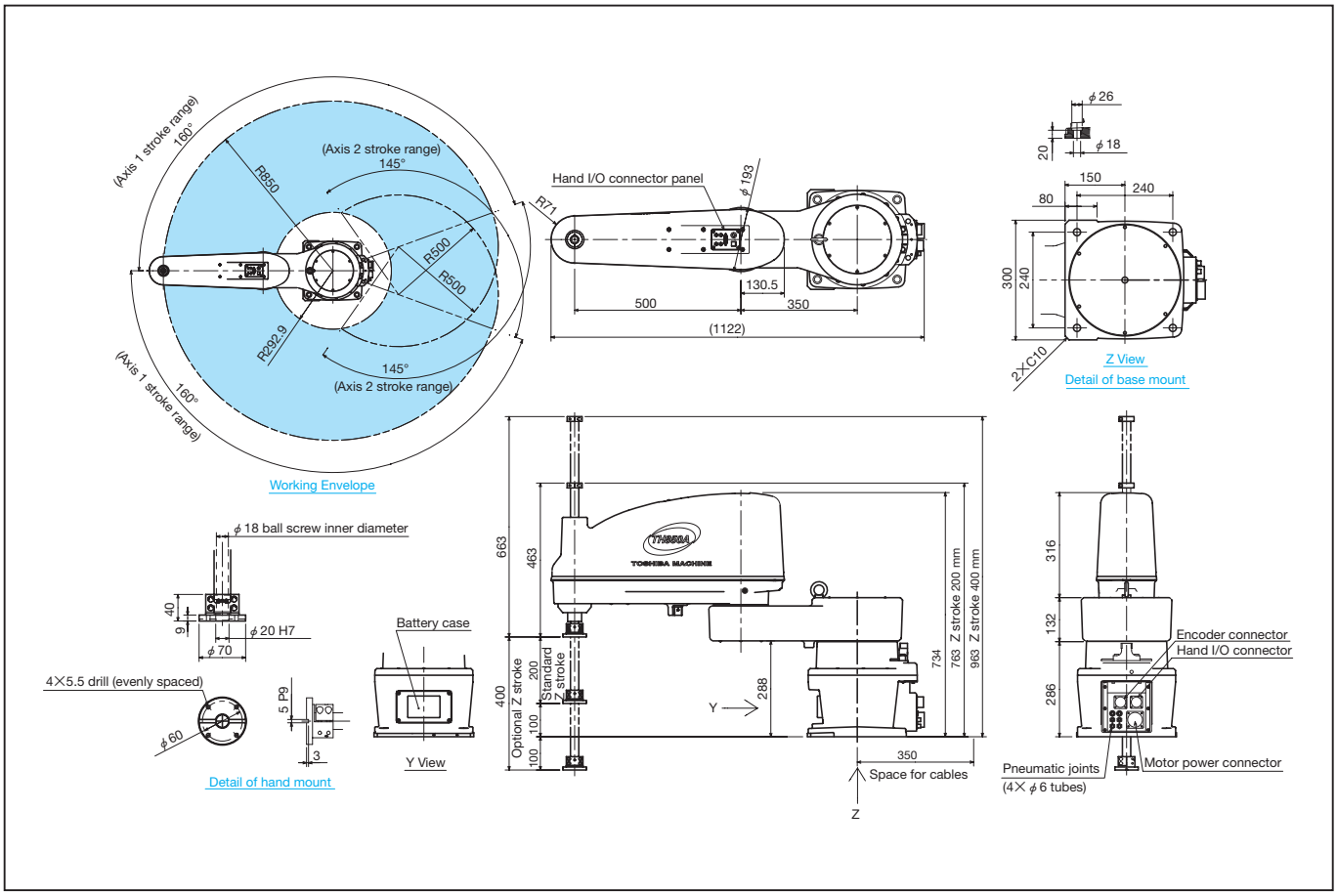


TH850A

Model		TH850A
Type		Horizontal multi-joint
Cleanliness (optional)		Class 10 (0.1 μm)
No. of controlled axes		4
Arm length		850 mm (350 mm+500 mm)
Working envelope	Axis 1	±160°
	Axis 2	±145°
	Axis 3 (Z-axis)	200 mm (optional: 400 mm)
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	300°/ s
	Axis 2	420°/ s
	Axis 3 (Z-axis)	2050 mm/ s
	Axis 4 (Z-axis rotation)	1200°/ s
	Composite	8.13 m/ s
Standard cycle time (with 2 kg load)		0.39 s
Maximum payload mass		20 kg
Allowable moment of inertia		0.2 kgm^2 *3
Positioning repeatability	X-Y	±0.01 mm *4
	Axis 3 (Z-axis)	±0.01 mm *4
	Axis 4 (Z-axis rotation)	±0.004° *4
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (ϕ6)
Position detection		Absolute
Robot controller cable		5 m (optional: max. 25 m)
Mass		76 kg

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

External view

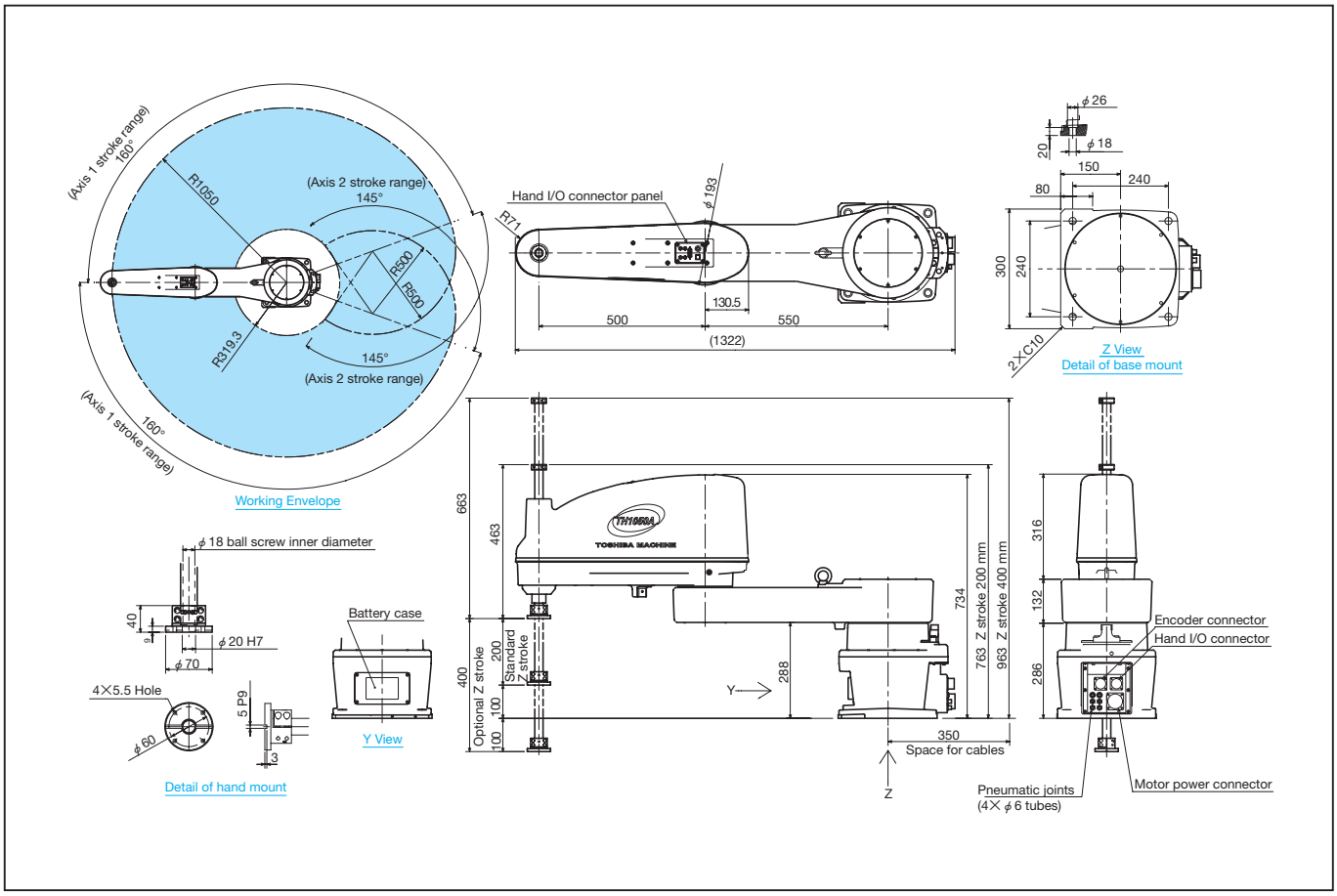


TH1050A

Model		TH1050A
Type		Horizontal multi-joint
Cleanliness (optional)		Class 10 (0.1 μm)
No. of controlled axes		4
Arm length		1050 mm (550 mm+500 mm)
Working envelope	Axis 1	±160°
	Axis 2	±145°
	Axis 3 (Z-axis)	200 mm (optional: 400 mm)
	Axis 4 (Z-axis rotation)	±360°
Maximum speed	Axis 1	300°/ s
	Axis 2	420°/ s
	Axis 3 (Z-axis)	2050 mm/ s
	Axis 4 (Z-axis rotation)	1200°/ s
	Composite	9.15 m/ s
Standard cycle time (under 2 kg load)		0.39 s
Maximum payload mass		20 kg
Allowable moment of inertia		0.2 kgm^2 *3
Positioning repeatability	X-Y	±0.01 mm *4
	Axis 3 (Z-axis)	±0.01 mm *4
	Axis 4 (Z-axis rotation)	±0.004° *4
Hand wiring		5 inputs / 4 outputs
Hand piping		4 pcs. (ϕ6)
Position detection		Absolute
Robot controller cable		5 m (optional: max. 25 m)
Mass		80 kg

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

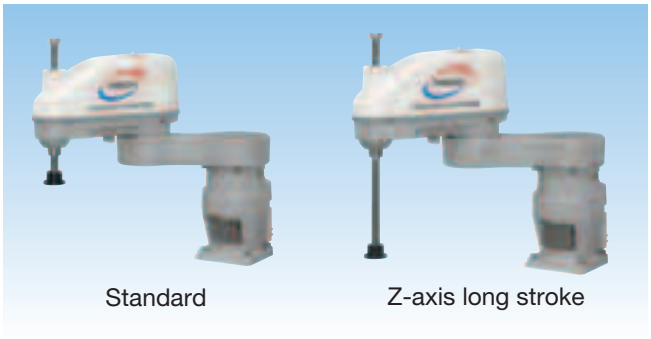
External view



These functional optional specifications are designed with consideration for applications, environment, and system-layout requirements.

● **Z-axis long stroke (-Z)**
TH450 / TH550: 300 mm
TH650A / TH850A / TH1050A: 400 mm

The Z-axis stroke range is extended.
Useful in an application with large up-down movements and handling of long workpieces



● **Protective Bellows for Z-Axis (-B)**
TH650A ~ TH1050A

Protection of the Z-axis shaft lower side in an environment where liquid or chips may scatter.
(Note: The cycle time and Z-axis stroke differ from the standard specifications.
Please contact us for details.)

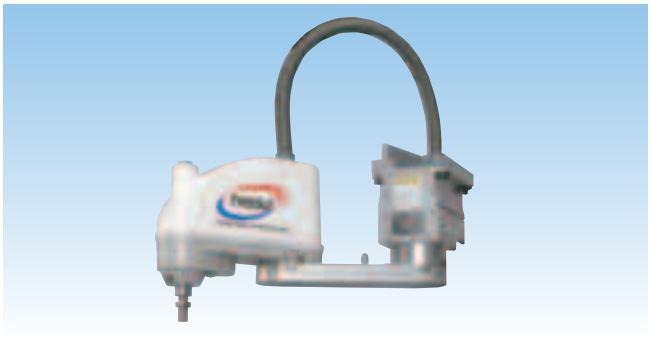
● **Z-Axis Cap (-C)**
TH650A / TH850A / TH1050A

Protection of the Z-axis shaft upper side in an environment where liquid or chips may scatter. It also prevents intrusion and jamming by cables and other peripheral items.

● **Ceiling-mount type (-T)**
TH350A / TH450 / TH550 / TH650A

To enable more freedom in system layout and effective use of a space, the robot is suspended from the upper side of the working area.

(Note: The working envelopes differ from the standard-type robots. Please contact us for details.)



● Optional cables length
Between robot and controller: Maximum 10 m (TH180 ~ 350A)
Maximum 25 m (TH450 ~ TH1050A)
Teach pendant: Max. 15 m

● **Cleanroom Design (-CR, -CRB)**
TH180 / TH250A / TH350A / TH650A / TH850A / TH1050A

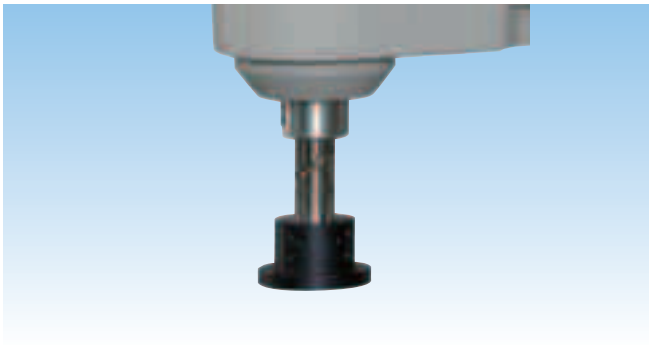
Class 10 (0.1 μm: -CRB, 0.3 μm: -CR)
Applicable around the hand area and in the downward airflow of speed 0.4 m/s or larger.
(Note: Maintain negative air pressure - air intake: approximately 60 L/min - in the robot. Limitations are imposed on acceleration rates. Please contact us for details.)

● **Waterproof Design (-IP)**
TH650A / TH850A / TH1050A

Protection grade: IP65
(Note: Limitation is imposed on acceleration / deceleration rates. Please contact us for details.)

● **Tool Flange for End Effectors Mounting**
TH180 / TH250A / TH350A / TH450 / TH550

Tool flange for securing the robot's hand is available. Standard-equipped for TH650A and larger models.



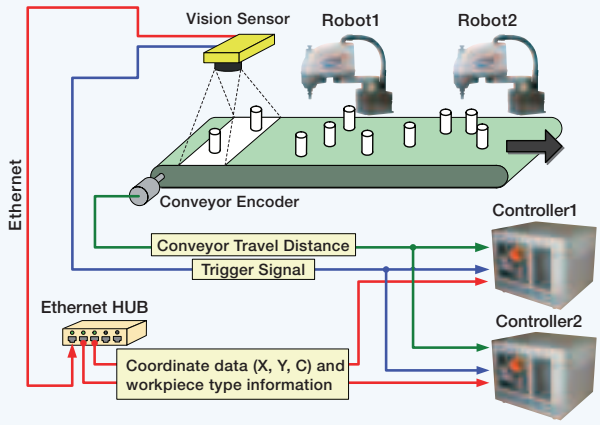
● **Additional 5th Axis (Traverse axis, Wrist axis, etc.)**
TH450 / TH550 / TH650A / TH850A / TH1050A

5th axis can be added for such usage as wrist axis for workpiece flip-over or moving the robot on a traverse axis.

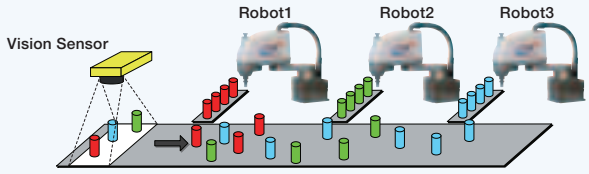
● **CAD Data Service**
Robots and controllers external view drawings are available in DXF format, downloadable from our website
URL: http://www.toshiba-machine.co.jp

Vision + Conveyor Synchronization

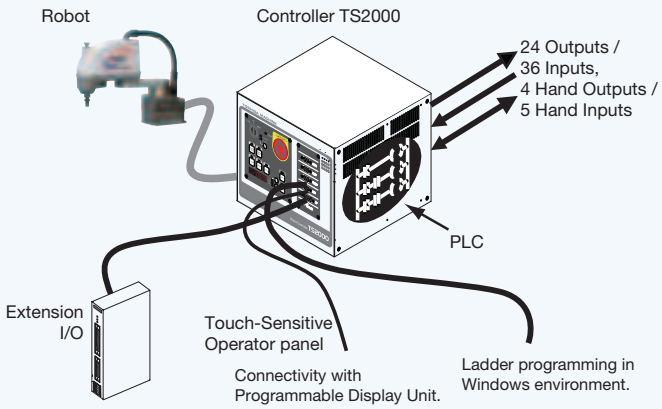
● Cost reduction by "one camera to one line"
Cost reduction of the system is realized. With an off-the-shelf ethernet Hub, data from one vision sensor can be shared among two or more robot controllers.



●Effective in sorting large-quantity and many types of workpieces
・Large quantity and many types workpieces on a conveyor can be sorted and put in boxes by multiple robots in coordination.
●Programming is made easy with special, dedicated commands to realize efficient workpiece-handling, with such functionalities as identifications and duplicate data avoidance.)
●Damage and breakage of workpieces are prevented by synchronization to the conveyor.



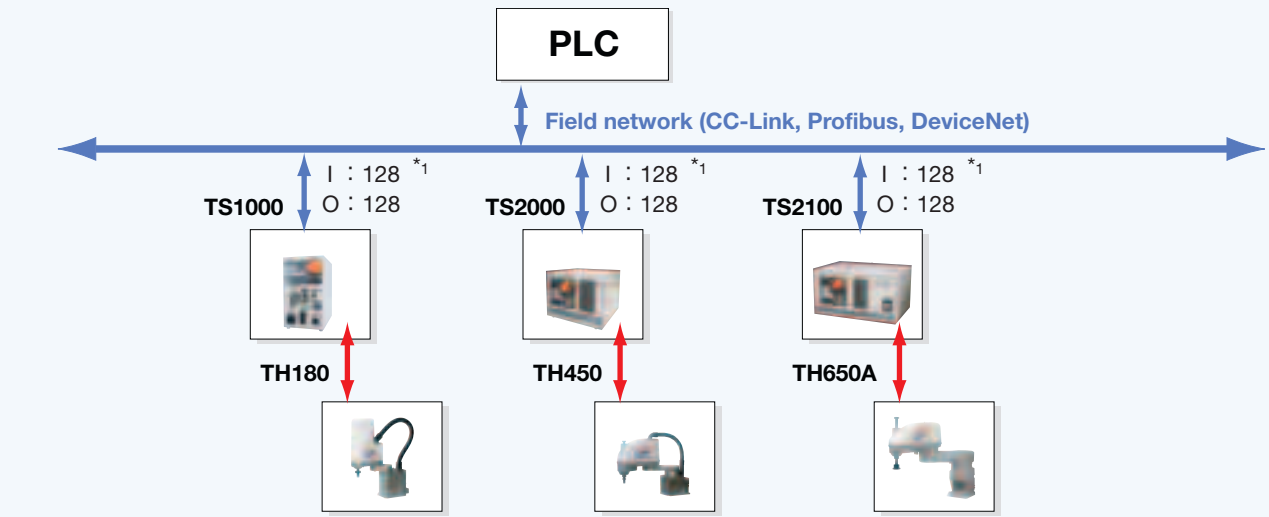
Built-in PLC



I/O Extension via Serial Communication
Remote location (maximum 400 m).
(Maximum 64 Outputs / 64 Inputs)

A PLC (TCmini) is built in the controllers TS1000, 2000 and 2100. Input and output signals can be handled by ladder-style programming logic, independent from robot motion.
[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.
Thus, flexible system design and control of peripheral equipment is possible without the added cost of an outside host PLC.
Creation, monitoring and debugging of ladder-logic programming with powerful programming support software TCPRGOS-W (optional).
The scan time is 5 ms per 1 K-word. Connection is possible with various programmable controllers and display units etc.

Field network

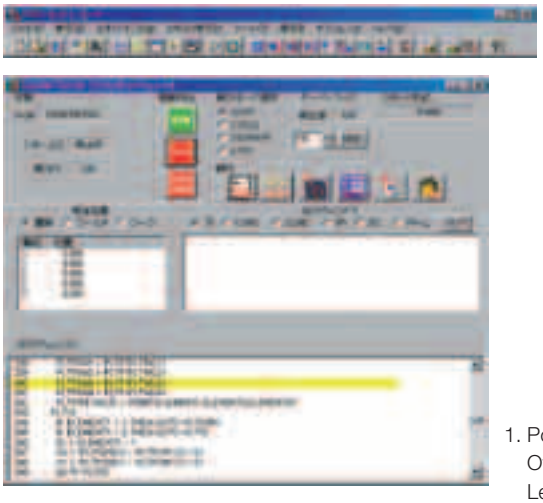


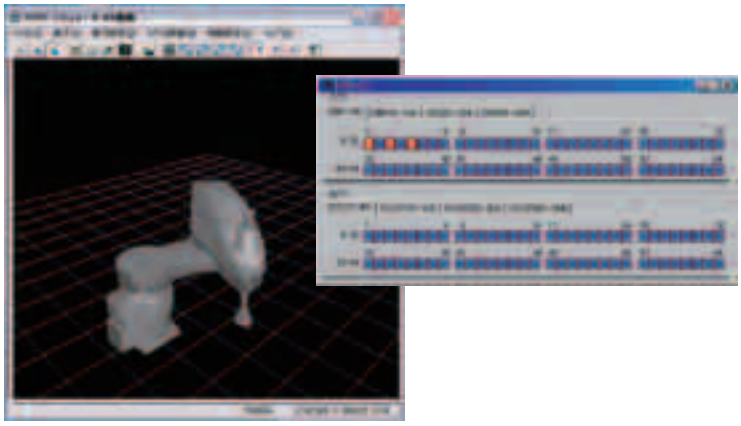
Various field network protocols are supported.

*1: I:126 and O:126 for CC-Link

The following PC software tools are provided to shorten the time and increase the efficiency of system designing and installation work.

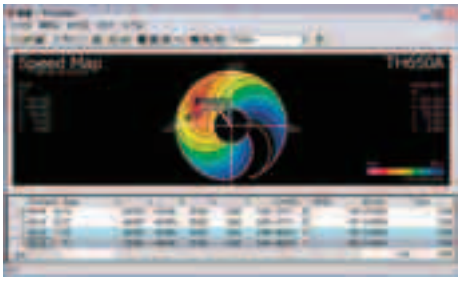
TSPC: For robot programming





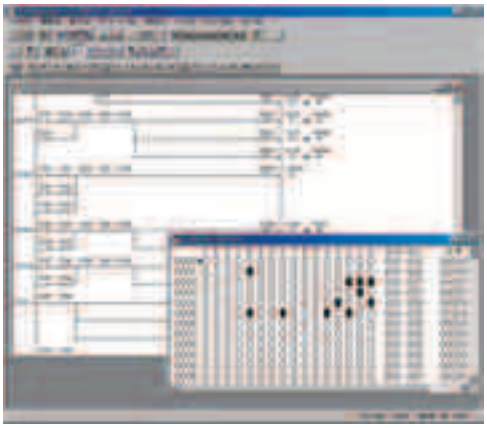
1. Powerful Simulation Function:
   Off-line robot program creation and simulation, with simulated I/O.
   Lead time up to the start of robot operation can be shortened.
   Robot programs can be pre-checked without stopping the production line.
2. User-friendly programming environment:
   Extensive help information, powerful grammar check, direct, online editing of programs in the controller memory.
3. Multi-functional monitor and support:
   Monitoring functions such as active program display, position display, motion status monitor by 3D model, and alarm history display.
   Operation from on-screen operation panel. Connection via Ethernet (optional) is also supported.

TS LayOut: For cycle-time and lay-out review



1. Instant cycle time estimation:
   Cycle time is calculated just by pointing at a position, without using the programming language.
2. Guidance for high-speed motions:
   Coloured speed map display indicates fast-motion areas from a given start position, guiding you to make the most optimized system layout.
3. Conversion to robot program:
   Input positions data can be converted to a robot program just by one click on a menu.

TCPRGOS: For programming the built-in PLC



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

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⚠ Cautions on safety

- Before using, read through and completely understand the appropriate instruction manuals.
- The contents of this catalog may be subject to change without prior notice.

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