

Tabletop Robot **TTA Series**

Cantilever Type, ZR-axis Type
Series Added

Tabletop TTA Series



Improved Tabletop Robot for Cell Production Applications. Featuring Significantly Higher Payload, Maximum Speed and Rigidity!

Enlarged variation with addition of
cantilever type and ZR-axis type



1. Significantly Higher Payload and Maximum Speed

		TT (Conventional model)	TTA
Maximum payload (kg)	Work part side (X-axis)	10	20
	Tool side (Z-axis)	2	6
Maximum speed (mm/sec)	X-axis	300	800
	Y-axis	300	800
	Z-axis	300	400



Up to **3** times



Up to **2.6** times

2. Stores Much More Programs and Positions

The larger memory lets you store much more programs and positions.

The additional data recovery function enables original data recovery due to power failure during FLASH writing.

	TT (Conventional model)	TTA
Number of programs	64	255
Number of program steps	6,000	9,999
Number of multi-tasking programs	16	16
Number of display languages	2 (Japanese/English)	2 (Japanese/English)
Number of positions	3,000	30,000



4 times more programs



10 times more positions

3. Three Times as Many I/O Points as Conventional Models

When the standard I/O slot isn't enough, two additional I/O expansion slots can be installed.

Inputs/outputs

16 points/16 points ➡ Up to 48 points/48 points

3 times more

Supporting
field networks

CC-Link

DeviceNet

PROFI
BUS

EtherNet/IP

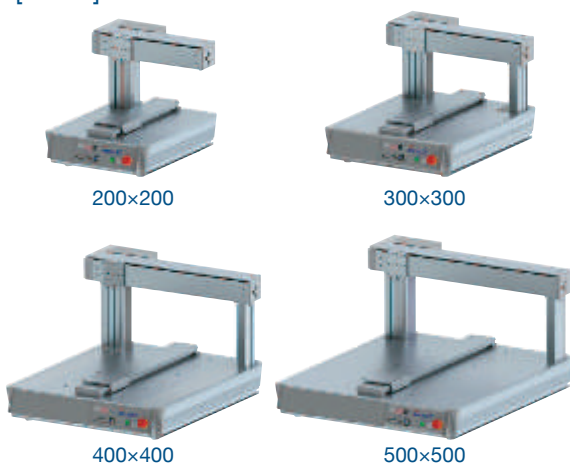
4. More Variations

Cantilever Type is now available in the lineup of TTA Series which is well-appraised with higher payload, maximum speed and rigidity.

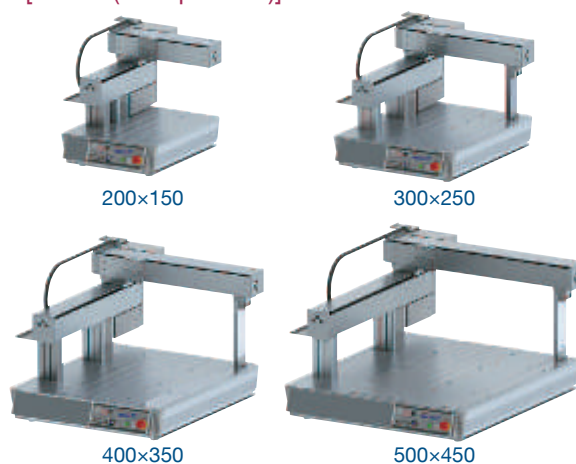
■ 8 Variety Types for Various Operation Range

There are four types of operation ranges to select from for each of TTA-A (current product) and TTA-C (new product). For 3-axis specification, we have prepared two types, 100mm and 150mm, for Z-axis. You can select a model ideal for the size of your work part.

[TTA-A]



[TTA-C (New product)]



■ Difference between Gate Type TTA-A Series and Cantilever Type TTA-C Series

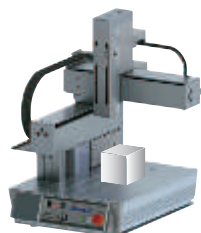
Conventional Gate Type [TTA-A Series]

With work piece mounted on the X-axis slider.
Work piece itself moves.



New product Cantilever Type, ZR-axis Equipped Type [TTA-C Series]

With work piece mounted on the base.
Work piece itself does not move.



■ CE Compliant Model Available

TTA-□□G, the global specification model, is compliant with CE.



5. Dedicated ZR-axis Now in Lineup





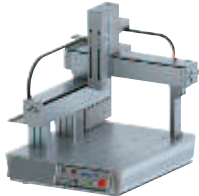

We have prepared the dedicated rotary axis, which was not available for the tabletop robot previously.

Range of application has been expanded by equipping a rotary axis (R-axis) at the tip of vertical axis (Z-axis).

It is now possible to mount a camera on the slider of the Z-axis.



TTA Series Lineup

Model	TTA											
Specification	Gate Type											
	A2 (2-axis standard specification) A2G (2-axis global specification)				A3 (3-axis standard specification) A3G (3-axis global specification)				A4 (ZR-axis standard specification) A4G (ZR-axis global specification)			
												
X-axis/Y-axis stroke (mm)	200×200 (Cantilever)	300×300 (Gate)	400×400 (Gate)	500×500 (Gate)	200×200 (Cantilever)	300×300 (Gate)	400×400 (Gate)	500×500 (Gate)	200×200 (Cantilever)	300×300 (Gate)	400×400 (Gate)	500×500 (Gate)
Z-axis stroke (mm)	—				100/150				100/150			
Standard price	—	—	—	—	—	—	—	—	Range of operation of R-axis ±180 deg.			
									—	—	—	—
									Range of operation of R-axis ±360 deg.			
									—	—	—	—
Reference page	P. 8	P. 9	P. 10	P. 11	P. 16	P. 17	P. 18	P. 19	P. 24			
Specification	Cantilever Type											
	C2 (2-axis standard specification) C2G (2-axis global specification)				C3 (3-axis standard specification) C3G (3-axis global specification)				C4 (ZR-axis standard specification) C4G (ZR-axis global specification)			
												
X-axis/Y-axis stroke (mm)	200×150	300×250	400×350	500×450	200×150	300×250	400×350	500×450	200×150	300×250	400×350	500×450
Z-axis stroke (mm)	—				100/150				100/150			
Standard price	—	—	—	—	—	—	—	—	Range of operation of R-axis ±180 deg.			
									—	—	—	—
									Range of operation of R-axis ±360 deg.			
									—	—	—	—
Reference page	P. 12	P. 13	P. 14	P. 15	P. 20	P. 21	P. 22	P. 23	P. 26			

* Standard price includes power plug and power supply cable. * Refer to Pg. 6 for prices of option products.

Additional Options Let You Change the Y-axis Height and Horizontal Position.

	Standard	Standard + 50mm up	Standard + 100mm up
Y-axis height is selectable	—	H1	H2

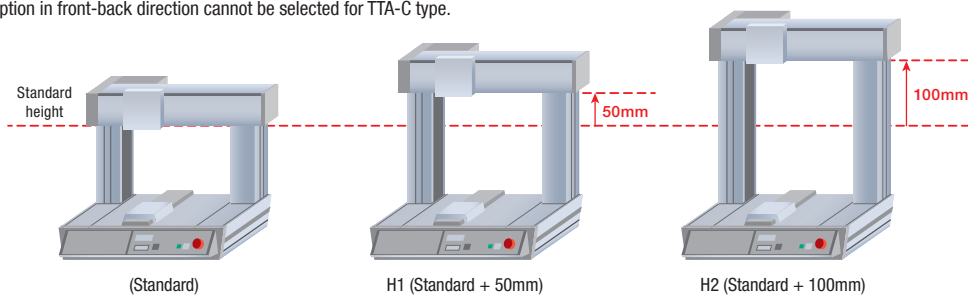
	Standard	Standard + 90mm forward	Standard + 180mm forward
Y-axis horizontal position is selectable	—	F1	F2

* To change both the Y-axis height and Y-axis horizontal position, specify the type codes in alphabetical order together with other option codes.

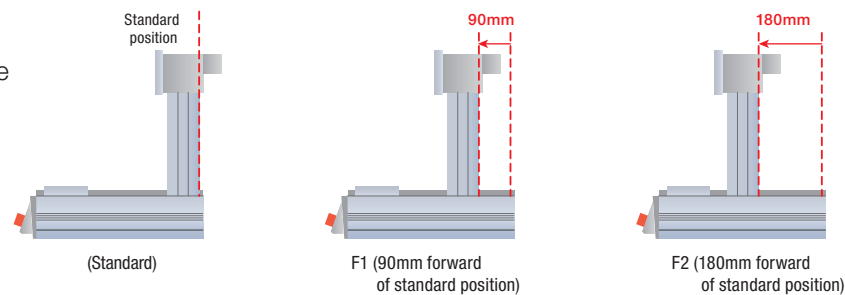
(Example: AP-F1-FT-H2-OS)

* Y-axis position change option in front-back direction cannot be selected for TTA-C type.

Y-axis height
is selectable

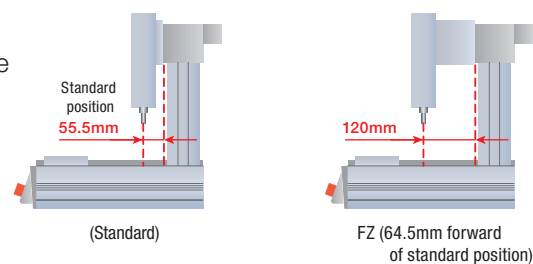


Y-axis horizontal
position is selectable
(Only available for
TTA-A type)

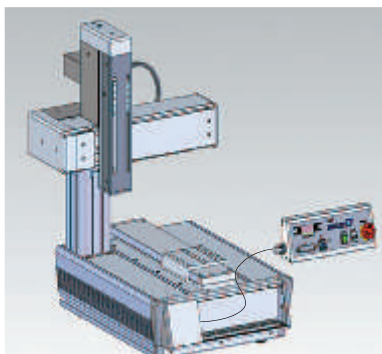


	Standard	Standard + 64.5mm forward
ZR-axis horizontal position is selectable	—	FZ

ZR-axis horizontal
position is selectable



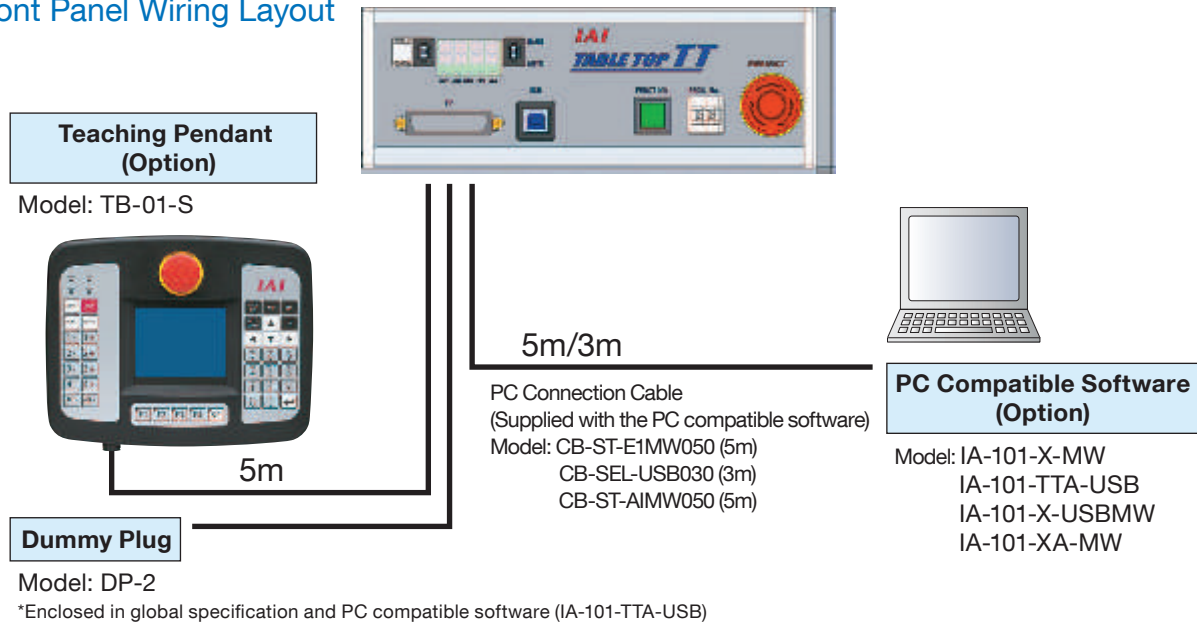
Optional Detachable Operation Console



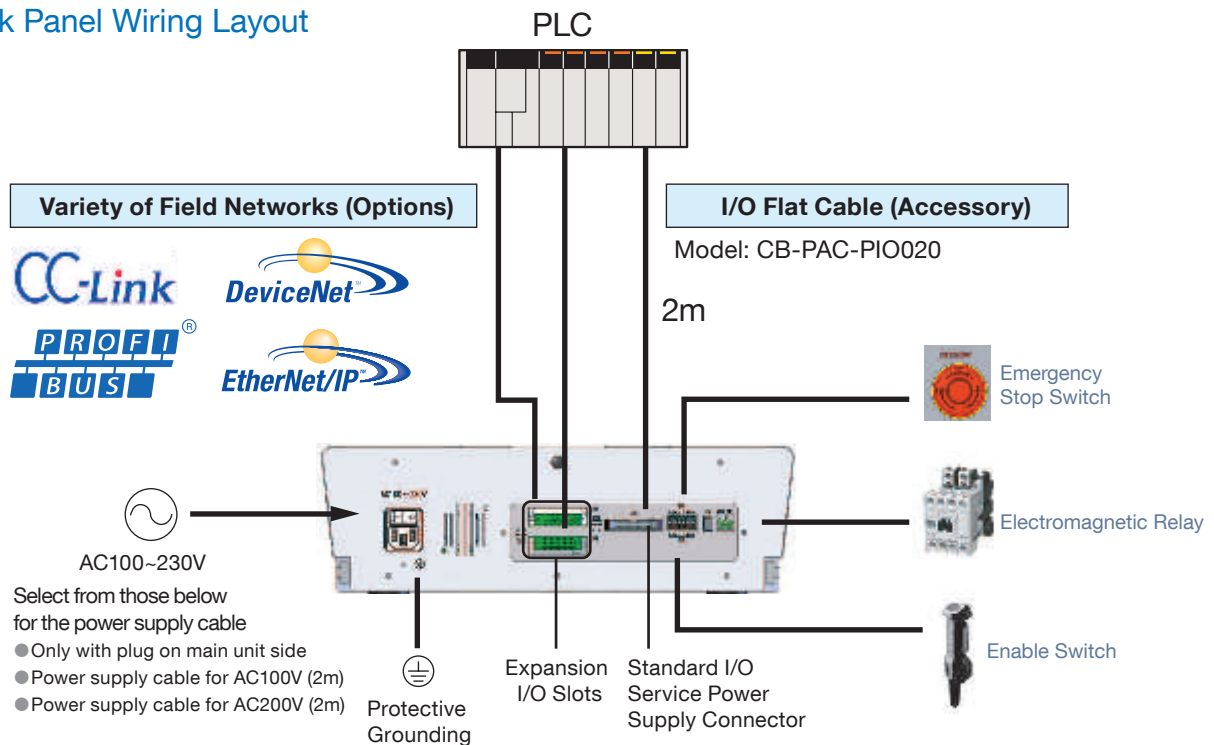
The operation console can be separated from the product for handy operation.
(Cable length: 900mm)

System Configuration

Front Panel Wiring Layout

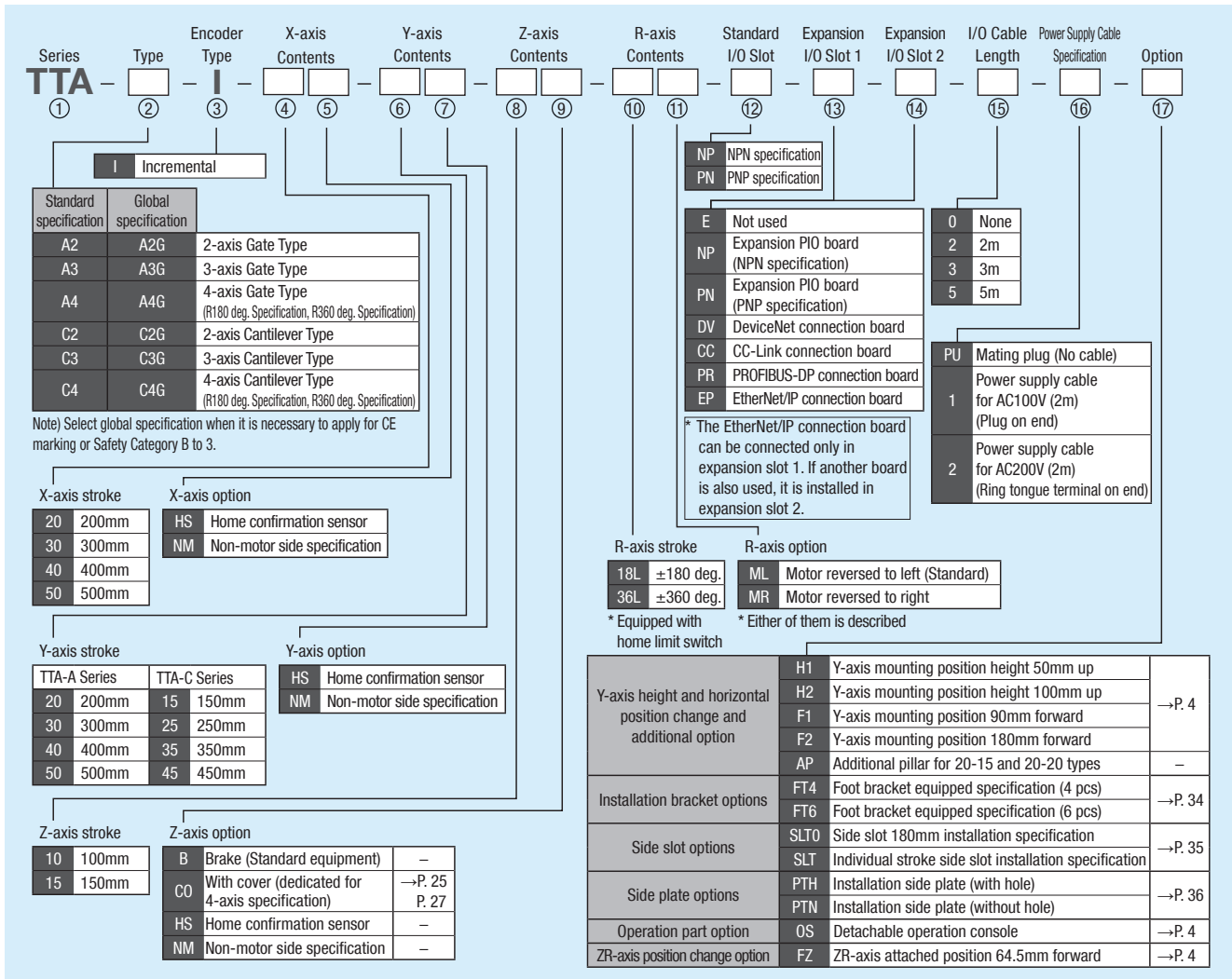


Back Panel Wiring Layout



*Emergency stop switch, enable switch, electromagnetic relay, and other external devices may be connected and wired if necessary. If no devices are connected or wired, the robot will still operate properly. Connectors with jumper wires are supplied.

Explanation of Model Name



[Supplemental Explanation for Options]

AP Additional pillar for 20-15 and 20-20 types

This option can make 20-15 and 20-20 type, which are cantilever types in standard, a gate type.

FT4 Foot bracket equipped specification (4 pcs)

for X-axis stroke 20/30

FT6 Foot bracket equipped specification (6 pcs)

for X-axis stroke 40/50

SLT0 Side slot 180mm installation specification

It is to be selected when changing to slot specification in selection of FT4 or FT6. 20/30 type of X-axis stroke is equipped with 2 places of 180mm side slot and 40/50 type with 4 places.

SLT Individual stroke side slot installation specification

It is to be selected when changing to the slot specification considering the size of the main unit.

*It is not available to select for FT4 and FT6.

PTH Installation side plate (with hole)

Y-axis installation position: Suitable size will be selected for each of standard, F1 and F2

* Only available for TTA-A type

PTN Installation side plate (without hole)

Y-axis installation position: Suitable size will be selected for each of standard, F1 and F2

* Only available for TTA-A type

<Notes>

• Global specification is enclosed with dummy plug [DP-2].

• F1 and F2 options cannot be selected for TTA-C type.

Option List (Standard price)

Name	Option code	Standard price
Home confirmation sensor	HS	—
Non-motor side specification	NM	—
Y-axis mounting position height 50mm up	H1	—
Y-axis mounting position height 100mm up	H2	—
Y-axis mounting position 90mm forward	F1	—
Y-axis mounting position 180mm forward	F2	—
Additional pillar for 20-15 and 20-20 types	AP	—
Foot bracket equipped specification (4 pcs)	FT4	—
Foot bracket equipped specification (6 pcs)	FT6	—
Side slot 180mm installation specification	SLT0	—
Individual stroke side slot installation specification	SLT	—
Installation side plate (with hole)	PTH	—
Installation side plate (without hole)	PTN	—
Detachable operation console	OS	—
With Z-axis cover	CO	—

Notes

Notes on Catalog Specifications

Speed

"Speed" refers to the set speed when the actuator is in motion.
The slider accelerates from a stationary state. Once the set speed is reached, the slider will move at that speed until immediately before the target position (specified position), where the slider will decelerate to a stop.

Acceleration/Deceleration

"Acceleration" refers to the rate of change of speed from a stationary state until the set speed is reached.
"Deceleration" refers to the rate of change of speed from the set speed until the slider stops.
Acceleration and deceleration are set in "G" ($0.3G = 2940\text{mm/sec}^2$ Rotary axis is $0.3G = 2940\text{deg./sec}^2$).

Duty cycle

The tabletop robot can be operated at a duty cycle of 100%.

$$\text{Duty cycle (\%)} = \frac{\text{Operating time}}{\text{Operating time} + \text{Stopped time}} \times 100$$

Positioning repeatability

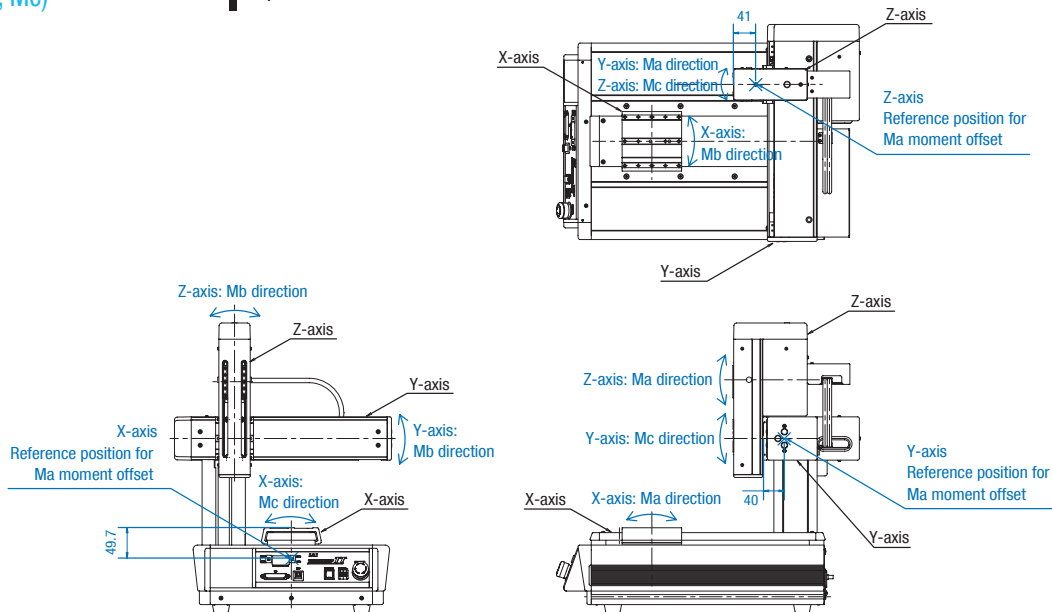
"Positioning repeatability" refers to the positioning accuracy when the actuator is repeatedly moved to a pre-stored position. It is different from "absolute positioning accuracy".

Home

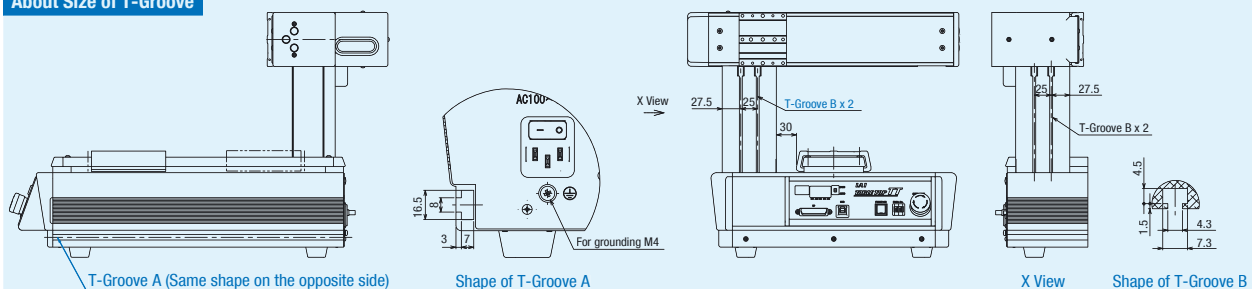
The home is located on the motor side on the actuator for standard specification, or on the front side of the actuator in the non-motor side specification.
During home return the slider moves until it contacts the mechanical end, and then it reversed its direction. Be careful to prevent contact with surrounding parts.

Dynamic allowable moment (Ma, Mb, Mc)

The load moment is calculated by assuming a travel life of 5,000km. Note that if the specified moment value is exceeded, the service life of the guide will be reduced. The direction of each moment and applicable reference point are shown below:

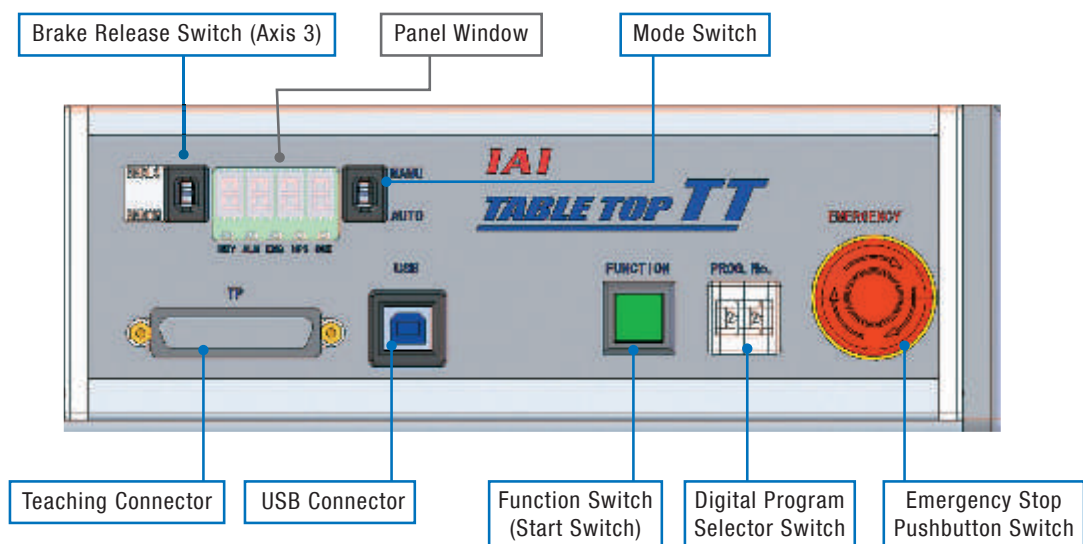


About Size of T-Groove

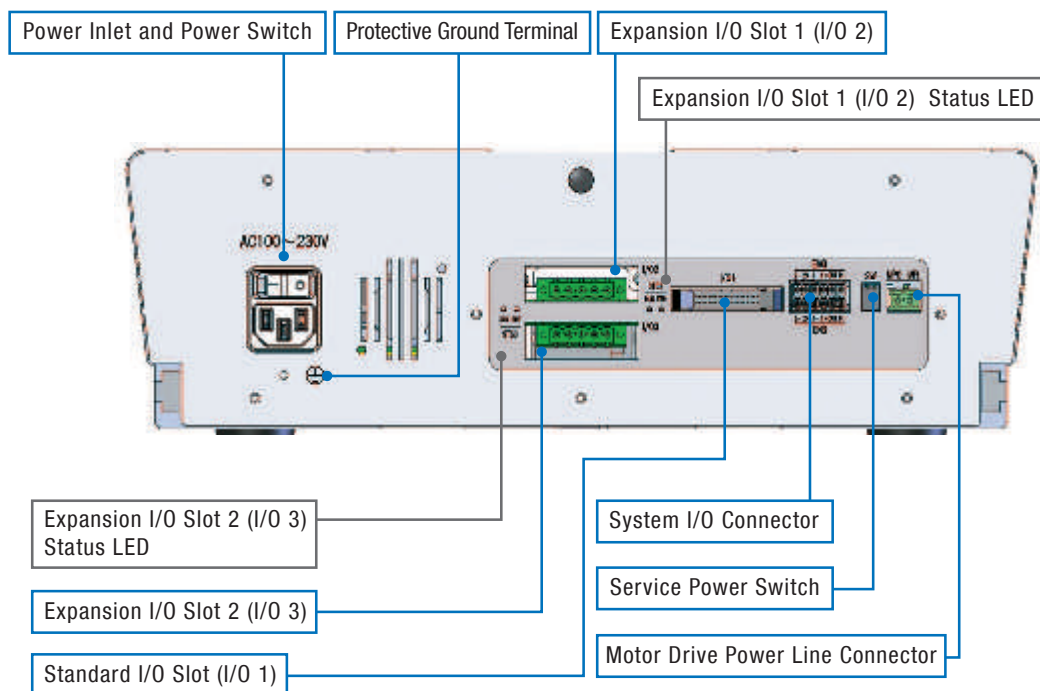


Tabletop Robot Series Name of Each Part

Front



Rear



I/O Interface

Standard I/O slot	Standard PIO (Input 16 points/output 16 points)
Expansion I/O slot 1 [Option]	Expansion PIO (Input 16 points/output 16 points), or Field Network (*1)
Expansion I/O slot 2 [Option]	Expansion PIO (Input 16 points/output 16 points), or Field Network (*1)
System I/O slot	Emergency stop input 2 contacts, enable input 2 contacts
Motor power I/O connector	For cutting off external drive power

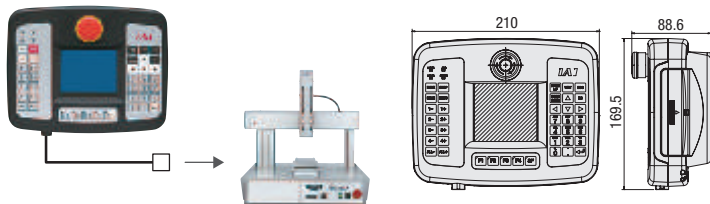
*1: For field network (CC-Link, DeviceNet, PROFIBUS-DP or EtherNet/IP) connection, the maximum number of input points is 240 and maximum number of output points is 240.
 EtherNet/IP + EtherNet/IP is not supported.
 Connect the vision system to EtherNet/IP.

Teaching Pendant

■ **Features:** A teaching device offering program/position input, trial operation and monitoring functions.

■ **Model:** **TB-01-S**

■ **Configuration:**



■ **Specifications:**

Item	TB-01-S
Rated voltage	DC24V
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0~50°C
Ambient operating humidity	20~85% RH (non-condensing)
Environmental endurance	IP40 (in initial state)
Weight	507g (TB-01-S; teaching pendant only)

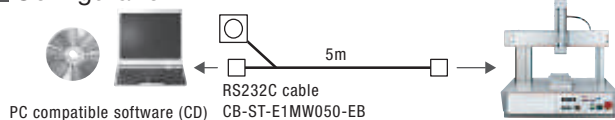
PC Compatible Software (for Windows PCs only)

■ **Features:** A startup support software program offering program/position input function, test operation function, monitoring function, and more. The functions needed for debugging have been enhanced to help reduce the startup time.

Note: The TTA series only supports version 10.0.0.0 or later.

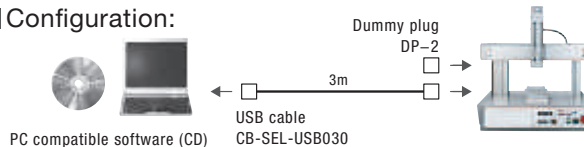
■ **Model:** **IA-101-X-MW** (RS232C cable included)

■ **Configuration:**



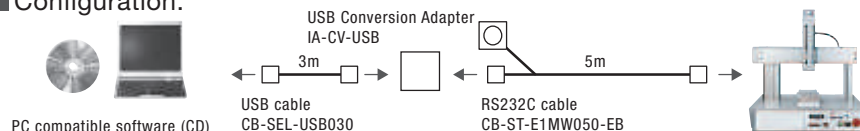
■ **Model:** **IA-101-TTA-USB** (USB cable included)

■ **Configuration:**



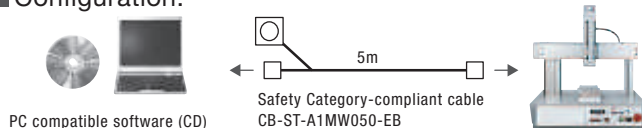
■ **Model:** **IA-101-X-USBMW** (USB conversion adapter + cable included)

■ **Configuration:**



■ **Model:** **IA-101-XA-MW** (With Safety Category 4-compliant cable)

■ **Configuration:**



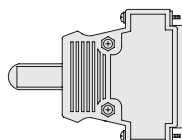
<If you have IA-101-TT-USB>

- It can be used with TTA by upgrading the version of the software.
- Dummy plug [DP-1] enclosed in IA-101-TT-USB is not applicable for Safety Categories. To make it applicable, [DP-2] is necessary.

Dummy Plug

■ **Features:** Connect this plug to the teaching connector to cut off the enable circuit when the TTA series is linked to a PC using a USB cable.

■ **Model:** **DP-2** This is a part enclosed in global type (TTA-A□G and TTA-C□G) and PC compatible software (Model: IA-101-TTA-USB).

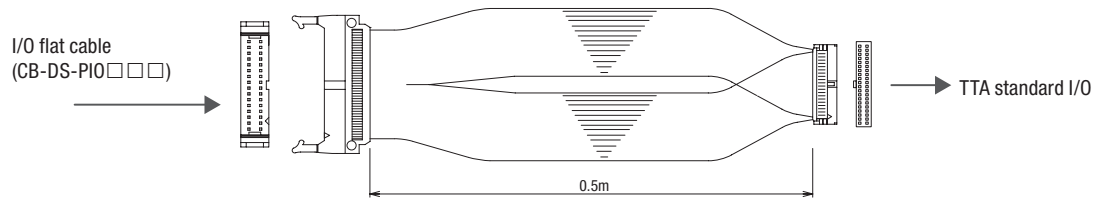


- The plug supports emergency stop/enable circuit redundancy (up to Category 3).

I/O Conversion Cable

■ **Features:** This conversion cable is used to connect the I/O flat cable (CB-DS-PIO□□□) for conventional TT series to the standard I/O slot of the TTA series.

■ Model: **CB-TTA-PIOJ005**



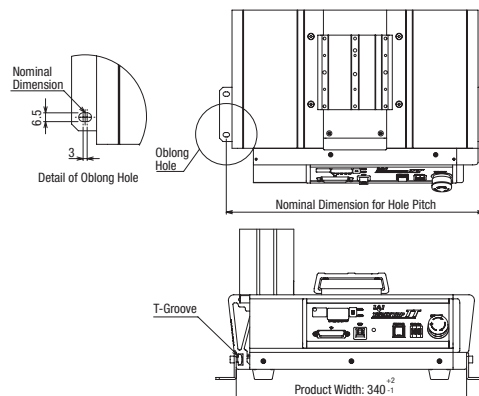
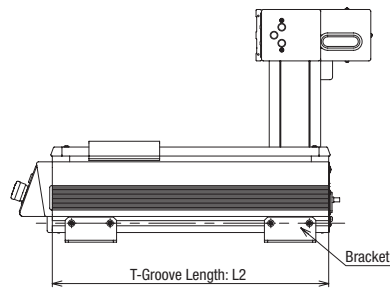
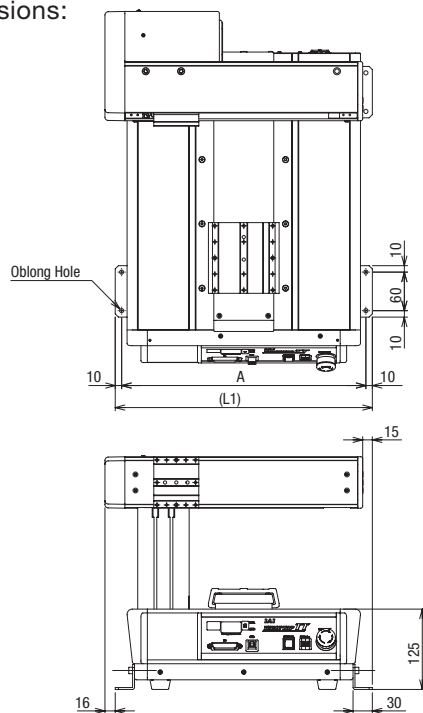
Actuator Mounting Brackets
(4 pieces / 6 pieces in one set, enclosed with attachment screws and nuts)

■ Model: **TTA-FT-4** (for X-axis stroke 20/30)
TTA-FT-6 (for X-axis stroke 40/50)

* 4 pieces of installation brackets are enclosed in 20/30 type of X-axis stroke and 6 pieces in 40/50 type.

■ Dimensions:

X-Y Stroke	L1	L2	A	Number of Brackets
20-20/20-15	400	430	380	4
30-30/30-25	500	530	480	
40-40/40-35	600	630	580	6
50-50/50-45	700	730	680	



When making your own bracket

When making your own bracket, have oblong holes to the hole pitch in the direction of production width to secure margin to attachment.

Make the oblong holes 3mm or more to the nominal position.

Tabletop Robot Series Side Slot Options

Side slot can be selected as an option. It becomes handy when customers themselves need to attach a device to the TTA. Side slot is available from individual stroke specification (Option code: SLT) and 180mm specification (Option code: SLT0).

■ Individual Stroke Side Slot (Option Code: SLT)

It is available when selecting slot specification considering body size.

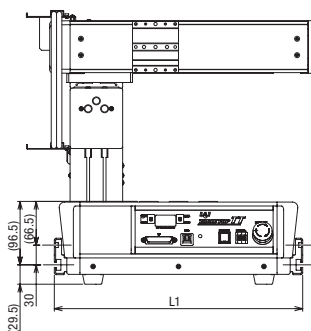
It is not available when selecting FT4 or FT6 as an option.

Dimension Table

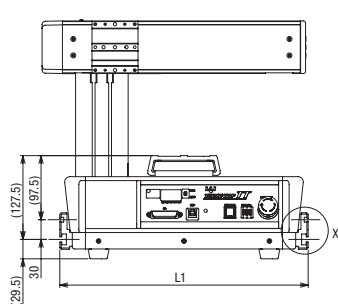
Model	L1	L2
20-20/20-15	378	430
30-30/30-25	478	530
40-40/40-35	578	630
50-50/50-45	678	730

■ Front View

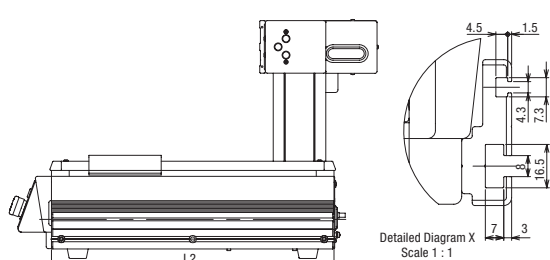
TTA-A type



TTA-C type



■ Side View (TTA-A, TTA-C)



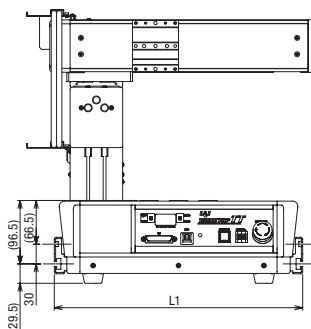
■ Side Slot 180mm Installation Specification (Option Code: SLT0)

It is available when selecting FT4 or FT6 as slot specification.

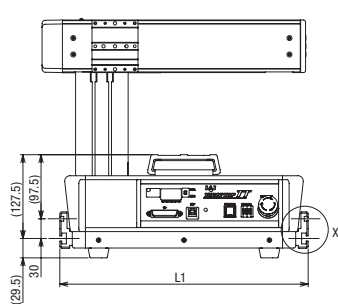
20/30 type of X-axis stroke is equipped with 2 places of 180mm side slot where 40/50 type has 4 places.

■ Front View

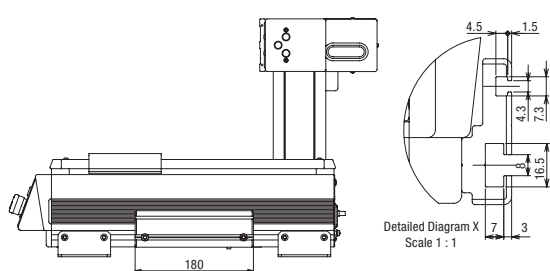
TTA-A type



TTA-C type



■ Side View (TTA-A, TTA-C)



Tabletop Robot Series Side Plate Options

Side plate can be selected as an option. It becomes handy when customers themselves need to attach a device to the TTA.

There are two types for the side plate, one with holes already available (option code: PTH) and the other where you make holes of your own (option code: PTN).

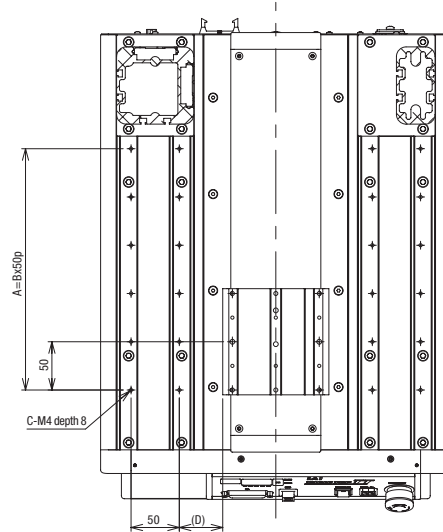
* This option is available only for TTA-A type.

* Option code: PTN is a plate with no hole of M4, depth 8 shown in the figure below.

Standard Specification Hole Positions

Dimension Table

Model	A	B	C	D
20-20/20-15	250	5	12	45
30-30/30-25	350	7	16	95
40-40/40-35	450	9	20	145
50-50/50-45	550	11	24	195

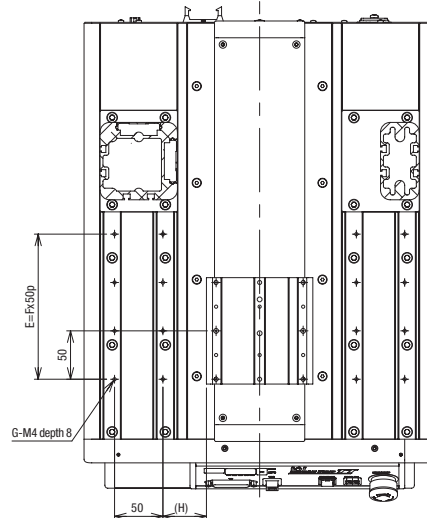


Frame Position F1 Specification Hole Position

It is when Option F1 is selected in the actuator model code.

Dimension Table

Model	E	F	G	H
20-20/20-15	150	3	8	45
30-30/30-25	250	5	12	95
40-40/40-35	350	7	16	145
50-50/50-45	450	9	20	195



Frame Position F2 Specification Hole Position

It is when Option F2 is selected in the actuator model code.

Dimension Table

Model	J	K	M	N
20-20/20-15	50	1	4	45
30-30/30-25	150	3	8	95
40-40/40-35	250	5	12	145
50-50/50-45	350	7	16	195

