IAI
Quality and Innovation

ATB Automation
Mechanics | Motion Control

Tabletop Robot
TTA Series

www.intelligentactuator.com

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 PROFIBUS EtherNet/IP EtherCAT Conformance tested

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]

200×200

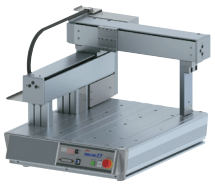
300×300

400×400

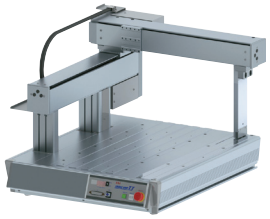
500×500

[TTA-C (New product)]

200×150



300×250



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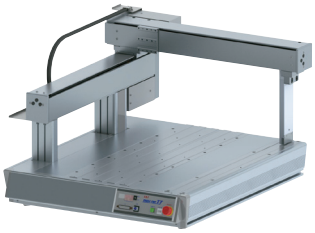


500×450

■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.

Tabletop Robot Product Series TTA

Gate / Cantilever Type with 230 VAC Pulse Motor and Built-in Controller

Product Series		TTA-AG/CG*											
External view		**Gate type (code "A")**											
		A2G (global 2-axis type) 				A3G (global 3-axis type) 				A4G (global 4-axis type)** 			
Stroke X/Y-axis (mm)		200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)
Stroke Z-axis (mm)		—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)			
Max. speed (mm/s)	X-axis	800				800				800			
	Y-axis	800				800				800			
	Z-axis	—				400				400			
	R-axis	—				—				1000 °/s			
Max. load capacity (kg)	X-axis	20				20				20			
	Y-axis	10				—				—			
	Z-axis	—				6				6			
	R-axis	—				—				0.01 kg•m² ***			
Loadable table top surface weight (kg)		20	30	40	50	20	30	40	50	20	30	40	50
External view		**Cantilever type (code "C")**											
		C2G (global 2-axis type) 				C3G (global 3-axis type) 				C4G (global 4-axis type)** 			
Stroke X/Y-axis (mm)		200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)
Stroke Z-axis (mm)		—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)			
Max. speed (mm/s)	X-axis	600	700	800		600	700	800		600	700	800	
	Y-axis	540	640	800		540	640	800		540	640	800	
	Z-axis	—				400				400			
	R-axis	—				—				1000 °/s			
Max. load capacity (kg)	X-axis	—				—				—			
	Y-axis	10				—				—			
	Z-axis	—				6				6			
	R-axis	—				—				0.01 kg•m² ***			
Loadable table top surface weight (kg)		40	60	80	100	40	60	80	100	40	60	80	100

*Global version (code „G") with safety category specification. **4-axis type with ZR rotary axis. ***Allowable load moment of inertia at velocity of 300 °/s or less.

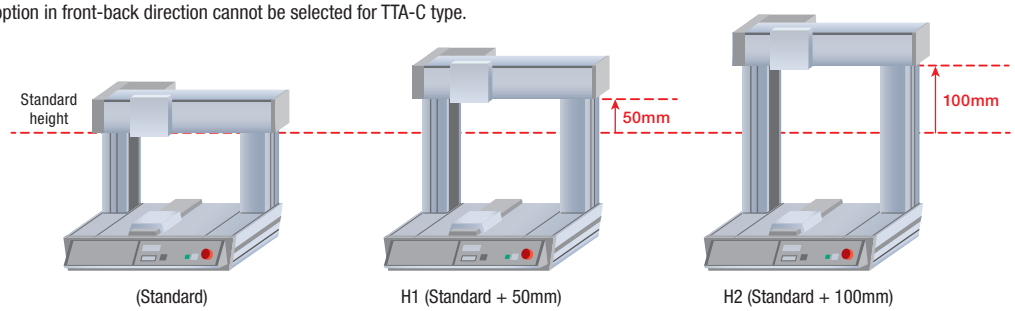
Additional Options Let You Change the Y-axis Height and Horizontal Position.

	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

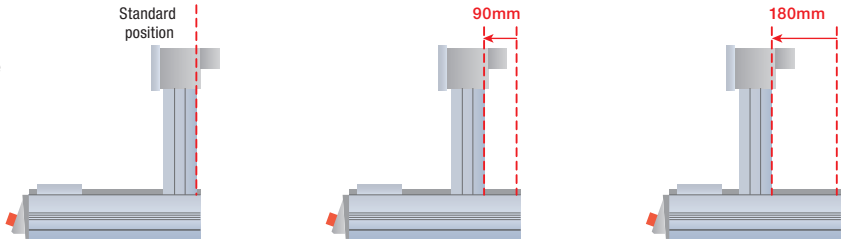
* To change both the Y-axis height and Y-axis horizontal position, specify the type codes in alphabetical order together with other option codes.
(Example: AP-F1-FT-H2-OS)
* Y-axis position change option in front-back direction cannot be selected for TTA-C type.

Y-axis height is selectable



(Standard) H1 (Standard + 50mm) H2 (Standard + 100mm)

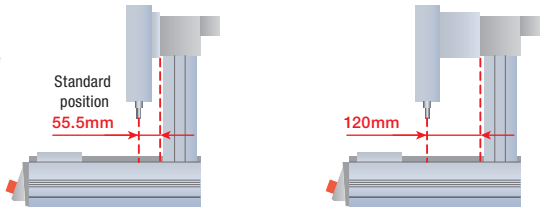
Y-axis horizontal position is selectable (Only available for TTA-A type)



(Standard) F1 (90mm forward of standard position) F2 (180mm forward of standard position)

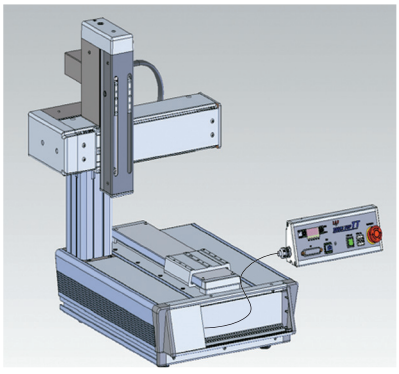
	Standard	Standard + 64.5mm forward
ZR-axis horizontal position is selectable	–	FZ

ZR-axis horizontal position is selectable



(Standard) FZ (64.5mm forward of standard position)

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

Teaching Pendant (Option)

Model: TB-02-S
(Standard specification) (*1)

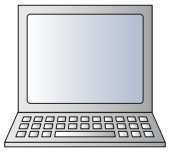
(*1) For a safety category compliant system with deadman switch specific. type TB-02D-S see TB-02 brochure.

5m

TP Connection Cable
Model: CB-TB1-X002

5m/3m

PC Connection Cable
(Supplied with the PC Software)
Model: CB-ST-E1MW050 (5m)
CB-ST-A1MW050 (5m)
CB-SEL-USB030 (3m)



PC Software (Option)

Model: IA-101-X-MW
IA-101-XA-MW (*2)
IA-101-TTA-USB (*3)
IA-101-TTA-USBMW

Dummy Plug

Model: DP-2 (*3)

(*2) Safety category compliant system with safety circuit emergency stop connector type IA-101-XA-MW including PC cable CB-ST-A1MW050.
(*3) Enclosed in global specification and PC software (IA-101-TTA-USB).

Back Panel Wiring Layout

PLC

Variety of Field Networks (Options)

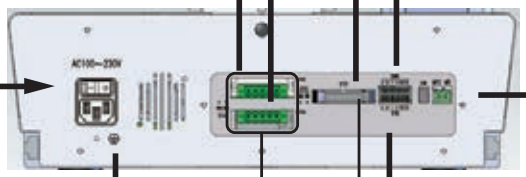
CC-Link
DeviceNet
PROFIBUS
EtherNet/IP
EtherCAT

I/O Flat Cable (Accessory)

Model: CB-PAC-PIO020

2m

Emergency Stop Switch



Electromagnetic Relay

Enable Switch

100 to 230 VAC

Select from those below for the power supply cable

- Only with plug on main unit side
- Power supply cable for 230 VAC (2m)

Protective Grounding

Expansion I/O Slots

Standard I/O Service Power Supply connector

Controller Specification

Item	Specifications
Motor type / Applicable encoder	Pulse motor / Battery-less absolute encoder
Power-supply voltage / frequency	100 to 230 VAC ±10% (Single-phase) / 50 or 60 Hz ±5%
Motor power capacity 2-axis type / 3-axis type / 4-axis type	Rated 182 VA, max. 352 VA / Rated 215 VA, max. 470 VA / Rated 248 VA, max. 588 VA
Number of program steps / positions / programs / multi-tasking programs	9999 / 30000 / 255 / 16
Operation mode	Serial communication, Program
SIO interface	RS232 (Baud rate : 9.6, 19.2, 38.4, 57.6, 76.8, 115.2 kpps), USB (Live wire insertion/removal)
Standard I/O interface: Inputs / Outputs / Load voltage / Isolation method	16 points IN / 16 points OUT / 24 VDC ±10% / Photocoupler isolation
Conforming expansion I/O interfaces	Expansion PIO NPN/PNP spec. (16 IN / 16 OUT), CC-Link, DeviceNet, PROFIBUS-DP, EtherNet/IP, EtherCAT
Calendar (clock) function: Retention time / Charge time	Approx. 10 days / Approx. 100 hours
Protective functions / Protecion class	Monitoring of overcurrent, fan speed drop, etc. / IP20

IAI Quality and Innovation

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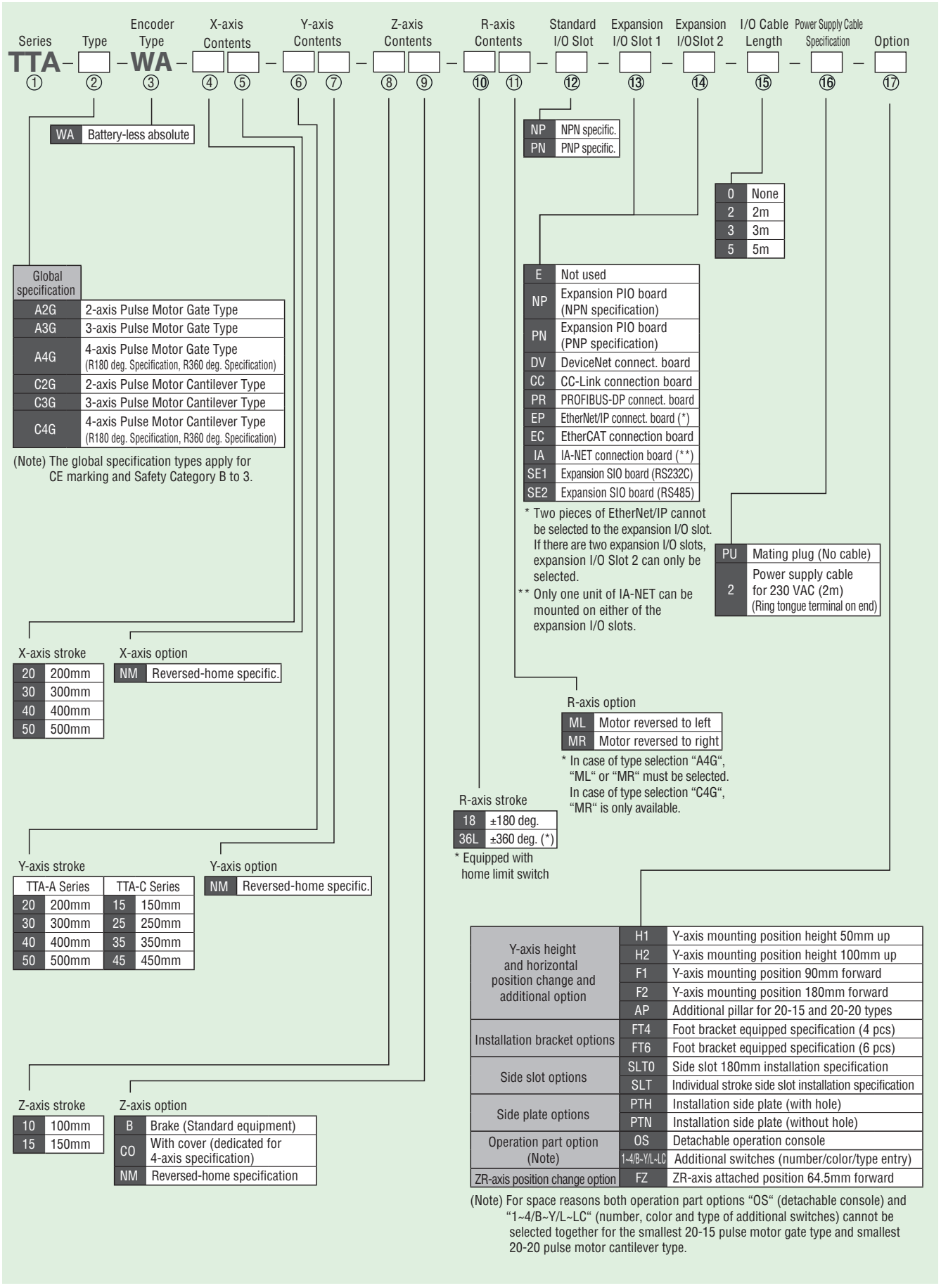
Explanation of Model Name



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 = 2940mm/sec^2 Rotary axis is 0.3G = 2940deg./sec^2).

Duty cycle

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

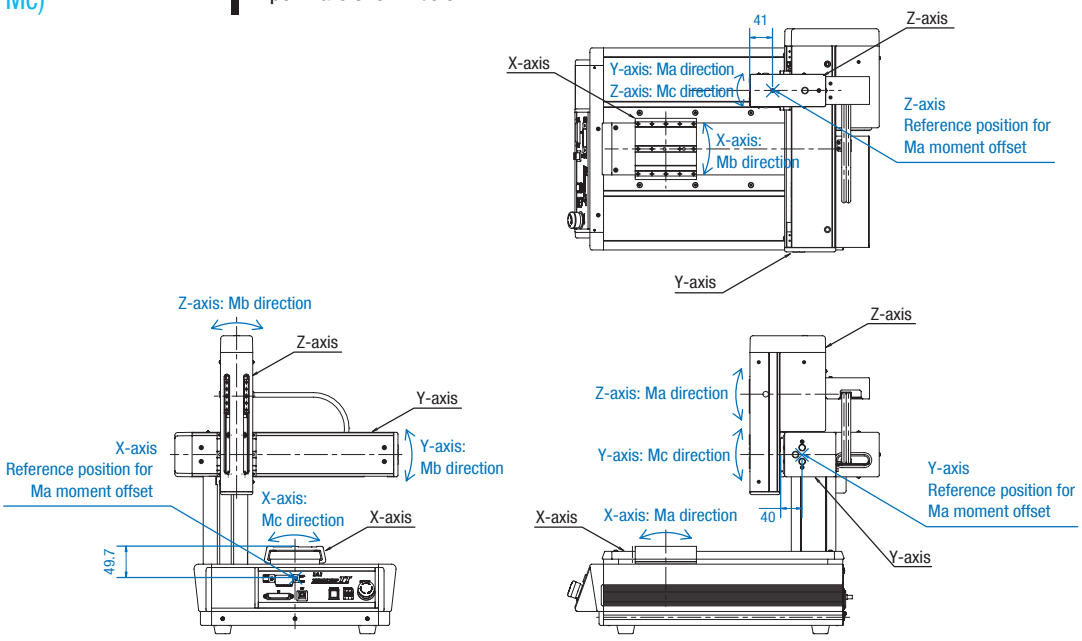
$$\text{Duty cycle (\%)} = \frac{\text{Operating time}}{\text{Operating time + Stopped time}} \times 100$$

Positioning repeatability

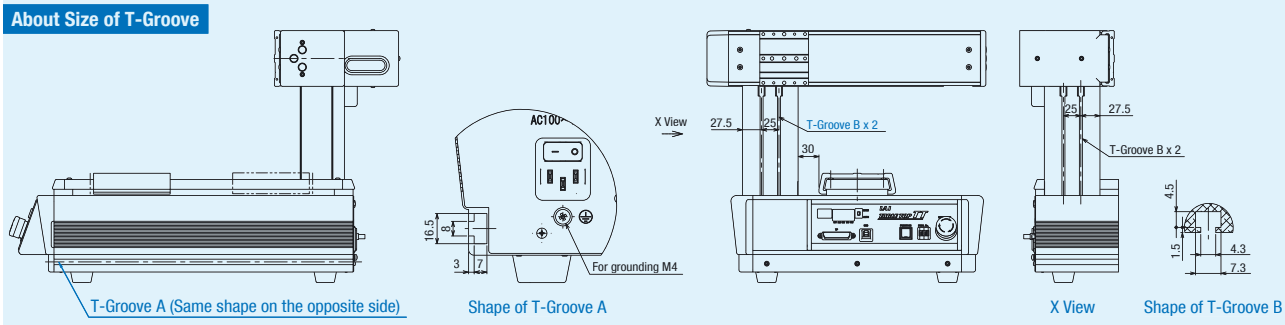
"Positioning repeatability" refers to the positioning accuracy when the actuator is repeatedly moved to a pre-stored position. It is different from "absolute positioning accuracy".

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



TTA-A2(G)-20-20 Tabletop Robot Gate Type 2-axis Specification XY-axis: 200mm

Model Specification Items

TTA — □ — I — 20 □ — 20 □ — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A2: 2-axis standard specification (Gate type) A2G: 2-axis global specification (Gate type)	I: Incremental specification	20: 200mm	HS: Home confirmation sensor NM: Non-motor side specification	20: 200mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2(G)-I-20①-20②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	200	1~800	20
	Y-axis			24 or equiv.	200	1~800	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	20kg
Actuator weight	24kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Dimensions

You can download CAD drawings from our website.

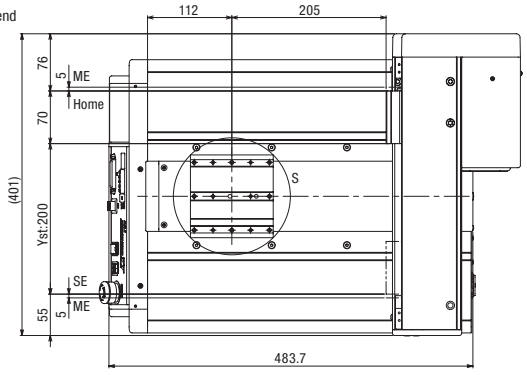
2D CAD RoHS

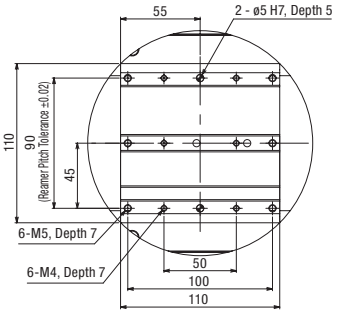
* Refer to P. 7 for dimensions of T-groove.

* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end

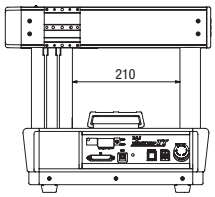
ME: Mechanical end

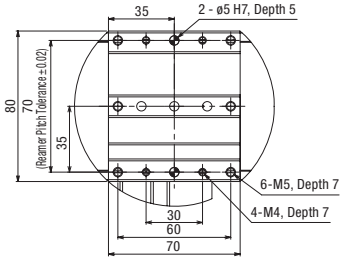




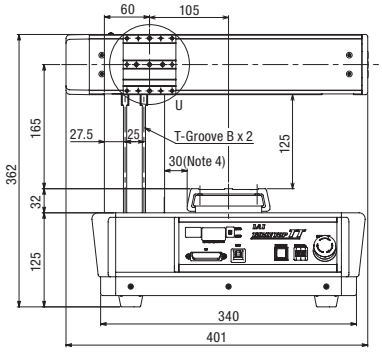
Detailed Diagram S (Detail of X-axis Slider)

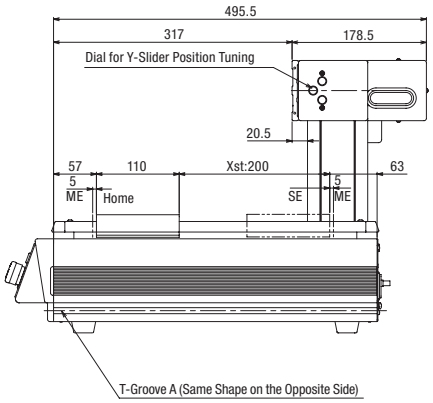
■AP (Additional Pillar Option) Dimensions





Detailed Diagram U (Detail of Y-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A2(G)-30-30 Tabletop Robot Gate Type 2-axis Specification XY-axis: 300mm

Model Specification Items

TTA — □ — I — 30 □ — 30 □ — □ — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A2: 2-axis standard specification (Gate type) A2G: 2-axis global specification (Gate type)	I: Incremental specification	30: 300mm	HS: Home confirmation sensor NM: Non-motor side specification	30: 300mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2(G)-I-30①-30②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	300	1~800	20
	Y-axis			24 or equiv.	300	1~800	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	30kg
Actuator weight	31kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Dimensions

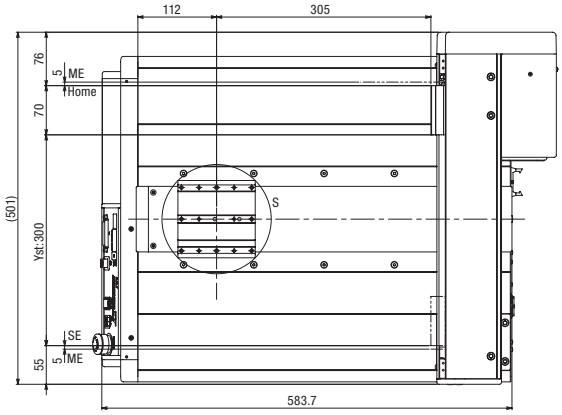
You can download CAD drawings from our website.

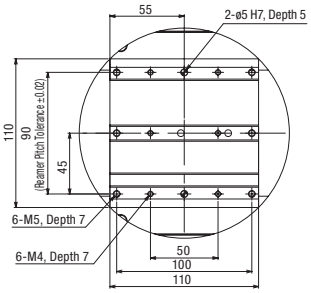
2D CAD RoHS

* Refer to P. 7 for dimensions of T-groove.

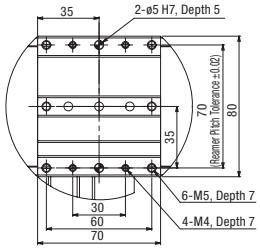
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

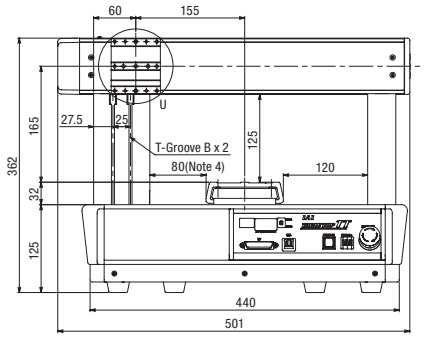


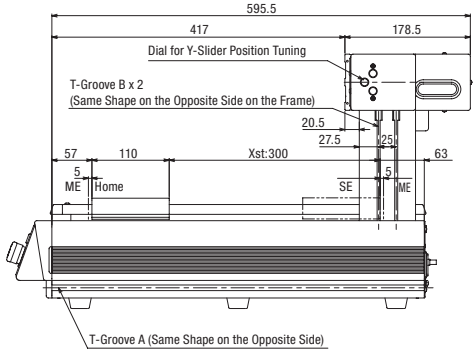


Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Y-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

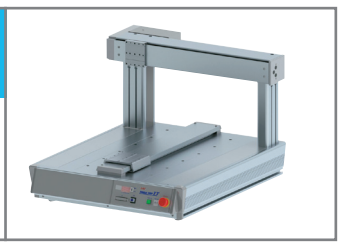
(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A2(G)-40-40 Tabletop Robot Gate Type 2-axis Specification XY-axis: 400mm



Model Specification Items

TTA — □ — I — 40 □ — 40 □ — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A2: 2-axis standard specification (Gate type) A2G: 2-axis global specification (Gate type)	I: Incremental specification	40: 400mm	HS: Home confirmation sensor NM: Non-motor side specification	40: 400mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2(G)-I-40①-40②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	400	1~800	20
	Y-axis			24 or equiv.	400	1~800	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	40kg
Actuator weight	37kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Dimensions

You can download CAD drawings from our website.

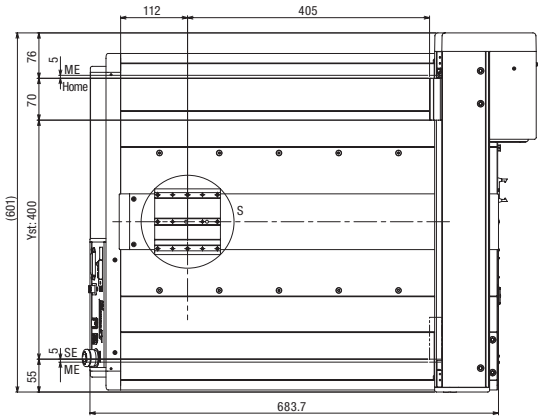
2D CAD RoHS

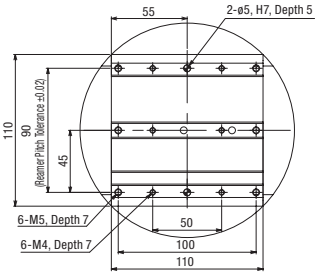
* Refer to P. 7 for dimensions of T-groove.

* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

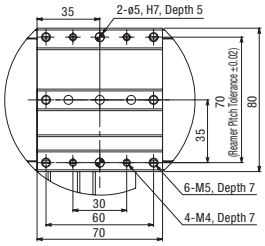
SE: Stroke end

ME: Mechanical end

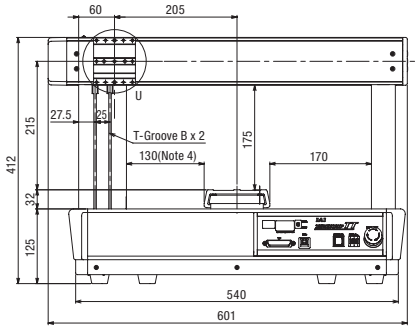


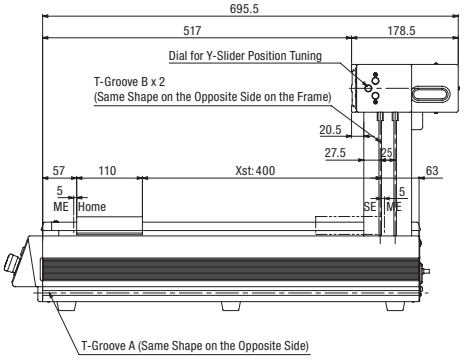


Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Y-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

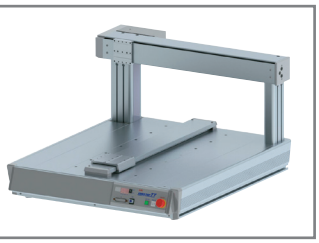
(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A2(G)-50-50 Tabletop Robot Gate Type 2-axis Specification XY-axis: 500mm



Model Specification Items

TTA – □ – I – 50 □ – 50 □ – □ – □ – □ – □ – □ – □ – □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A2: 2-axis standard specification (Gate type) A2G: 2-axis global specification (Gate type)	I: Incremental specification	50: 500mm	HS: Home confirmation sensor NM: Non-motor side specification	50: 500mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2(G)-I-50①-50②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	500	1~800	20
	Y-axis			24 or equiv.	500	1~800	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	50kg
Actuator weight	44kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Dimensions

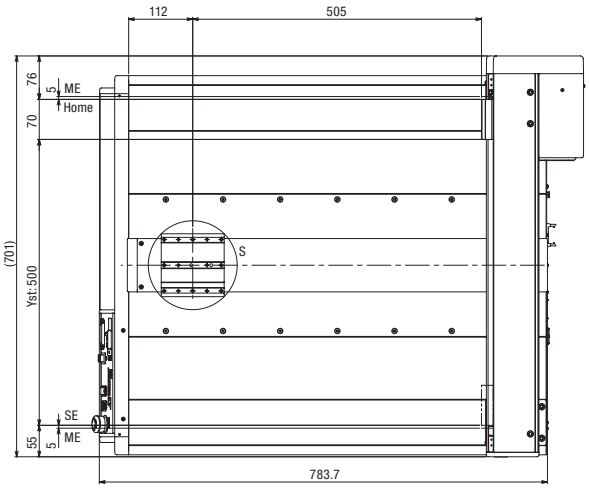
You can download CAD drawings from our website.

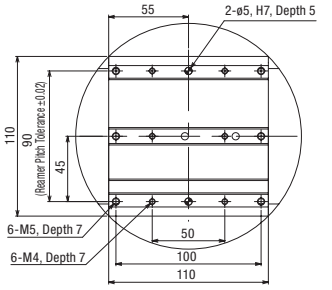
2D CAD RoHS

* Refer to P. 7 for dimensions of T-groove.

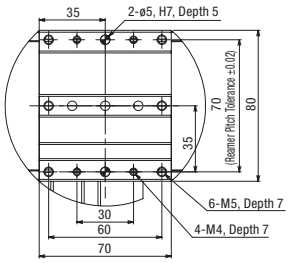
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

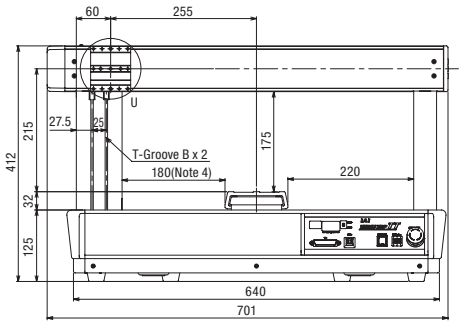


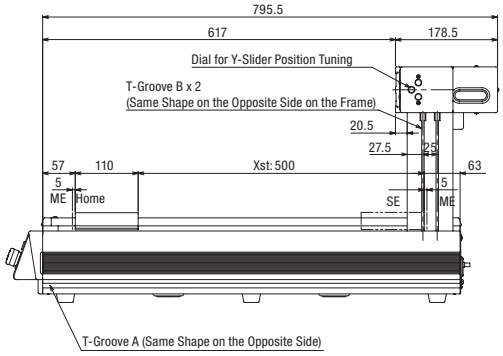


Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Y-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-C2(G)-20-15 Tabletop Robot Cantilever Type 2-axis Specification X-axis: 200mm, Y-axis: 150mm

Model Specification Items

TTA – □ – I – 20 □ – 15 □ – □ – □ – □ – □ – □ —— □ —— □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C2: 2-axis standard specification (Cantilever type) C2G: 2-axis global specification (Cantilever type)	I: Incremental specification	20: 200mm	HS: Home confirmation sensor NM: Non-motor side specification	15: 150mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.	* If the expansion I/O slot is not used, enter "E."	0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C2(G)-I-20①-15②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	200	1~600	–
	Y-axis			24 or equiv.	150	1~540	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	40kg
Actuator weight	25kg

Dimensions

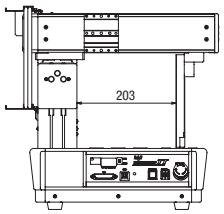
You can download CAD drawings from our website.

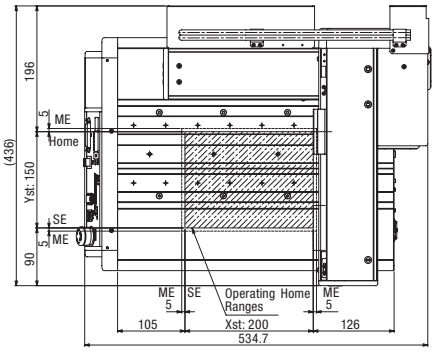
2D CAD RoHS

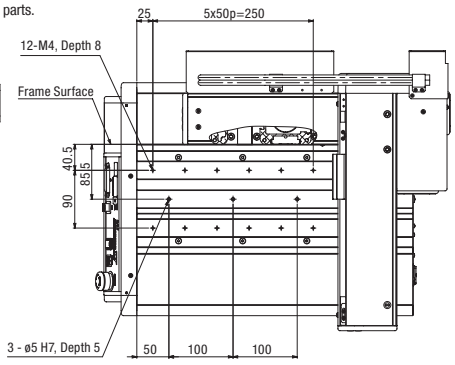
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

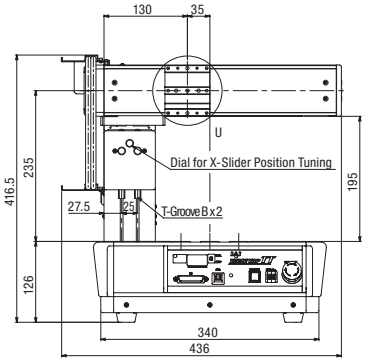
■AP (Additional Pillar Option) Dimensions

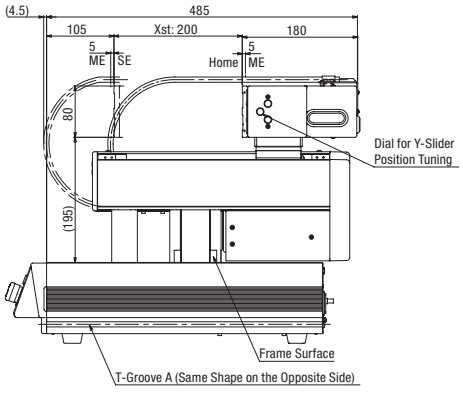


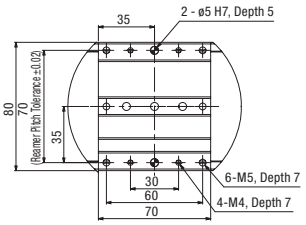




View for Top Base Hole Allocation







Detailed Diagram U (Detail of Y-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

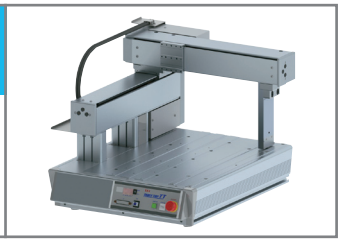
Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C2(G)-30-25 Tabletop Robot Cantilever Type 2-axis Specification X-axis: 300mm, Y-axis: 250mm



Model Specification Items

TTA – □ – I – 30 □ – 25 □ – □ – □ – □ – □ – □ – □ – □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C2: 2-axis standard specification (Cantilever type) C2G: 2-axis global specification (Cantilever type)	I: Incremental specification	30: 300mm	HS: Home confirmation sensor NM: Non-motor side specification	25: 250mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C2(G)-I-30①-25②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	300	1~700	–
	Y-axis			24 or equiv.	250	1~640	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	60kg
Actuator weight	33kg

Dimensions

You can download CAD drawings from our website.

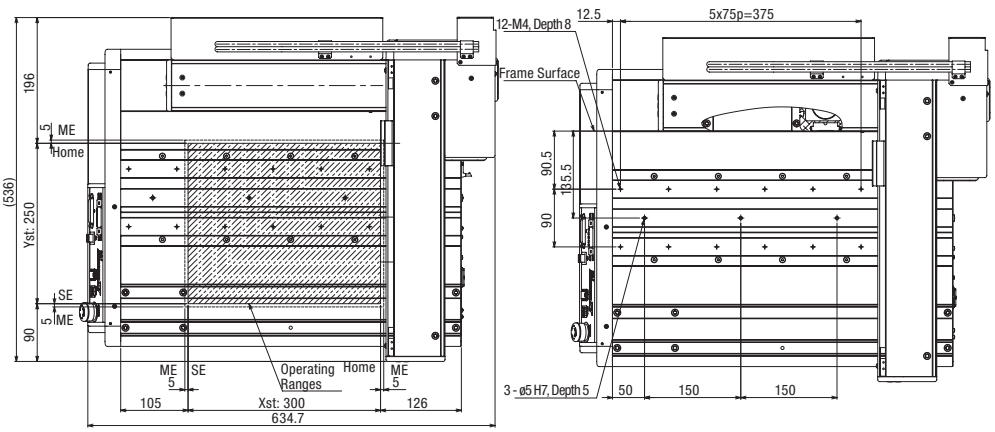
2D CAD RoHS

* Refer to P. 7 for dimensions of T-groove.

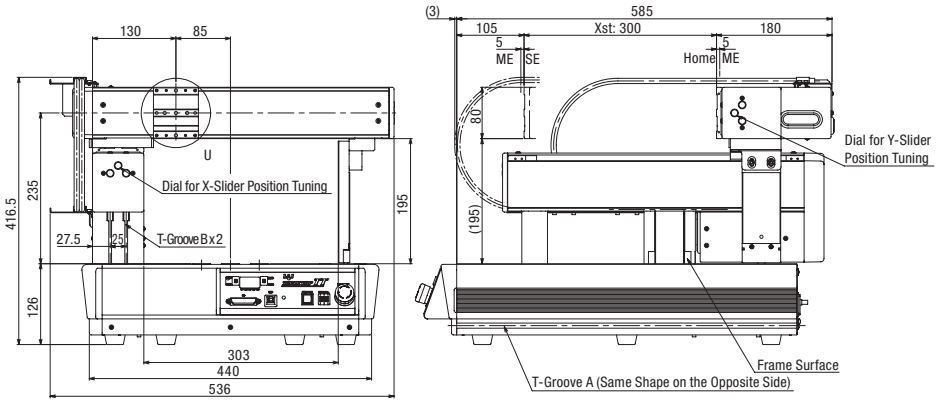
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

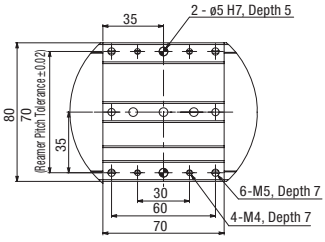
SE: Stroke end

ME: Mechanical end



View for Top Base Hole Allocation





Detailed Diagram U (Detail of Y-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

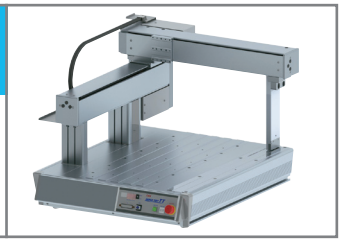
Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C2(G)-40-35 Tabletop Robot Cantilever Type 2-axis Specification X-axis: 400mm, Y-axis: 350mm



Model Specification Items

TTA — □ — I — 40 □ — 35 □ — □ — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C2: 2-axis standard specification (Cantilever type) C2G: 2-axis global specification (Cantilever type)	I: Incremental specification	40: 400mm	HS: Home confirmation sensor NM: Non-motor side specification	35: 350mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C2(G)-I-40①-35②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	400	1~800	–
	Y-axis			24 or equiv.	350	1~800	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	80kg
Actuator weight	40kg

Dimensions

You can download CAD drawings from our website.

2D CAD

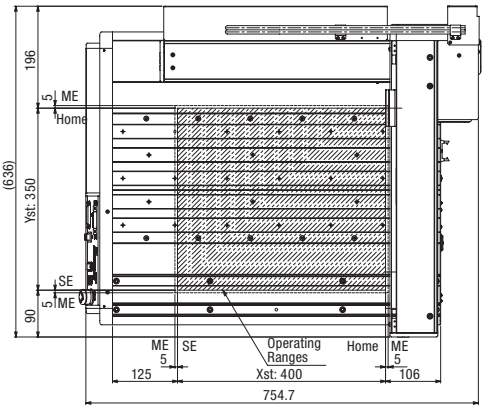
RoHS

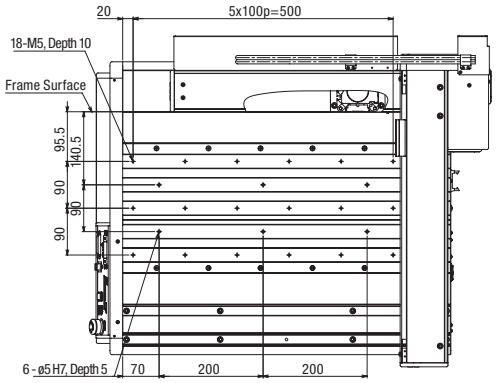
* Refer to P. 7 for dimensions of T-groove.

* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

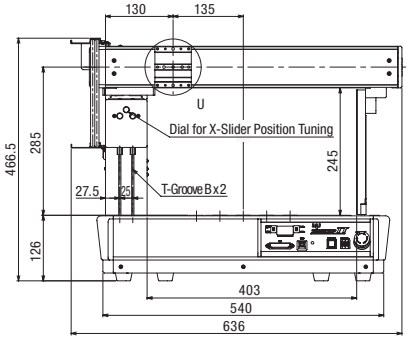
SE: Stroke end

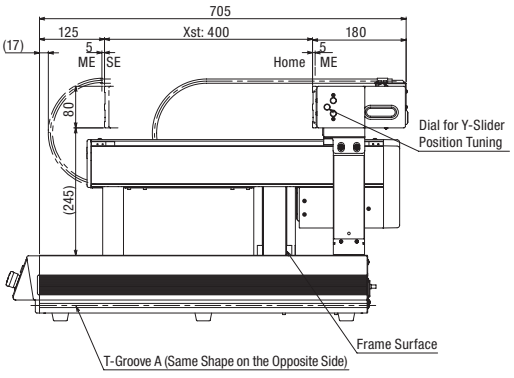
ME: Mechanical end

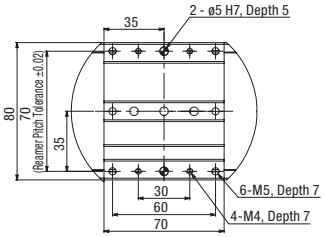




View for Top Base Hole Allocation







Detailed Diagram U (Detail of Y-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

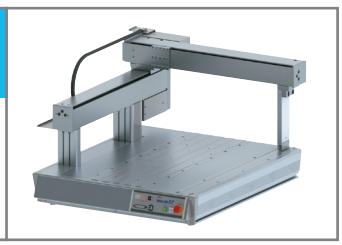
Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C2(G)-50-45 Tabletop Robot Cantilever Type 2-axis Specification X-axis: 500mm, Y-axis: 450mm



Model Specification Items

TTA – □ – I – 50 □ – 45 □ – □ – □ – □ – □ – □ – □ – □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C2: 2-axis standard specification (Cantilever type) C2G: 2-axis global specification (Cantilever type)	I: Incremental specification	50: 500mm	HS: Home confirmation sensor NM: Non-motor side specification	45: 450mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* If the expansion I/O slot is not used, enter "E."

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C2(G)-I-50①-45②-③-④-⑤-⑥-⑦-⑧	X-axis	Incremental	Pulse motor	24 or equiv.	500	1~800	–
	Y-axis			24 or equiv.	450	1~800	10

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the standard I/O slot, ④ and ⑤ indicate the expansion I/O slots, ⑥ indicates the I/O cable length, ⑦ indicates the power supply cable specification, and ⑧ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	Ballscrew (ø12mm, rolled C10) Speed increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Y-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	100kg
Actuator weight	47kg

Dimensions

You can download CAD drawings from our website.

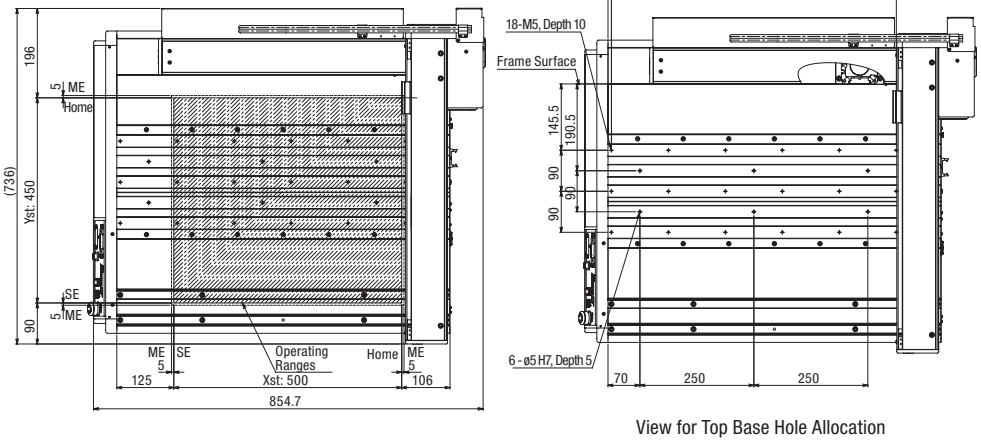
2D CAD RoHS

* Refer to P. 7 for dimensions of T-groove.

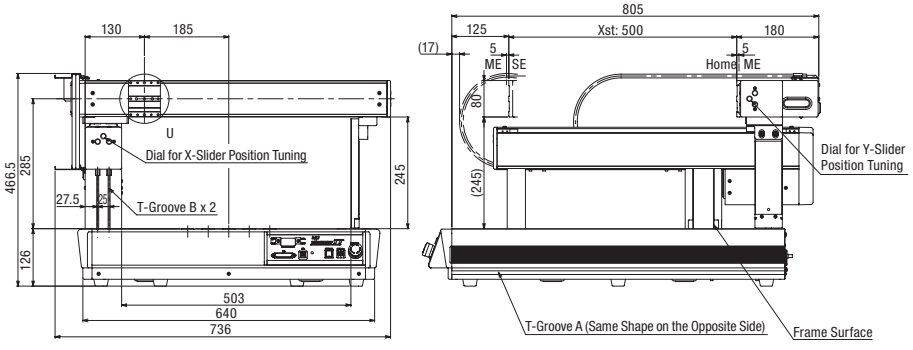
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

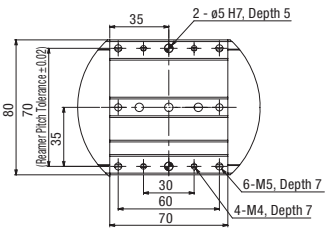
SE: Stroke end

ME: Mechanical end



View for Top Base Hole Allocation





Detailed Diagram U (Detail of Y-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-A3(G)-20-20 Tabletop Robot Gate Type 3-axis Specification XY-axis: 200mm, Z-axis: 100mm/150mm

Model Specification Items

TTA — □ — I — 20 □ — 20 □ — □ □ — □ - □ - □ - □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A3: 3-axis standard specification (Gate type) A3G: 3-axis global specification (Gate type)	I: Incremental specification	20: 200mm	20: 200mm HS: Home confirmation sensor NM: Non-motor side specification	20: 200mm		10: 100mm 15: 150mm	B: Brake (Standard) HS: Home confirmation sensor NM: Non-motor side specification	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A3(G)-I-20①-20②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	200	1~800	20
	Y-axis			24 or equiv.	200	1~800	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	20kg
Actuator weight	27kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

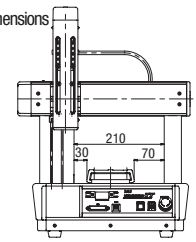
Dimensions

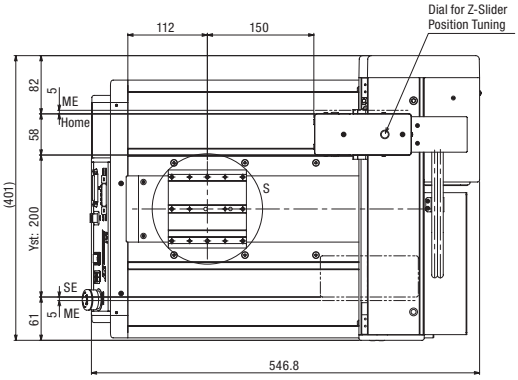
You can download CAD drawings from our website.

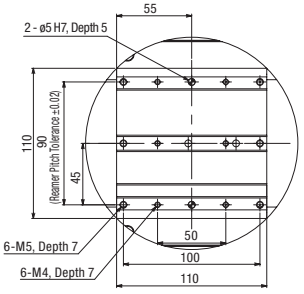
2D CAD

RoHS

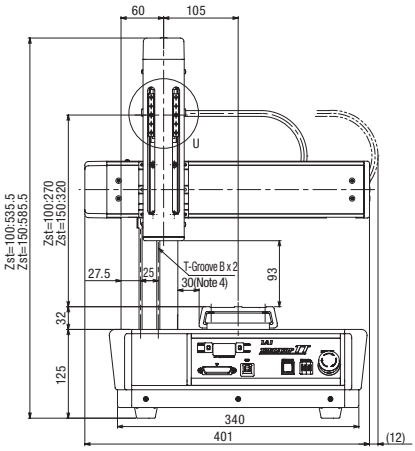
■AP (Additional Pillar Option) Dimensions

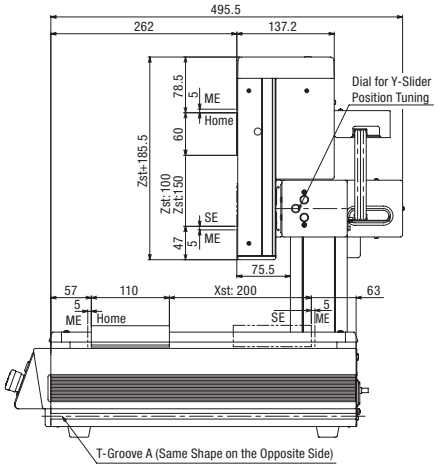


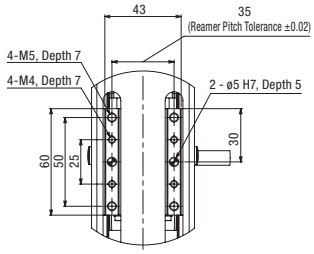




Detailed Diagram S (Detail of X-axis Slider)







Detailed Diagram U (Detail of Z-axis Slider)

* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A3(G)-30-30 Tabletop Robot Gate Type 3-axis Specification XY-axis: 300mm, Z-axis: 100mm/150mm

Model Specification Items

TTA — □ — I — 30 □ — 30 □ — □ — □ — □ - □ - □ - □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A3: 3-axis standard specification (Gate type) A3G: 3-axis global specification (Gate type)	I: Incremental specification	30: 300mm	HS: Home confirmation sensor NM: Non-motor side specification	30: 300mm		10: 100mm 15: 150mm	B: Brake (Standard) HS: Home confirmation sensor NM: Non-motor side specification	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A3(G)-I-30①-30②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	300	1~800	20
	Y-axis			24 or equiv.	300	1~800	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	30kg
Actuator weight	34kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Dimensions

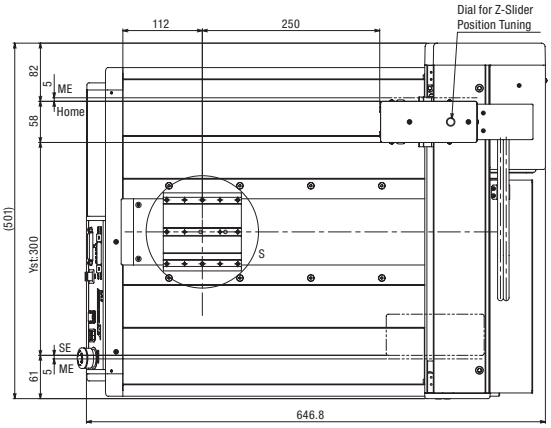
You can download CAD drawings from our website.

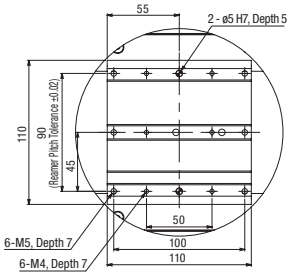
2D CAD

RoHS

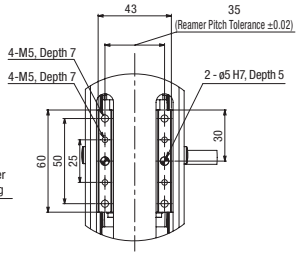
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

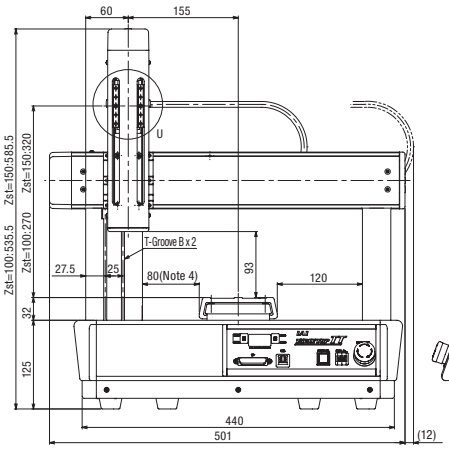


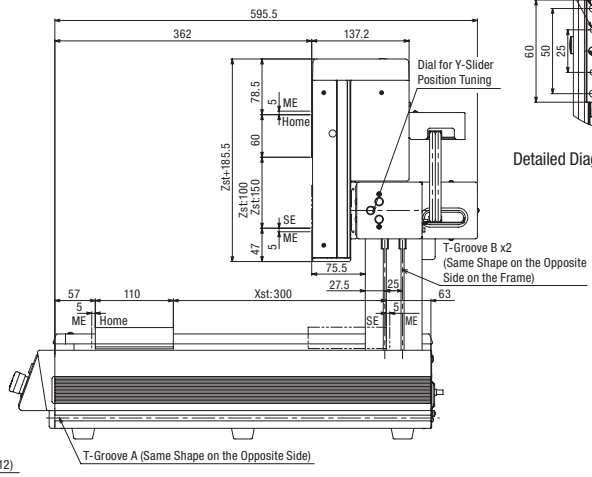


Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Z-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)
(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)
(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A3(G)-40-40 Tabletop Robot Gate Type 3-axis Specification XY-axis: 400mm, Z-axis: 100mm/150mm

Model Specification Items

TTA — □ — I — 40 □ — 40 □ — □ — □ — □ - □ - □ - □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	A3: 3-axis standard specification (Gate type) A3G: 3-axis global specification (Gate type)	I: Incremental specification	40: 400mm	HS: Home confirmation sensor NM: Non-motor side specification	40: 400mm		10: 100mm 15: 150mm	B: Brake (Standard) HS: Home confirmation sensor NM: Non-motor side specification	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A3(G)-I-40①-40②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	400	1~800	20
	Y-axis			24 or equiv.	400	1~800	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	40kg
Actuator weight	40kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

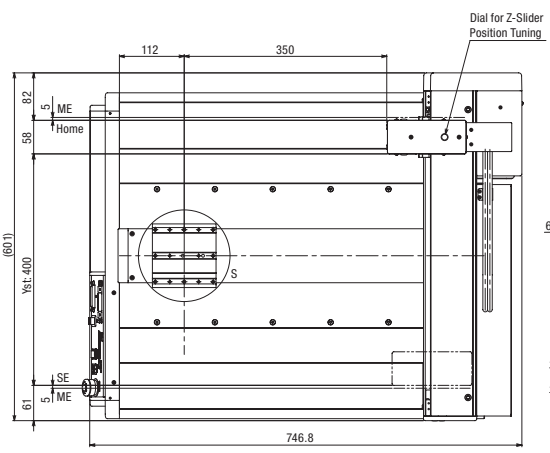
Dimensions

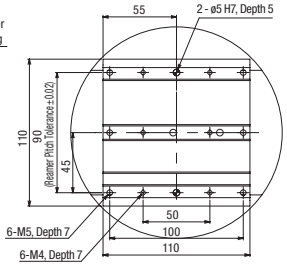
You can download CAD drawings from our website.

2D CAD RoHS

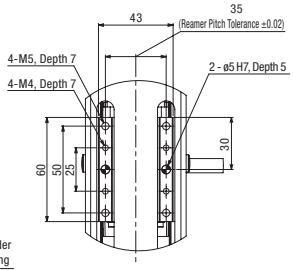
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

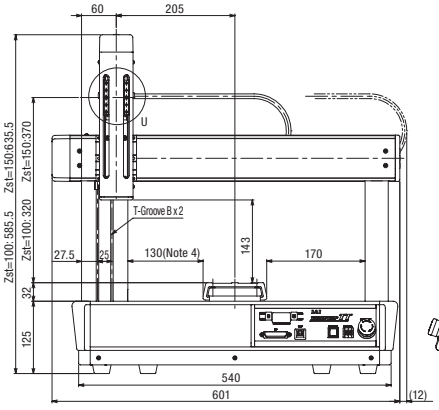


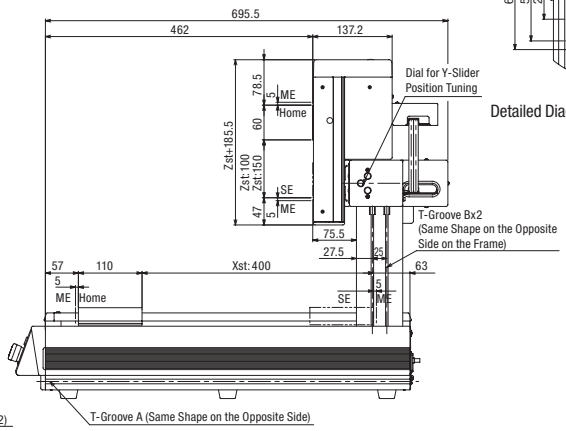


Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Z-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

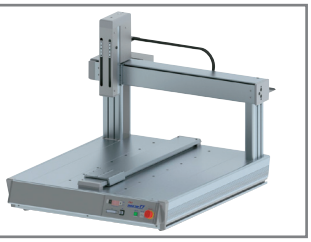
(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A3(G)-50-50 Tabletop Robot Gate Type 3-axis Specification XY-axis: 500mm, Z-axis: 100mm/150mm



Model Specification Items

TTA — [Series] — [Type] — I [Encoder type] — 50 [X-axis stroke] — [X-axis option] — 50 [Y-axis stroke] — [Y-axis option] — [Z-axis stroke] — [Z-axis option] — [Standard I/O slot] - [Expansion I/O slot 1] - [Expansion I/O slot 2] - [I/O cable length] — [Power supply cable specification] — [Option]

- Series: A3: 3-axis standard specification (Gate type); A3G: 3-axis global specification (Gate type)
- Type: I: Incremental specification
- Encoder type: 50: 500mm
- X-axis stroke: 50: 500mm
- X-axis option: HS: Home confirmation sensor; NM: Non-motor side specification
- Y-axis stroke: 50: 500mm
- Y-axis option
- Z-axis stroke: 10: 100mm; 15: 150mm
- Z-axis option: B: Brake (Standard); HS: Home confirmation sensor; NM: Non-motor side specification
- Standard I/O slot: NP: NPN specification; PN: PNP specification
- Expansion I/O slot 1 / Expansion I/O slot 2: Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."
- I/O cable length: 0: None; 2: 2m; 3: 3m; 5: 5m
- Power supply cable specification: PU: Mating plug (No cable); 1: Power supply cable for AC100V (2m); 2: Power supply cable for AC200V (2m)
- Option: Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A3(G)-I-50①-50②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	500	1~800	20
	Y-axis			24 or equiv.	500	1~800	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	50kg
Actuator weight	47kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Dimensions

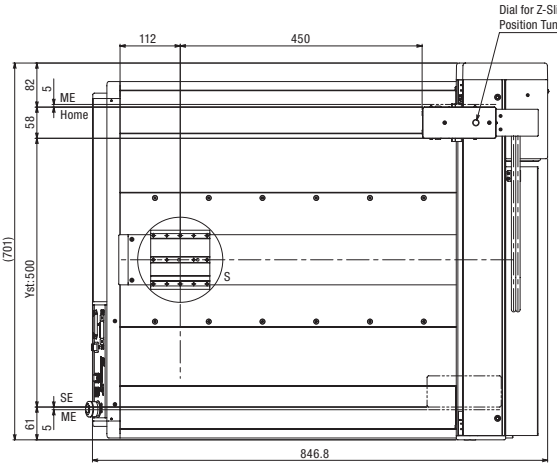
You can download CAD drawings from our website.

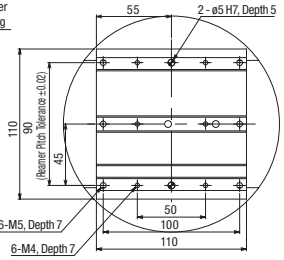
2D CAD

RoHS

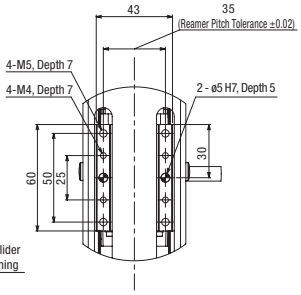
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end

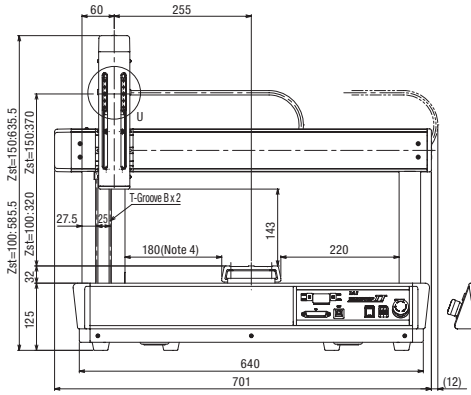


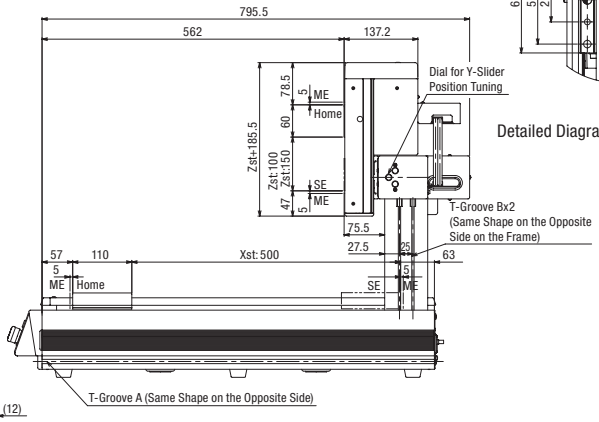


Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Z-axis Slider)





Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-C3(G)-20-15 Tabletop Robot Cantilever Type 3-axis Specification X-axis: 200mm, Y-axis: 150mm, Z-axis: 100mm/150mm

Model Specification Items

TTA — □ — I — 20 □ — 15 □ — □ □ — □ - □ - □ - □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C3: 3-axis standard specification (Cantilever type) C3G: 3-axis global specification (Cantilever type)	I: Incremental specification	20: 200mm	HS: Home confirmation sensor NM: Non-motor side specification	15: 150mm		10: 100mm 15: 150mm	B: Brake (Standard) HS: Home confirmation sensor NM: Non-motor side specification	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C3(G)-I-20①-15②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	200	1~600	–
	Y-axis			24 or equiv.	150	1~540	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	40kg
Actuator weight	29kg

Dimensions

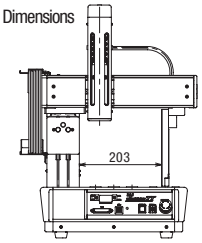
You can download CAD drawings from our website.

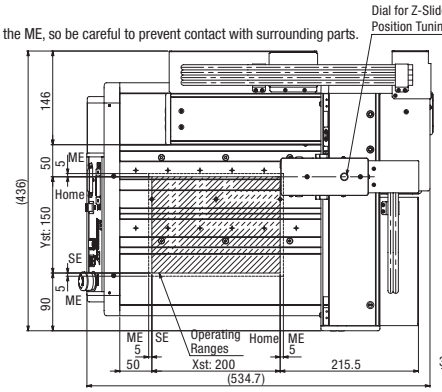
2D CAD RoHS

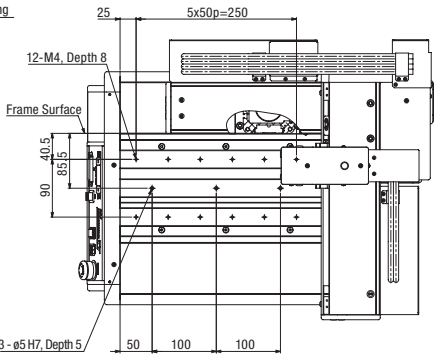
* Refer to P. 7 for dimensions of T-groove.

* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.
SE: Stroke end
ME: Mechanical end

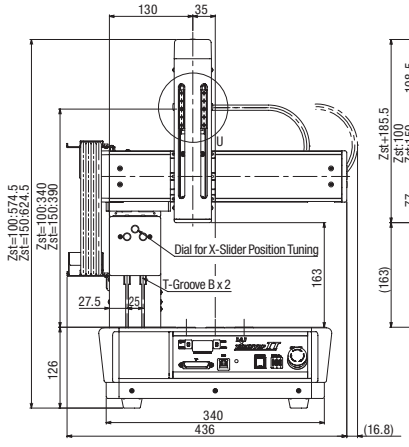
■AP (Additional Pillar Option) Dimensions

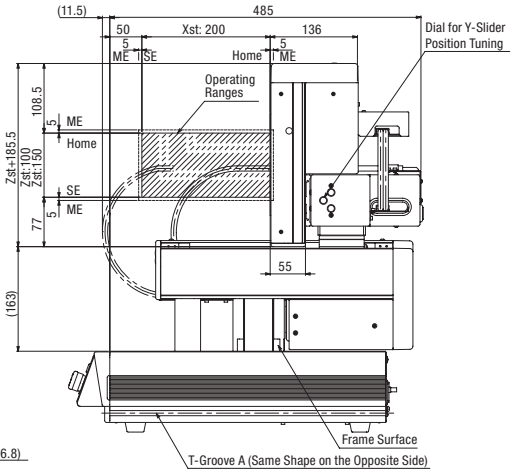


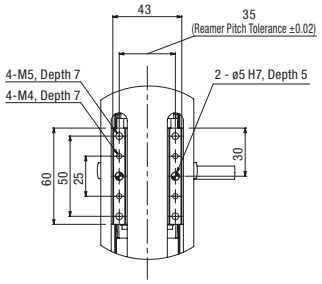




View for Top Base Hole Allocation







Detailed Diagram U (Detail of Z-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C3(G)-30-25 Tabletop Robot Cantilever Type 3-axis Specification X-axis: 300mm, Y-axis: 250mm, Z-axis: 100mm/150mm

Model Specification Items

TTA — [Series] — [Type] — I [Encoder type] — 30 [X-axis stroke] — [X-axis option] — 25 [Y-axis stroke] — [Y-axis option] — [Z-axis stroke] — [Z-axis option] — [Standard I/O slot] — [Expansion I/O slot 1] — [Expansion I/O slot 2] — [I/O cable length] — [Power supply cable specification] — [Option]

- Series: C3: 3-axis standard specification (Cantilever type); C3G: 3-axis global specification (Cantilever type)
- Type: I: Incremental specification
- Encoder type: 30: 300mm
- X-axis stroke: 25: 250mm
- X-axis option / Y-axis option: HS: Home confirmation sensor; NM: Non-motor side specification
- Y-axis stroke: 10: 100mm; 15: 150mm
- Z-axis stroke: B: Brake (Standard); HS: Home confirmation sensor; NM: Non-motor side specification
- Z-axis option: NP: NPN specification; PN: PNP specification
- Standard I/O slot: Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."
- Expansion I/O slot 1 / Expansion I/O slot 2
- I/O cable length: 0: None; 2: 2m; 3: 3m; 5: 5m
- Power supply cable specification: PU: Mating plug (No cable); 1: Power supply cable for AC100V (2m); 2: Power supply cable for AC200V (2m)
- Option: Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C3(G)-I-30①-25②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	300	1~700	–
	Y-axis			24 or equiv.	250	1~640	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	60kg
Actuator weight	37kg

Dimensions

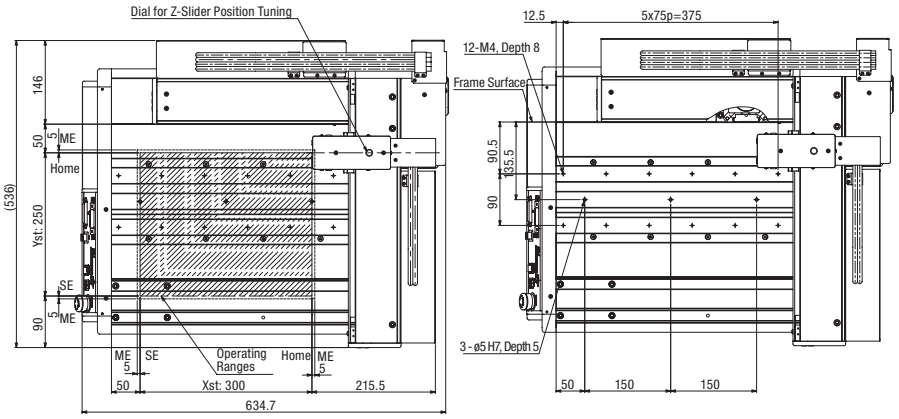
You can download CAD drawings from our website.

2D CAD

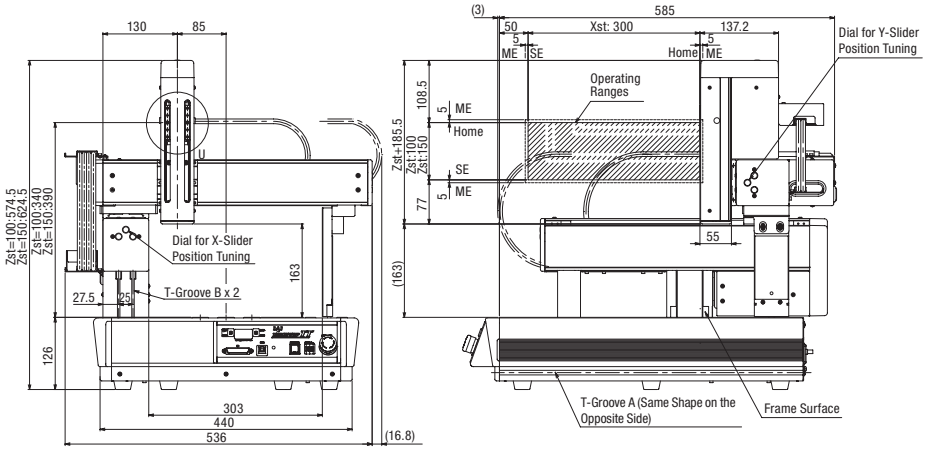
RoHS

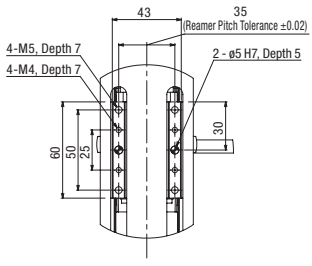
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end



View for Top Base Hole Allocation





Detailed Diagram U (Detail of Z-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C3(G)-40-35 Tabletop Robot Cantilever Type 3-axis Specification X-axis: 400mm, Y-axis: 350mm, Z-axis: 100mm/150mm

Model Specification Items

TTA — □ — I — 40 □ — 35 □ — □ — □ — □ - □ - □ - □ — □ — □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C3: 3-axis standard specification (Cantilever type) C3G: 3-axis global specification (Cantilever type)	I: Incremental specification	40: 400mm	HS: Home confirmation sensor NM: Non-motor side specification	35: 350mm		10: 100mm 15: 150mm	B: Brake (Standard) HS: Home confirmation sensor NM: Non-motor side specification	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C3(G)-I-40①-35②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	400	1~800	–
	Y-axis			24 or equiv.	350	1~800	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	80kg
Actuator weight	44kg

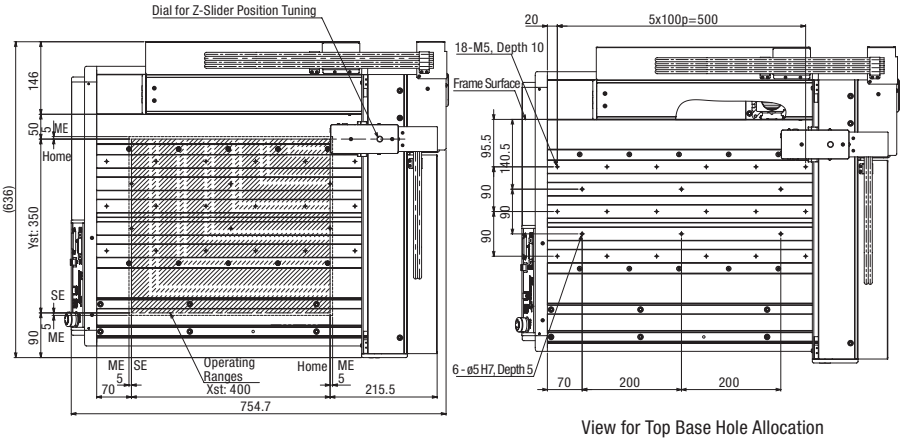
Dimensions

You can download CAD drawings from our website.

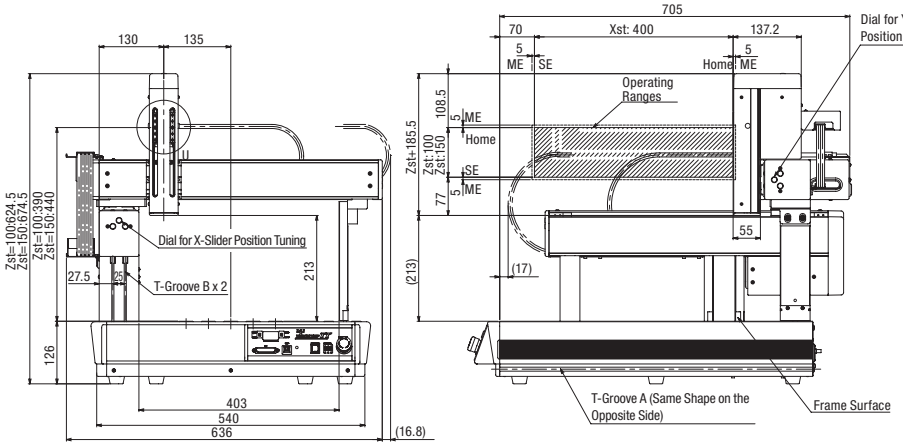
2D CAD RoHS

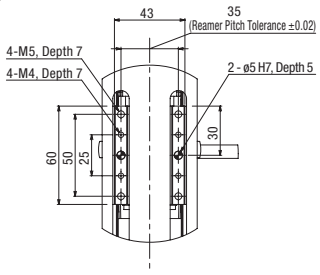
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

SE: Stroke end
ME: Mechanical end



View for Top Base Hole Allocation





Detailed Diagram U (Detail of Z-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

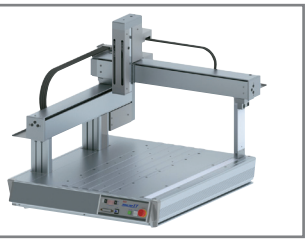
Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C3(G)-50-45 Tabletop Robot Cantilever Type 3-axis Specification X-axis: 500mm, Y-axis: 450mm, Z-axis: 100mm/150mm



Model Specification Items

TTA — [Type] — I — 50 — [X-axis option] — 45 — [Y-axis option] — [Z-axis stroke] — [Z-axis option] — [Standard I/O slot] - [Expansion I/O slot 1] - [Expansion I/O slot 2] - [I/O cable length] — [Power supply cable specification] — [Option]

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C3: 3-axis standard specification (Cantilever type) C3G: 3-axis global specification (Cantilever type)	I: Incremental specification	50: 500mm	HS: Home confirmation sensor NM: Non-motor side specification	45: 450mm		10: 100mm 15: 150mm	B: Brake (Standard) HS: Home confirmation sensor NM: Non-motor side specification	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E."		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-C3(G)-I-50①-45②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Incremental	Pulse motor	24 or equiv.	500	1~800	–
	Y-axis			24 or equiv.	450	1~800	–
	Z-axis			12	100/150	1~400	6

* In the above model number, ① and ② indicate the XY-axis options, ③ indicates the Z-axis stroke, ④ indicates the Z-axis option(s), ⑤ indicates the standard I/O slot, ⑥ and ⑦ indicate the expansion I/O slots, ⑧ indicates the I/O cable length, ⑨ indicates the power supply cable specification, and ⑩ indicates the selected option(s).

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	±0.02mm (Note 2)
Lost motion	0.1mm or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	100kg
Actuator weight	51kg

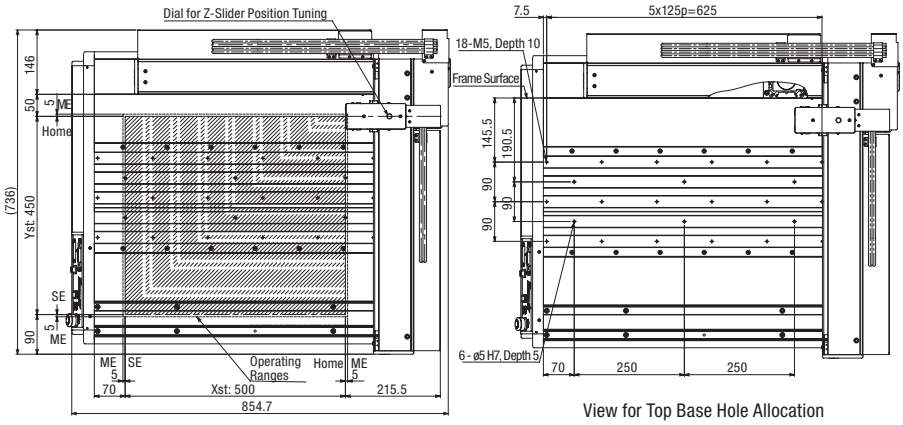
Dimensions

You can download CAD drawings from our website.

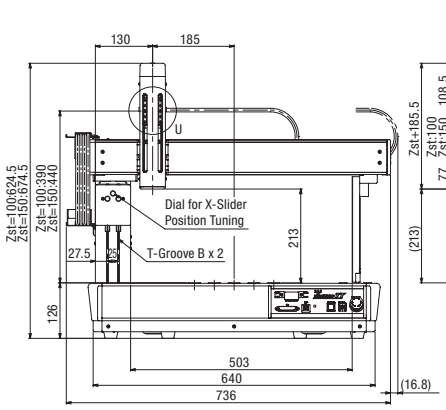
2D CAD RoHS

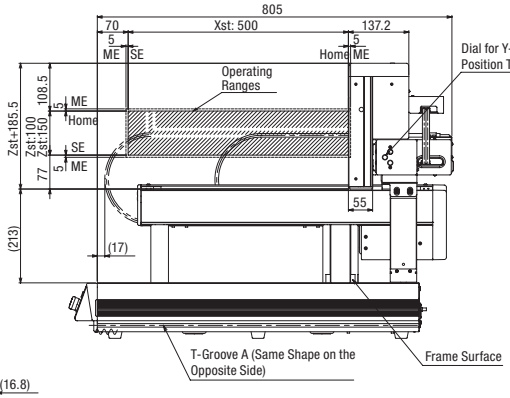
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

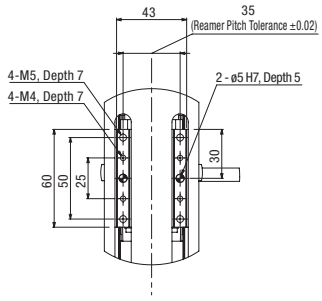
SE: Stroke end
ME: Mechanical end



View for Top Base Hole Allocation







Detailed Diagram U (Detail of Z-axis Slider)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	3 axes	Incremental	Program	AC100V AC200V	→ P. 28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)

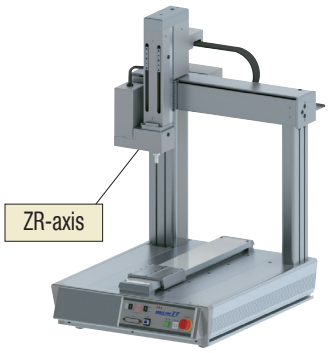
(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

Vertical Axis + Rotation

ZR Specification TTA-A4(G)

ZR Type with 4 axes is now added to the lineup of TTA Series (Gate Type).
It is equipped with rotary axis (R-axis) on the end of the vertical axis (Z-axis).



■Model Specification Items

TTA - □ — I - □ □ - □ □ - □ □ - □ □ - □ □ - □ □ — □ — □ □ - □ □ - □ - □ □ - □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	R-axis stroke	R-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
A4: 4-axis ZR type standard specification A4G: 4-axis ZR type global specification	I: Incremental specification	20: 200mm 30: 300mm 40: 400mm 50: 500mm	HS: Home confirmation sensor NM: Non-motor side specification	20: 200mm 30: 300mm 40: 400mm 50: 500mm	10: 100mm 15: 150mm	B: Brake (Standard) CO: With cover HS: Home confirmation sensor NM: Non-motor side specification	18L: ±180deg. 36L: ±360deg. (Equipped with home limit switch)	ML: Motor Reversed to Left (Standard) MR: Motor Reversed to Right	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E".			0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg)	Max. Load Moment of Inertia (kg·m²)
TTA-A4(G)-I-20□-20□	X-axis	24 or equiv.	200	1~800	20	—
	Y-axis	24 or equiv.	200	1~800	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01
TTA-A4(G)-I-30□-30□	X-axis	24 or equiv.	300	1~800	20	—
	Y-axis	24 or equiv.	300	1~800	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01
TTA-A4(G)-I-40□-40□	X-axis	24 or equiv.	400	1~800	20	—
	Y-axis	24 or equiv.	400	1~800	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01
TTA-A4(G)-I-50□-50□	X-axis	24 or equiv.	500	1~800	20	—
	Y-axis	24 or equiv.	500	1~800	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	X/Y/Z-axis: ±0.02mm R-axis: ±0.015deg. (Note 2)
Lost motion	X/Y/Z-axis: 0.1mm or less R-axis: 0.06deg. or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 15.9Nm Mb: 15.9Nm Mc: 32.0Nm Y-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Overhang load length	Z-axis: Ma: 75mm or less Mb: 180mm or less Mc: 180mm or less R-axis: Radius 100mm or less
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table*	20-20: 20kg 30-30: 30kg 40-40: 40kg 50-50: 50kg
Actuator weight	20-20: 28kg 30-30: 35kg 40-40: 41kg 50-50: 48kg

* Table part is defined as the top surface on the main body except for the slider part. It is not the payload of X-axis.

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	4 axes	Incremental	Program	AC100V AC200V	→ P.28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37)
Note that the rotary axis may not be able to perform the maximum velocity depending on the value of the load moment of inertia. (Refer to P. 38)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

Dimensions

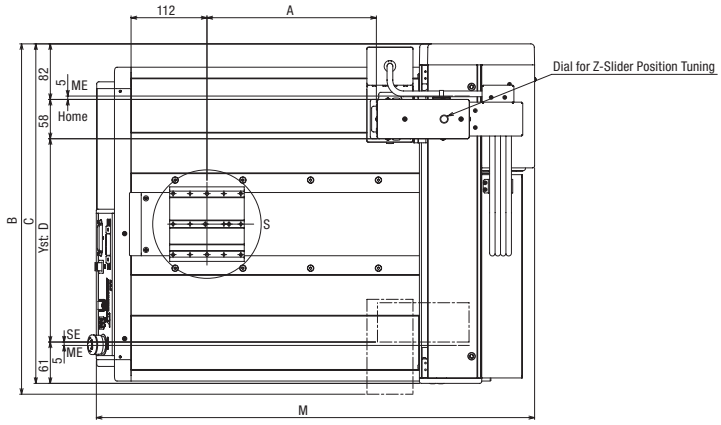
You can download CAD drawings from our website.

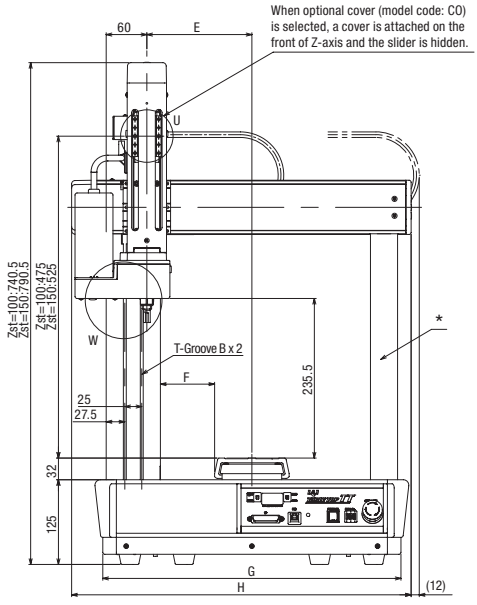
2D CAD

RoHS

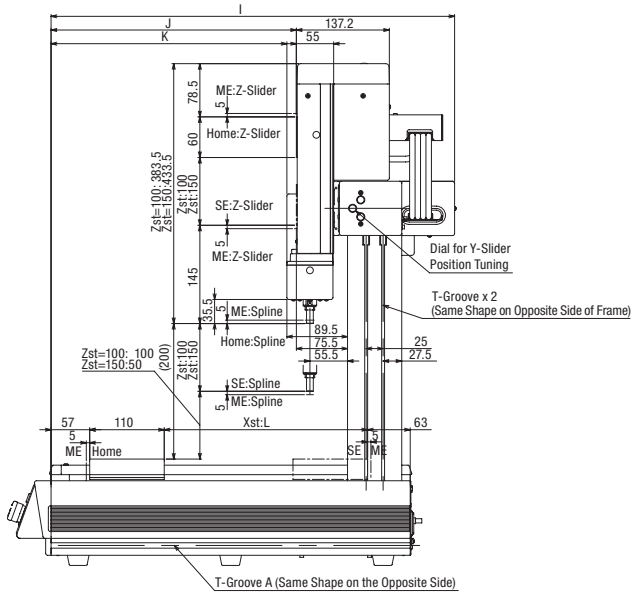
* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

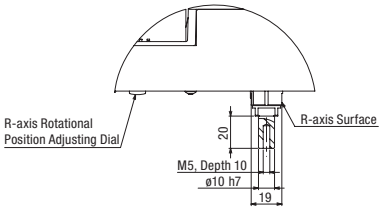
SE: Stroke end
ME: Mechanical end



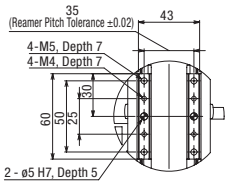


* Does not apply to A4-20-20 type

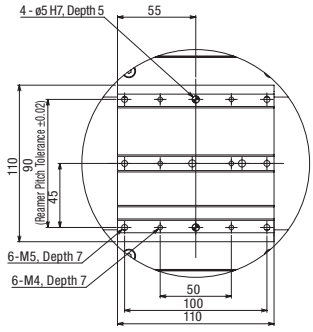




Detailed Diagram W
(Detail of R Spline End)



Detailed Diagram U
(Detail of Z-axis Slider)



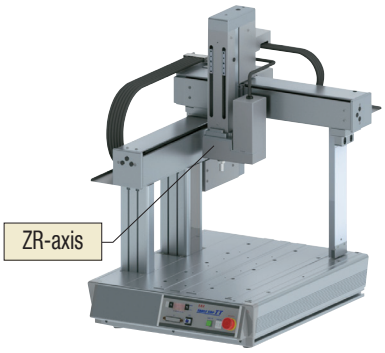
Detailed Diagram S
(Detail of X-axis Slider)

	2020	3030	4040	5050
A	150	250	350	450
B	417	517	617	717
C	401	501	601	701
D	200	300	400	500
E	105	155	205	255
F	30	80	130	180
G	340	440	540	640
H	401	501	601	701
I	495.5	595.5	695.5	795.5
J	262	362	462	562
K	248	348	448	548
L	200	300	400	500
M	546.8	646.8	746.8	846.8

Vertical Axis + Rotation

ZR Specification TTA-C4(G)

ZR Type with 4 axes is now added to the lineup of TTA Series (Cantilever Type).
It is equipped with rotary axis (R-axis) on the end of the vertical axis (Z-axis).



■Model Specification Items

TTA - □ — I - □ □ - □ □ - □ □ - □ □ - □ □ - □ — □ — □ - □ - □ - □ - □

Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	R-axis stroke	R-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
TTA	C4: 4-axis ZR type standard specification C4G: 4-axis ZR type global specification	I: Incremental specification	20: 200mm 30: 300mm 40: 400mm 50: 500mm	HS: Home confirmation sensor NM: Non-motor side specification	15: 150mm 25: 250mm 35: 350mm 45: 450mm		10: 100mm 15: 150mm	B: Brake (Standard) CO: With cover HS: Home confirmation sensor NM: Non-motor side specification	18L: ±180deg. 36L: ±360deg. (Equipped with home limit switch)	MR: Motor Reversed to Right (Standard)	NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below. *If the expansion I/O slot is not used, enter "E".		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 1: Power supply cable for AC100V (2m) 2: Power supply cable for AC200V (2m)	Refer to P. 6

* Refer to P. 6 for the details of model specification items.

Model/Specifications

Model number	Axis configuration	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg)	Max. Load Moment of Inertia (kg·m²)
TTA-C4(G)-I-20□-15□	X-axis	24 or equiv.	200	1~600	—	—
	Y-axis	24 or equiv.	150	1~540	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L : ±180deg. 36L : ±360deg.	1000deg./s		0.01
TTA-C4(G)-I-30□-25□	X-axis	24 or equiv.	300	1~700	—	—
	Y-axis	24 or equiv.	250	1~640	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L : ±180deg. 36L : ±360deg.	1000deg./s		0.01
TTA-C4(G)-I-40□-35□	X-axis	24 or equiv.	400	1~800	—	—
	Y-axis	24 or equiv.	350	1~800	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L : ±180deg. 36L : ±360deg.	1000deg./s		0.01
TTA-C4(G)-I-50□-45□	X-axis	24 or equiv.	500	1~800	—	—
	Y-axis	24 or equiv.	450	1~800	—	—
	Z-axis	12	100/150	1~400	6	—
	R-axis	—	18L : ±180deg. 36L : ±360deg.	1000deg./s		0.01

Expansion I/O Slot

Name	Model	Standard price
Not used	E	–
Expansion PIO board (NPN specification)	NP	–
Expansion PIO board (PNP specification)	PN	–
DeviceNet connection board	DV	–
CC-Link connection board	CC	–
PROFIBUS-DP connection board	PR	–
EtherNet/IP connection board	EP	–

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	X/Y/Z-axis: ±0.02mm R-axis: ±0.015deg. (Note 2)
Lost motion	X/Y/Z-axis: 0.1mm or less R-axis: 0.06deg. or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Overhang load length	Z-axis: Ma : 75mm or less Mb : 180mm or less Mc : 180mm or less R-axis: Radius 100mm or less
Ambient temperature/humidity	0 to 40ºC, 85% RH max. (non-condensing)
Loadable weight on table	20-15: 40kg 30-25: 60kg 40-35: 80kg 50-45: 100kg
Actuator weight	20-15: 36kg 30-25: 41kg 40-35: 48kg 50-45: 56kg

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	4 axes	Incremental	Program	AC100V AC200V	→ P.28

Caution

(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37)
Note that the rotary axis may not be able to perform the maximum velocity depending on the value of the load moment of inertia. (Refer to P. 38)

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5,000km. (Refer to P. 7 for the dynamic allowable moment.)

TTA-C4(G) - □ - □

Dimensions

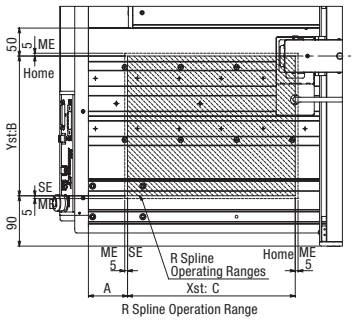
You can download CAD drawings from our website.

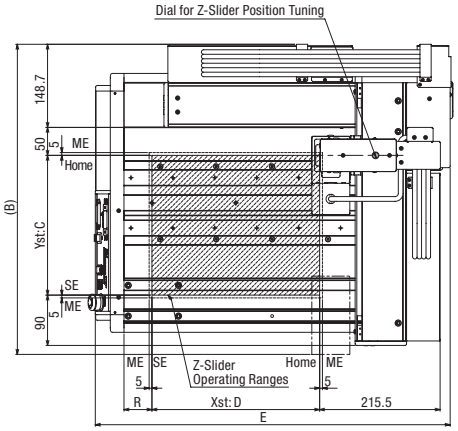
2D CAD

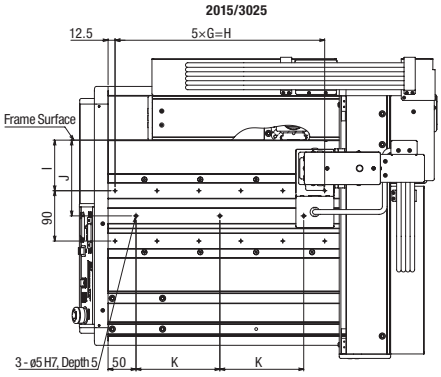
RoHS

* Refer to P. 7 for dimensions of T-groove.
* During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.

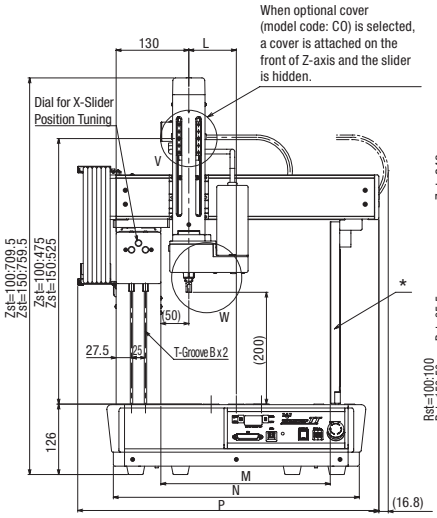
SE: Stroke end
ME: Mechanical end



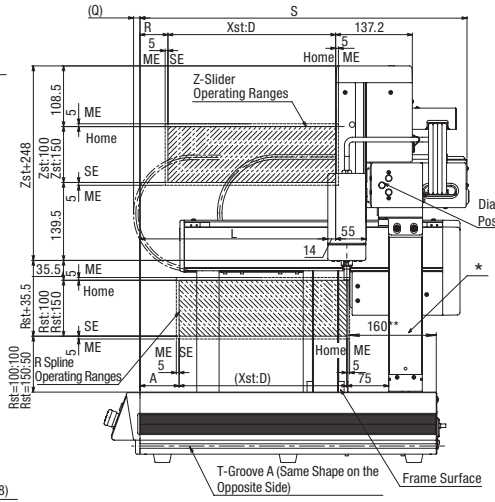




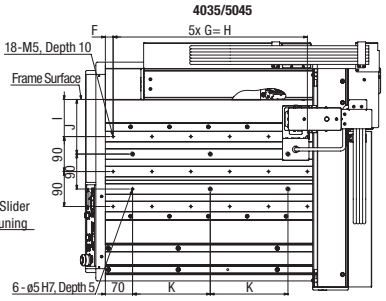
View for Top Base Hole Allocation



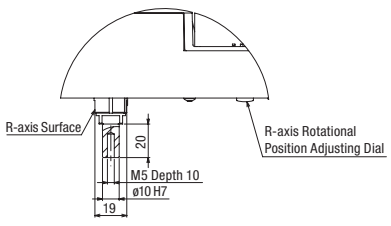
*Does not apply to 2015 type



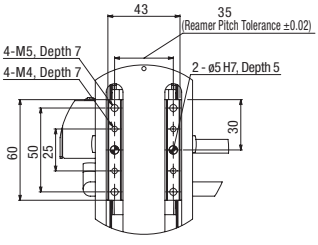
*Does not apply to 2015 type
**When 2015 type is selected



View for Top Base Hole Allocation



Detailed Diagram W (Detail of R Spline End)



Detailed Diagram V (Detail of Z-axis Slider)

	2015	3025	4035	5045
A	70	70	90	90
B	454.8	554.8	654.8	754.8
C	150	250	350	450
D	200	300	400	500
E	534.8	634.8	754.8	854.8
F	25	12.5	20	7.5
G	50	75	100	125
H	250	375	500	625
I	40.5	90.5	95.5	145.5
J	85.5	135.5	140.5	190.5
K	100	150	200	250
L	35	85	135	185
M	–	303	403	503
N	340	440	540	640
P	438.7	538.7	638.7	738.7
Q	11.5	11.5	-17	-17
R	50	50	70	70
S	485	585	705	805
T	236	336	456	556

Controller Specifications

Controller Specifications

Item			
Motor type			Pulse motor (Servo control)
Applicable encoder			Incremental encoder
Data-storage device			Flash ROM/FRAM
Number of program steps			9,999
Number of positions			30,000
Number of programs			255
Number of multi-tasking programs			16
Operation mode	Serial communication		○
	Program		○
	Positioner		×
	Pulse train		×
SIO interface	Communication method		RS232
	Baud rate		9.6, 19.2, 38.4, 57.6, 76.8, 115.2kbps
	Live wire insertion/removal	TP port	×
		USB	○
Standard I/O Interface	Input specification	Number of input	16 points
		Input voltage	DC24V ±10%
		Input current	7mA per circuit
		ON voltage	Min. DC16V
		OFF voltage	Max. DC5V
		Leak current	Allowable leak current: 1mA max.
		Isolation method	Photocoupler isolation
	Output specification	Number of output	16 points
		Load voltage	DC24V ±10%
		Maximum current	100mA per point, 400mA per 8 points (Note 1)
		Saturated voltage	Max.3V
		Leak current	Max 0.1mA
		Isolation method	Photocoupler isolation
Conforming expansion I/O interface			Expansion PIO NPN specification (16IN/16OUT)
			Expansion PIO PNP specification (16IN/16OUT)
			CC-Link (remote device)
			DeviceNet
			PROFIBUS-DP
			EtherNet/IP
Brake output voltage			DC24V ±10%
Connectable brake power			Max.5W
Calendar/clock function	Retention time		Approx. 10 days
	Charge time		Approx. 100 hours
Protective functions			Monitoring of overcurrent, fan speed drop, etc.
Power supply capacity			100V: 2.9A 200V: 1.2A

(Note 1) The total load current for every 8 points from Standard I/O No. 316 is 400mA. (The maximum value per point is 100mA.)

PIO Signal Table

Standard PIO Connector Pin Layout

Pin No.	Classification	Assignment	Pin No.	Classification	Assignment
1A	24V *	P24	1B	Output	OUT0
2A	24V *	P24	2B		OUT1
3A	-	-	3B		OUT2
4A	-	-	4B		OUT3
5A	Input	IN0	5B		OUT4
6A		IN1	6B		OUT5
7A		IN2	7B		OUT6
8A		IN3	8B		OUT7
9A		IN4	9B		OUT8
10A		IN5	10B		OUT9
11A		IN6	11B		OUT10
12A		IN7	12B		OUT11
13A		IN8	13B		OUT12
14A		IN9	14B		OUT13
15A		IN10	15B		OUT14
16A		IN11	16B		OUT15
17A		IN12	17B	-	-
18A		IN13	18B	-	-
19A		IN14	19B	0V *	N
20A		IN15	20B	0V *	N

* [24V]/[0V] indicates the 24V power input when the service power output is OFF, or 24V power output when the service power output is ON.
* [24V]/[0V] must not be connected to an external power supply when the service power output is ON.

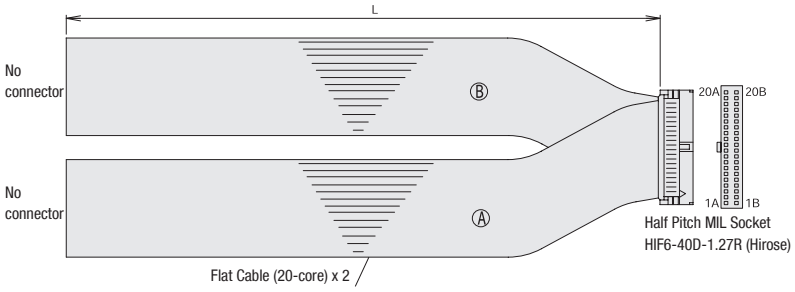
Expansion PIO Connector Pin Layout

Pin No.	Classification	Assignment	Pin No.	Classification	Assignment
1A	24V *	P24	1B	Output	OUT0
2A	24V *	P24	2B		OUT1
3A	-	-	3B		OUT2
4A	-	-	4B		OUT3
5A	Input	IN0	5B		OUT4
6A		IN1	6B		OUT5
7A		IN2	7B		OUT6
8A		IN3	8B		OUT7
9A		IN4	9B		OUT8
10A		IN5	10B		OUT9
11A		IN6	11B		OUT10
12A		IN7	12B		OUT11
13A		IN8	13B		OUT12
14A		IN9	14B		OUT13
15A		IN10	15B		OUT14
16A		IN11	16B		OUT15
17A		IN12	17B	-	-
18A		IN13	18B	-	-
19A		IN14	19B	0V *	N
20A		IN15	20B	0V *	N

* [24V]/[0V] (not connected to the service power) must be supplied with power even when the service power output is ON.

I/O cable (CB-PAC-PIO □□□)

* Enter the cable length (L) in □□□. Lengths up to 10 m are supported.
Example) 080 = 8 m



HIF6-40D-1.27R

No	Signal Name	Cable Color	Wiring	No	Signal Name	Cable Color	Wiring
1A	24V	Brown-1	Flat Cable Ⓐ (Crimped)	1B	OUT0	Brown-3	Flat Cable Ⓑ (Crimped) AWG28
2A	24V	Red-1		2B	OUT1	Red-3	
3A	-	Orange-1		3B	OUT2	Orange-3	
4A	-	Yellow-1		4B	OUT3	Yellow-3	
5A	IN0	Green-1		5B	OUT4	Green-3	
6A	IN1	Blue-1		6B	OUT5	Blue-3	
7A	IN2	Purple-1		7B	OUT6	Purple-3	
8A	IN3	Gray-1		8B	OUT7	Gray-3	
9A	IN4	White-1		9B	OUT8	White-3	
10A	IN5	Black-1		10B	OUT9	Black-3	
11A	IN6	Brown-2		11B	OUT10	Brown-4	
12A	IN7	Red-2		12B	OUT11	Red-4	
13A	IN8	Orange-2		13B	OUT12	Orange-4	
14A	IN9	Yellow-2		14B	OUT13	Yellow-4	
15A	IN10	Green-2		15B	OUT14	Green-4	
16A	IN11	Blue-2		16B	OUT15	Blue-4	
17A	IN12	Purple-2		17B	-	Purple-4	
18A	IN13	Gray-2		18B	-	Gray-4	
19A	IN14	White-2		19B	0V	White-4	
20A	IN15	Black-2		20B	0V	Black-4	

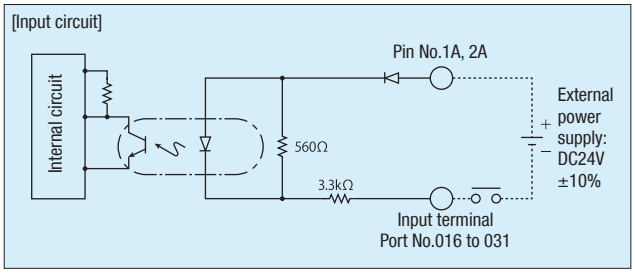
I/O Wiring Diagrams (Standard PIO)

■Input Part: External input specification (NPN specification)

Item	Specification
Input voltage	DC24V +10%
Input current	7mA/circuit
ON/OFF voltages	ON voltage---DC16.0V min., OFF voltage---DC5.0V max.
Isolation method	Photocoupler isolation

* The circuit diagram below assumes that the power is input externally (the service power output is OFF).
* In the circuit diagram below, the port numbers conform to the standard factory settings.
* The allowable leak current is 1mA when the input is OFF.

[Input circuit]



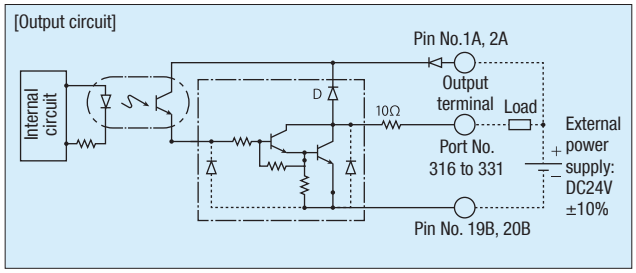
■Output Part: External output specification (NPN specification)

Item	Specification	
Load voltage	DC24V	TD62084 (or equivalent)
Maximum load current	100mA/point, 400mA/8 ports Note)	
Leak current	0.1mA/point max.	
Isolation method	Photocoupler isolation	

* The circuit diagram assumes that the power is input externally (the service power output is OFF).
* In the circuit diagram below, the port numbers conform to the standard factory settings.

Note: The total load current for every 8 points from Standard I/O No. 316 is 400mA.
(The maximum value per point is 100mA.)

[Output circuit]

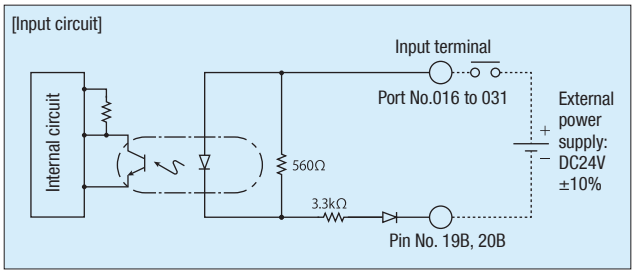


■Input Part: External input specification (PNP specification)

Item	Specification
Input voltage	DC24V +10%
Input current	7mA/circuit
ON/OFF voltages	ON voltage---DC8.0V max., OFF voltage---DC19.0V min.
Isolation method	Photocoupler isolation

* The circuit diagram below assumes that the power is input externally (the service power output is OFF).
* In the circuit diagram below, the port numbers conform to the standard factory settings.
* The allowable leak current is 1mA when the input is OFF.

[Input circuit]



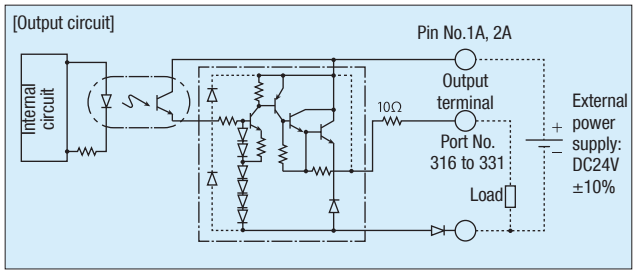
■Output Part: External output specification (PNP specification)

Item	Specification	
Load voltage	DC24V	TD62783 (or equivalent)
Maximum load current	100mA/point, 400mA/8 ports Note)	
Leak current	0.1mA/point max.	
Isolation method	Photocoupler isolation	

* The circuit diagram assumes that the power is input externally (the service power output is OFF).
* In the circuit diagram below, the port numbers conform to the standard factory settings.

Note: The total load current for every 8 points from Standard I/O No. 316 is 400mA.
(The maximum value per point is 100mA.)

[Output circuit]

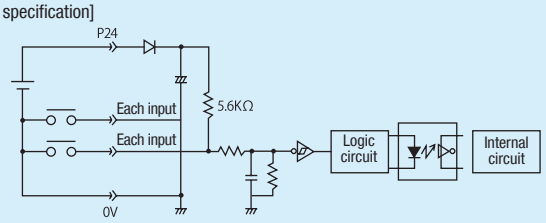


I/O Wiring Diagrams (Expansion PIO)

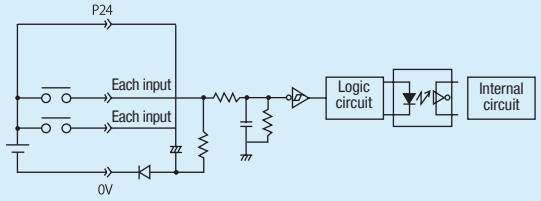
■Input Part: External input specification

Item	Specification
Number of input	16 points
Input voltage	DC24V +10%
Input current	4mA/circuit
ON/OFF voltages	ON voltage---DC18.0V min. (3.5mA) OFF voltage---DC6.0V max. (1mA)
Isolation method	Photocoupler isolation

[NPN specification]



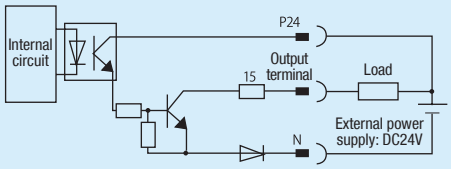
[PNP specification]



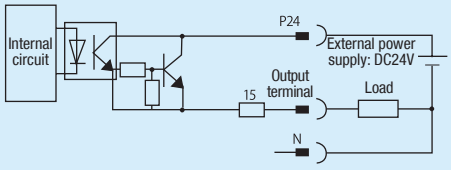
■Output Part: External output specification

Item	Specification
Number of output	16 points
Rated load voltage	DC24V
Maximum current	50mA/circuit
Isolation method	Photocoupler isolation

[NPN specification]

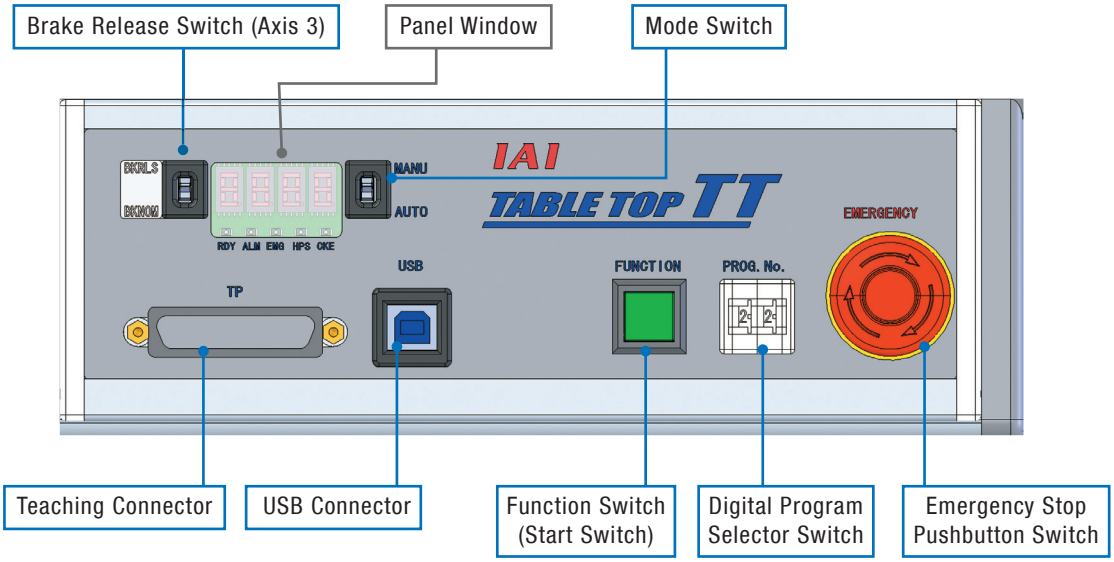


[PNP specification]

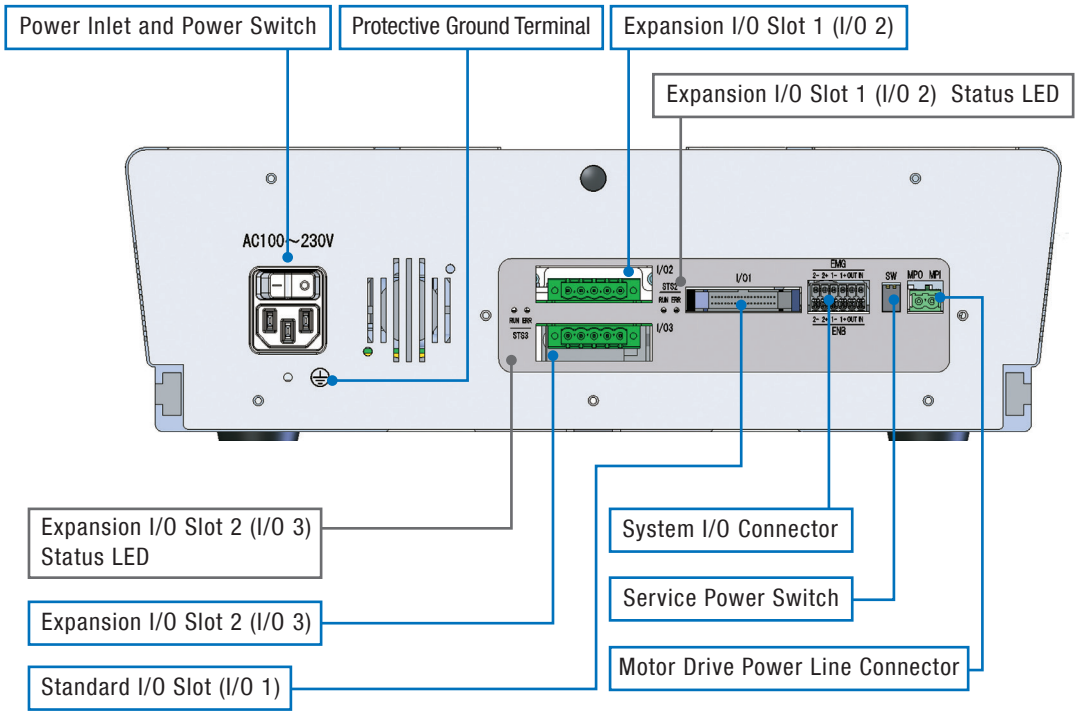


Name of Each Part

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

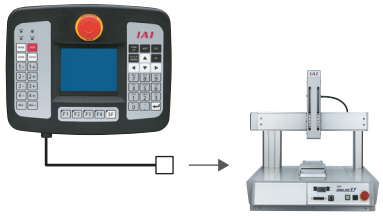
*1: For field network (CC-Link, DeviceNet, PROFIBUS-DP or EtherNet/IP) connection, the maximum number of input points is 240 and maximum number of output points is 240.
EtherNet/IP + EtherNet/IP is not supported.
Connect the vision system to EtherNet/IP.

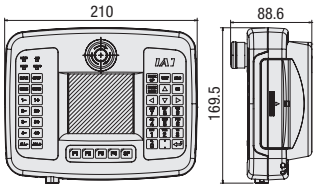
Teaching Pendant

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	0~50ºC
Ambient operating humidity	20~85% RH (non-condensing)
Environmental endurance	IP40 (in initial state)
Weight	507g (TB-01-S; teaching pendant only)

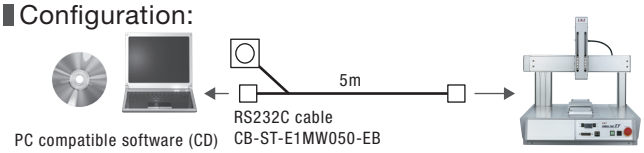
PC Compatible Software (for Windows PCs only)

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.

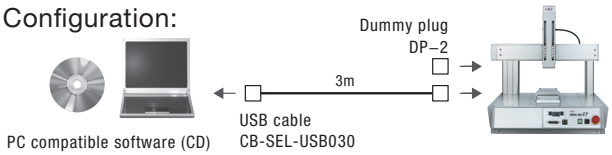
Model: **IA-101-X-MW** (RS232C cable included)

Configuration:



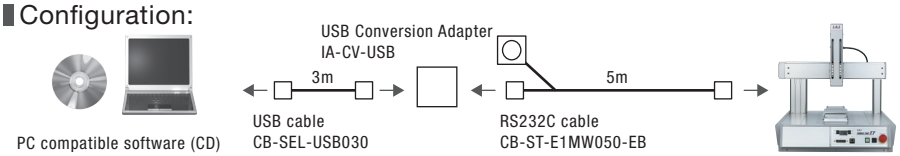
Model: **IA–101–TTA–USB** (USB cable included)

Configuration:



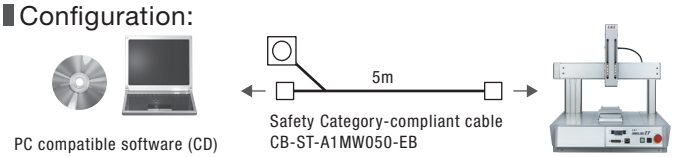
Model: **IA–101–X–USBMW** (USB conversion adapter + cable included)

Configuration:



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

Configuration:



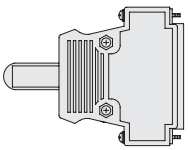
<If you have IA-101-TT-USB>

- 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).

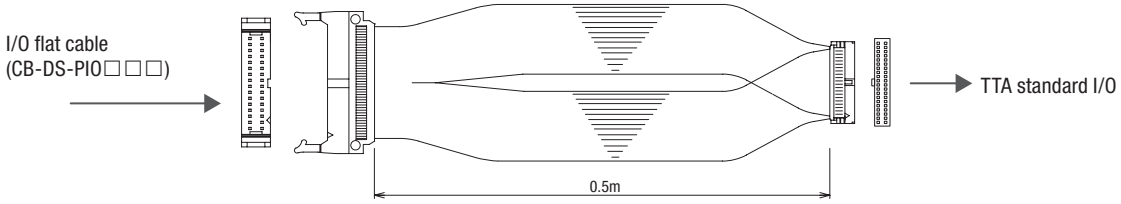


- The plug supports emergency stop/enable circuit redundancy (up to Category 3).

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**



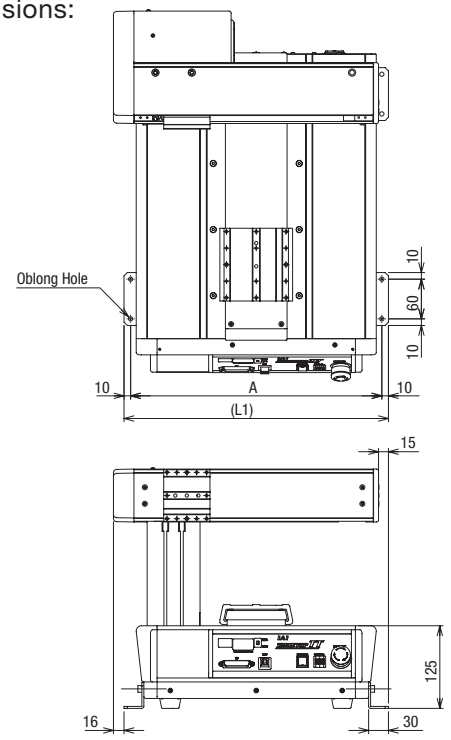
Actuator Mounting Brackets
(4 pieces / 6 pieces in one set, enclosed with attachment screws and nuts)

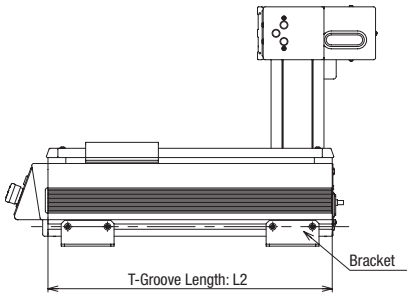
Model: **TTA-FT-4** (for X-axis stroke 20/30)
TTA-FT-6 (for X-axis stroke 40/50)

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

Dimensions:

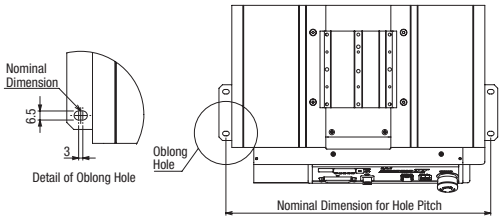
X-Y Stroke	L1	L2	A	Number of Brackets
20-20/20-15	400	430	380	4
30-30/30-25	500	530	480	
40-40/40-35	600	630	580	6
50-50/50-45	700	730	680	

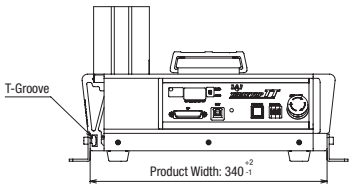




When making your own bracket

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.





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)

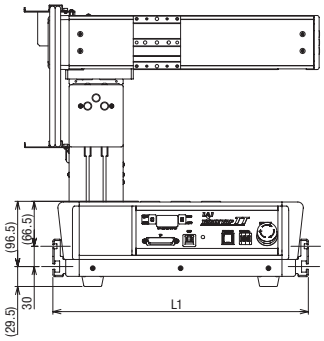
It is available when selecting slot specification considering body size.
It is not available when selecting FT4 or FT6 as an option.

Dimension Table

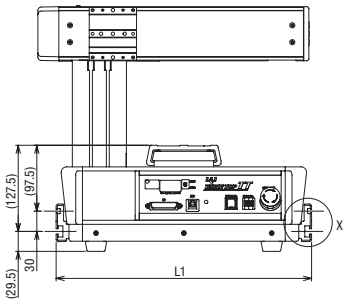
Model	L1	L2
20-20/20-15	378	430
30-30/30-25	478	530
40-40/40-35	578	630
50-50/50-45	678	730

■Front View

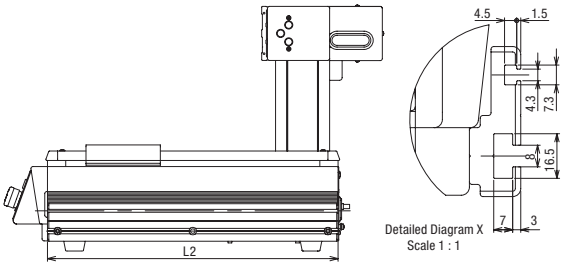
TTA-A type



TTA-C type



■Side View (TTA-A, TTA-C)

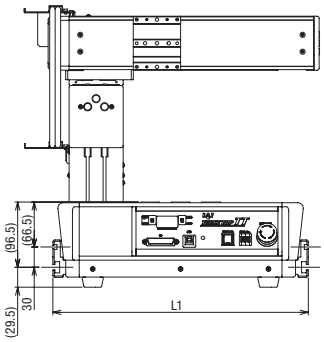


■Side Slot 180mm Installation Specification (Option Code: SLT0)

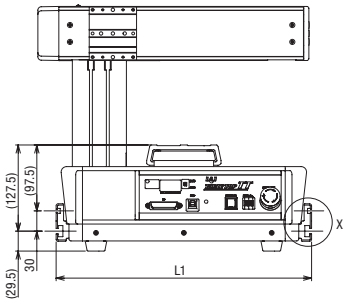
It is available when selecting FT4 or FT6 as slot specification.
20/30 type of X-axis stroke is equipped with 2 places of 180mm side slot where 40/50 type has 4 places.

■Front View

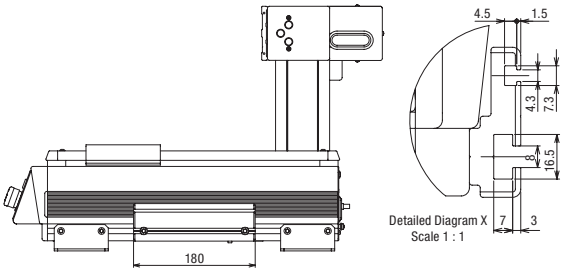
TTA-A type



TTA-C type



■Side View (TTA-A, TTA-C)



Side Plate Options

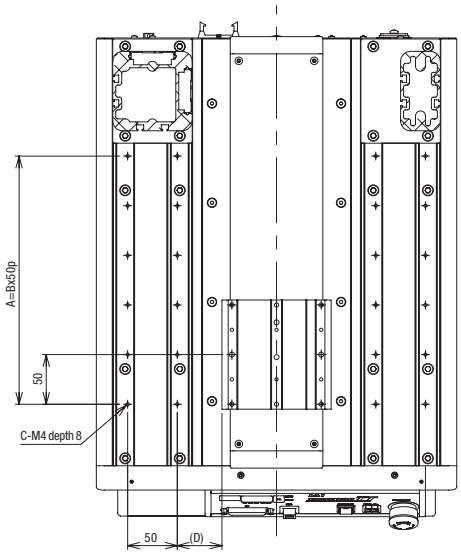
Side plate can be selected as an option. It becomes handy when customers themselves need to attach a device to the TTA.
There are two types for the side plate, one with holes already available (option code: PTH) and the other where you make holes of your own (option code: PTN).

* This option is available only for TTA-A type.
* Option code: PTN is a plate with no hole of M4, depth8 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

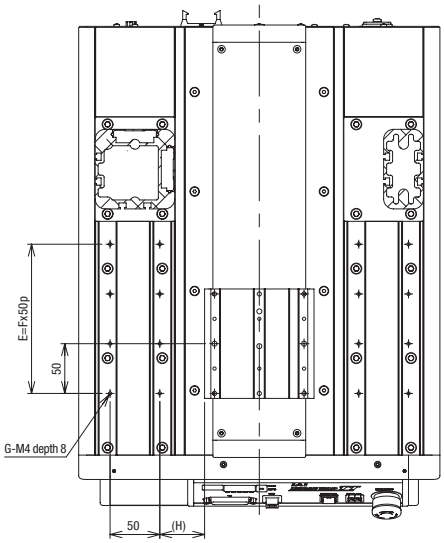


■Frame Position F1 Specification Hole Position

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

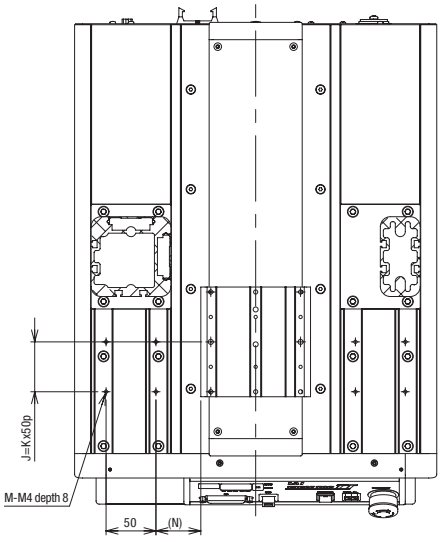


■Frame Position F2 Specification Hole Position

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

Dimension Table

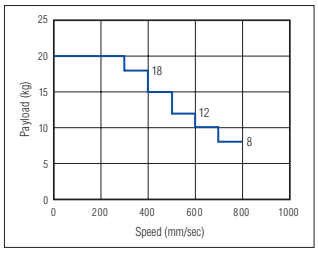
Model	J	K	M	N
20-20/20-15	50	1	4	45
30-30/30-25	150	3	8	95
40-40/40-35	250	5	12	145
50-50/50-45	350	7	16	195



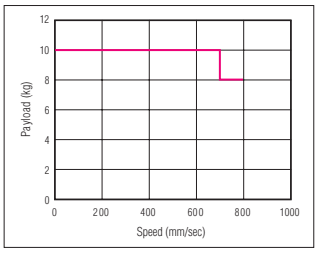
Correlation Diagram of Load Capacity by Speed (X-axis/Y-axis/Z-axis)

Use the diagrams below to check if the desired payload and speed are met.

TTA-A Series: X-axis

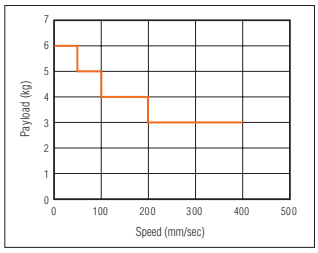


TTA-A Series: Y-axis



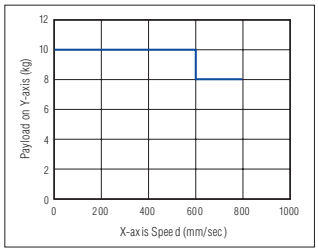
• Set the acceleration/deceleration to 0.4G at max.

TTA-A Series: Z-axis



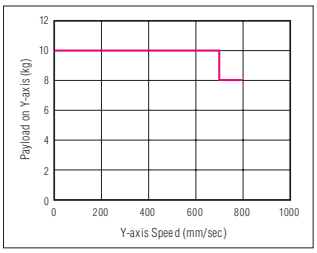
• Set the acceleration/deceleration to 0.2G at max.

TTA-C2: X-axis



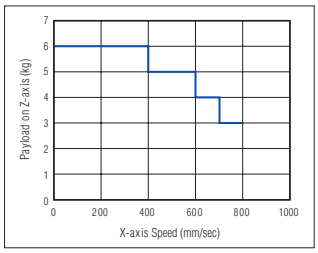
• Set the acceleration/deceleration to 0.2G at max.

TTA-C2: Y-axis



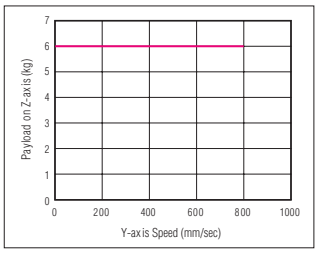
• Set the acceleration/deceleration to 0.2G at max.

TTA-C3/C4: X-axis



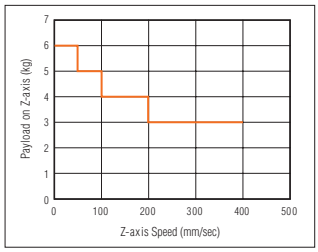
• Set the acceleration/deceleration to 0.2G at max.

TTA-C3/C4: Y-axis



• Set the acceleration/deceleration to 0.2G at max.

TTA-C3/C4: Z-axis



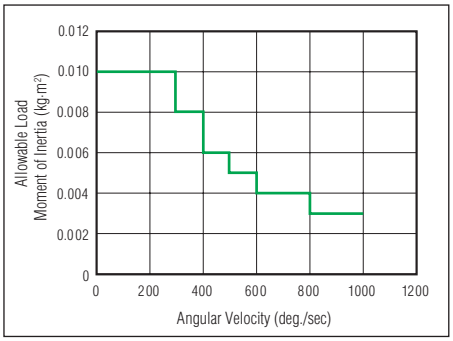
• Set the acceleration/deceleration to 0.2G at max.

TTA-A Series: Payload and acceleration/deceleration

Payload	20kg	18kg	15kg	12kg	10kg	8kg
Acceleration/deceleration	0.2G or less		0.3G or less		0.4G or less	

Correlation Graph for Allowable Load Moment of Inertia and Angular Velocity (R-axis)

R-axis



Allowable load moment of inertia, angular velocity, angular acceleration and deceleration (R)

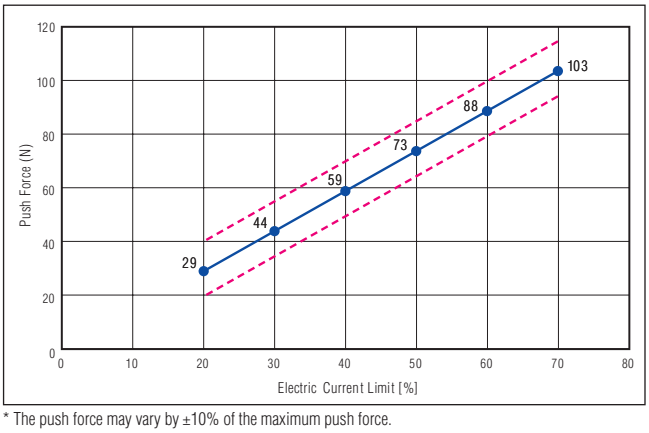
Allowable Load Moment of Inertia	Angular Velocity	Acceleration/deceleration
0.010kg·m²	100deg./sec	1000deg./sec²
0.010kg·m²	200deg./sec	1000deg./sec²
0.010kg·m²	300deg./sec	1000deg./sec²
0.008kg·m²	400deg./sec	1778deg./sec²
0.006kg·m²	500deg./sec	2778deg./sec²
0.005kg·m²	600deg./sec	4000deg./sec²
0.004kg·m²	700deg./sec	5444deg./sec²
0.004kg·m²	800deg./sec	7111deg./sec²
0.003kg·m²	900deg./sec	9000deg./sec²
0.003kg·m²	1000deg./sec	11111deg./sec²

(Note) Convert to G when setting to a teaching tool such as PC compatible software. (1G=9800deg./sec²).

Correlation Graph of Push Force and Electric Current Limit

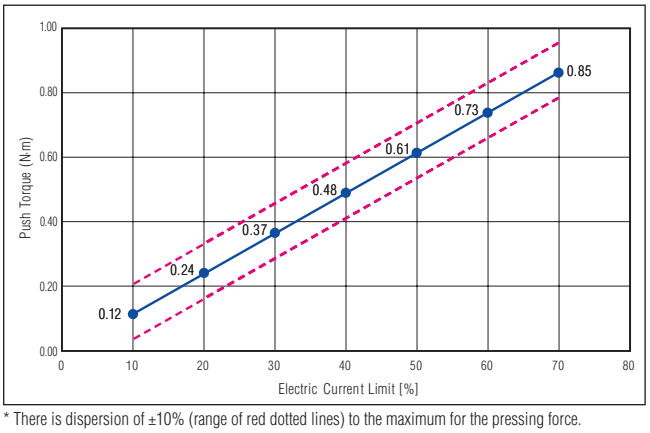
In the case of push-motion operation, the push force can be changed freely by changing the electric current limit of the controller (only for TTA-A Series). Take the push force graph below (Z-axis) as a reference. Contact IAI if it is required to have push control on the rotary axis. Take the push torque graph below (R-axis) as a reference.

Z-axis



* The push force may vary by ±10% of the maximum push force.

R-axis



* There is dispersion of ±10% (range of red dotted lines) to the maximum for the pressing force.

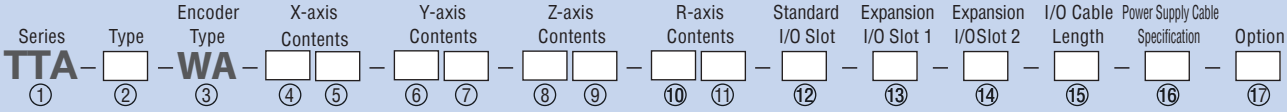
Tabletop Robot Product Series TTA-S

Gate / Cantilever Type with 230 VAC Servo Motor and Built-in Controller

Product Series		TTA-ASG/CSG*											
External view		**Gate type (code "A")**											
		A2SLG (global 2-axis low-speed type) [A2SHG (global 2-axis high-speed type)] 				A3SLG (global 3-axis low-speed type) [A3SHG (global 3-axis high-speed type)] 				A4SLG (global 4-axis low-speed type)** [A4SHG (global 4-axis high-speed type)]** 			
Stroke X/Y-axis (mm)		200x200 (with double pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with double pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with double pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)
Stroke Z-axis (mm)		—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)			
Max. speed (mm/s)	X-axis	600 [1000]	600 [1200]			600 [1000]	600 [1200]			600 [1000]	600 [1200]		
	Y-axis	600 [1000]	600 [1200]			600 [800]	600 [1000]	600 [1200]		600 [700]	600 [900]	600 [1050]	600 [1200]
	Z-axis	—				170 [400]				170 [400]			
	R-axis	—				—				1500 °/s [1500 °/s]			
Max. load capacity (kg)	X-axis	30 [15]				30 [15]				30 [15]			
	Y-axis	20 [11]				—				—			
	Z-axis	—				15 [7]				15 [7]			
	R-axis	—				—				0.01 kg•m² [0.01 kg•m²]***			
Loadable table top surface weight (kg)		20	30	40	50	20	30	40	50	20	30	40	50
External view		**Cantilever type (code "C")**											
		C2SLG (global 2-axis low-speed type) [C2SHG (global 2-axis high-speed type)] 				C3SLG (global 3-axis low-speed type) [C3SHG (global 3-axis high-speed type)] 				C4SLG (global 4-axis low-speed type)** [C4SHG (global 4-axis high-speed type)]** 			
Stroke X/Y-axis (mm)		200x150 (with double pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with double pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with double pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)
Stroke Z-axis (mm)		—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)			
Max. speed (mm/s)	X-axis	600 [700]	600 [900]	600 [1000]		600 [600]	600 [750]	600 [850]	600 [1000]	600 [600]	600 [750]	600 [850]	600 [1000]
	Y-axis	600 [600]	600 [800]	600 [1000]		600 [600]	600 [800]	600 [1000]		600 [600]	600 [800]	600 [1000]	
	Z-axis	—				170 [400]				170 [400]			
	R-axis	—				—				1500 °/s [1500 °/s]			
Max. load capacity (kg)	X-axis	—				—				—			
	Y-axis	20 [12]				—				—			
	Z-axis	—				15 [7]				15 [7]			
	R-axis	—				—				0.01 kg•m² [0.01 kg•m²]***			
Loadable table top surface weight (kg)		40	60	80	100	40	60	80	100	40	60	80	100

*Global version (code „G") with safety category specification. **4-axis type with ZR rotary axis. ***Allowable load moment of inertia at velocity of 300 °/s or less.

Explanation of Model Name



WA	Battery-less absolute

Global specification	
A2SLG	2-axis Servo Motor Low-speed Gate Type
A2SHG	2-axis Servo Motor High-speed Gate Type
A3SLG	3-axis Servo Motor Low-speed Gate Type
A3SHG	3-axis Servo Motor High-speed Gate Type
A4SLG	4-axis Servo Motor Low-speed Gate Type (R180 deg. Specification, R360 deg. Specification)
A4SHG	4-axis Servo Motor High-speed Gate Type (R180 deg. Specification, R360 deg. Specification)
C2SLG	2-axis Servo Motor Low-speed Cantilever Type
C2SHG	2-axis Servo Motor High-speed Cantilever Type
C3SLG	3-axis Servo Motor Low-speed Cantilever Type
C3SHG	3-axis Servo Motor High-speed Cantilever Type
C4SLG	4-axis Servo Motor Low-speed Cantilever Type (R180 deg. Specification, R360 deg. Specification)
C4SHG	4-axis Servo Motor High-speed Cantilever Type (R180 deg. Specification, R360 deg. Specification)

(Note) The global specification types apply for CE marking and Safety Category B to 3.

X-axis stroke	
20	200mm
30	300mm
40	400mm
50	500mm

X-axis option	
NM	Reversed-home specific.

Y-axis stroke			
TTA-A Series		TTA-C Series	
20	200mm	15	150mm
30	300mm	25	250mm
40	400mm	35	350mm
50	500mm	45	450mm

Y-axis option	
NM	Reversed-home specific.

Z-axis stroke	
10	100mm
15	150mm

Z-axis option	
B	Brake (Standard equipment)
CO	With cover (dedicated for 4-axis specification)
NM	Reversed-home specification

R-axis stroke	
18	±180 deg.
36L	±360 deg. (*)

* Equipped with home limit switch

R-axis option	
ML	Motor reversed to left
MR	Motor reversed to right

* In case of type selection “A4SLG“ or “A4SHG“, “ML“ or “MR“ must be selected. In case of type selection “C4SLG“ or “C4SHG“, “MR“ is only available.

Standard I/O Slot	
NP	NPN specific.
PN	PNP specific.

Expansion I/O Slot 1 / I/O Slot 2	
E	Not used
NP	Expansion PIO board (NPN specification)
PN	Expansion PIO board (PNP specification)
DV	DeviceNet connect. board
CC	CC-Link connection board
PR	PROFIBUS-DP connect. board
EP	EtherNet/IP connect. board (*)
EC	EtherCAT connection board
IA	IA-NET connection board (**)
SE1	Expansion SIO board (RS232C)
SE2	Expansion SIO board (RS485)

* Two pieces of EtherNet/IP cannot be selected to the expansion I/O slot. If there are two expansion I/O slots, expansion I/O Slot 2 can only be selected.

** Only one unit of IA-NET can be mounted on either of the expansion I/O slots.

I/O Cable Length	
0	None
2	2m
3	3m
5	5m

Power Supply Cable Specification	
PU	Mating plug (No cable)
2	Power supply cable for 230 VAC (2m) (Ring tongue terminal on end)

Option		
Y-axis height and horizontal position change (Note 1)	H1	Y-axis mounting position height 50mm up
	H2	Y-axis mounting position height 100mm up
	F1	Y-axis mounting position 90mm forward
	F2	Y-axis mounting position 180mm forward
Installation bracket options	FT4	Foot bracket equipped specification (4 pcs)
	FT6	Foot bracket equipped specification (6 pcs)
Side slot options	SLT0	Side slot 180mm installation specification
	SLT	Individual stroke side slot installation specification
Side plate options	PTH	Installation side plate (with hole)
	PTN	Installation side plate (without hole)
Operation part option (Note 2)	OS	Detachable operation console
	1~4/B~Y/L~LC	Additional switches (number/color/type entry)
ZR-axis position change option	FZ	ZR-axis attached position 64.5mm forward

(Note 1) The smallest 20-15 servo motor gate type and smallest 20-20 servo motor cantilever type comes with double pillar as standard. Single pillar versions are not available contrary to smallest types of TTA pulse motor model series.

(Note 2) For space reasons both operation part options “OS“ (detachable console) and “1~4/B~Y/L~LC“ (number, color and type of additional switches) cannot be selected together for the smallest 20-15 servo motor gate type and smallest 20-20 servo motor cantilever type.

Selection References

Table of Load Capacity by Acceleration (X-axis/Y-axis/Z-axis)

Use the tables below to check if the desired payload and acceleration are met.

Type	Axis	Lead Type	Load Capacity (kg)						
			0.1G	0.2G	0.3G	0.4G	0.5G	0.6G	0.7G
TTA-A (Gate type)	X	Low-speed	30	17	10	6	3	—	—
		High-speed	15	15	8	5	3	1.8	1
	Y	Low-speed	20	17	10	6	3	—	—
		High-speed	11	11	8	5	3	1.8	1
	Z	Low-speed	15	12	9	—	—	—	—
		High-speed	7	7	5.5	4	3	—	—
TTA-C (Cantilever type)	X	Low-speed	30	17	—	—	—	—	—
		High-speed	22	17	12	—	—	—	—
	Y	Low-speed	20	15	10	—	—	—	—
		High-speed	12	12	10	—	—	—	—
	Z	Low-speed	15	12	9	—	—	—	—
		High-speed	7	7	5.5	4	3	—	—

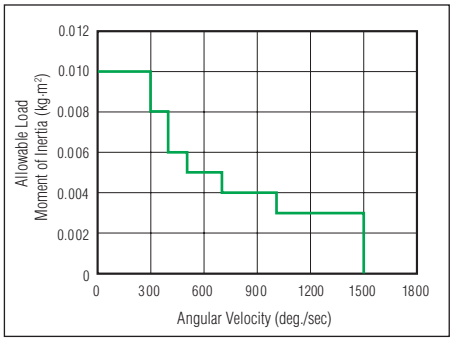
Type	Lead Type	Z-axis Load Capacity (kg) by Y-axis Accel.			
		0.1G	0.2G	0.3G	0.4G
TTA-A (Gate type)	Low-speed	15	13	6	2
	High-speed	7	7	4	1
TTA-C (Cantilever type)	Low-speed	15	11	6	—
	High-speed	7	7	6	—

Type	Lead Type	ZR-axis Load Capacity (kg) by Y-axis Accel.			
		0.1G	0.2G	0.3G	0.4G
TTA-A (Gate type)	Low-speed	15	11	4	—
	High-speed	7	7	2	—
TTA-C (Cantilever type)	Low-speed	15	9	4	—
	High-speed	7	7	4	—

Type	Lead Type	Y-axis Load Capacity (kg) by X-axis Accel.			
		0.1G	0.2G	0.3G	0.4G
TTA-C (Cantilever type)	Low-speed	20	7	—	—
	High-speed	12	7	2	—
	Lead Type	Z-axis Load Capacity (kg) by X-axis Accel.			
		0.1G	0.2G	0.3G	0.4G
	Low-speed	15	3	—	—
	High-speed	7	3	—	—
	Lead Type	ZR-axis Load Capacity (kg) by X-axis Accel.			
		0.1G	0.2G	0.3G	0.4G
	Low-speed	15	1	—	—
	High-speed	7	1	—	—

Correlation Graph for Allowable Load Moment of Inertia and Angular Velocity (R-axis)

R-axis



Allowable load moment of inertia, angular velocity, angular acceleration and deceleration (R)

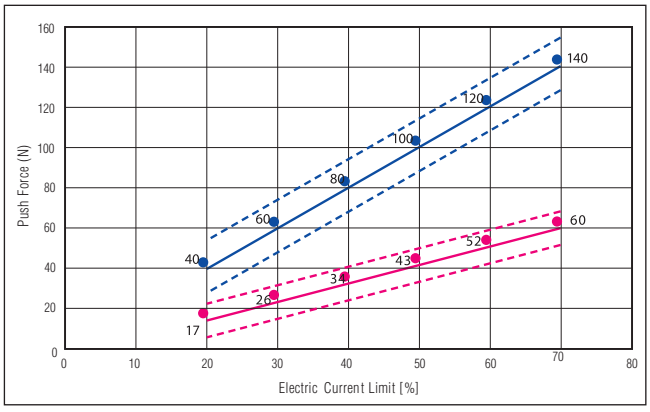
Allowable Load Moment of Inertia	Angular Velocity	Acceleration/deceleration
0.010kg·m²	300deg./sec	490deg./sec²
0.008kg·m²	400deg./sec	980deg./sec²
0.006kg·m²	500deg./sec	1960deg./sec²
0.005kg·m²	700deg./sec	4900deg./sec²
0.004kg·m²	1000deg./sec	9800deg./sec²
0.003kg·m²	1500deg./sec	14700deg./sec²

(Note) Convert to G when setting to a teaching tool such as PC compatible software. (1G=9800deg./sec²).

Correlation Graph of Push Force and Electric Current Limit

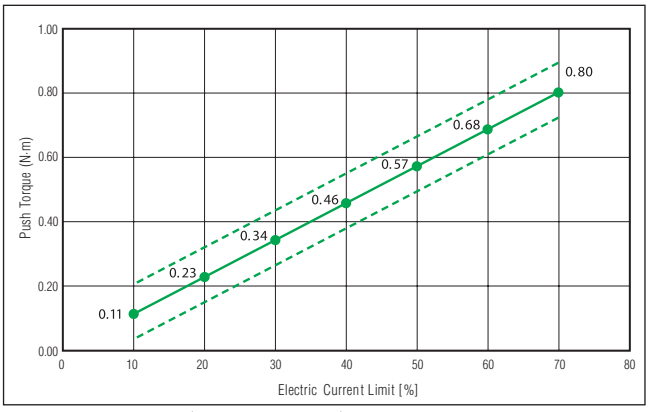
In the case of push-motion operation, the push force can be changed freely by changing the electric current limit of the controller (only for TTA-A Series). Take the push force graph below (Z-axis) as a reference. Contact IAI if it is required to have push control on the rotary axis. Take the push torque graph below (R-axis) as a reference.

Z-axis



* The push force may vary by ±10% of the maximum push force.

R-axis



* There is dispersion of ±10% (range of red dotted lines) to the maximum for the pressing force.

System Configuration

Front Panel Wiring Layout

Teaching Pendant (Option)

Model: TB-02-S
(Standard specification) (*1)

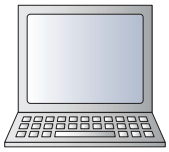
(*1) For a safety category compliant system with deadman switch specific. type TB-02D-S see TB-02 brochure.

5m

TP Connection Cable
Model: CB-TB1-X002

5m/3m

PC Connection Cable
(Supplied with the PC Software)
Model: CB-ST-E1MW050 (5m)
CB-ST-A1MW050 (5m)
CB-SEL-USB030 (3m)



PC Software (Option)

Model: IA-101-X-MW
IA-101-XA-MW (*2)
IA-101-TTA-USB (*3)
IA-101-TTA-USBMW

Dummy Plug

Model: DP-2 (*3)

(*2) Safety category compliant system with safety circuit emergency stop connector type IA-101-XA-MW including PC cable CB-ST-A1MW050.
(*3) Enclosed in global specification and PC software (IA-101-TTA-USB).

Back Panel Wiring Layout

PLC

Variety of Field Networks (Options)

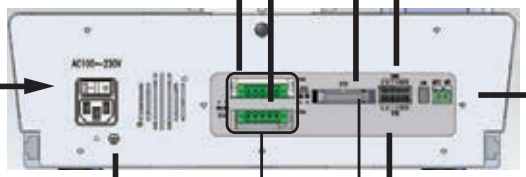
CC-Link
DeviceNet
PROFIBUS
EtherNet/IP
EtherCAT

I/O Flat Cable (Accessory)

Model: CB-PAC-PIO020

2m

Emergency Stop Switch



Electromagnetic Relay

Enable Switch

100 to 230 VAC

Select from those below for the power supply cable

- Only with plug on main unit side
- Power supply cable for 230 VAC (2m)

Protective Grounding

Expansion I/O Slots

Standard I/O Service Power Supply connector

Controller Specification

Item	Specifications
Motor type / Applicable encoder	AC servo motor / Battery-less absolute encoder
Power-supply voltage / frequency	100 to 230 VAC ±10% (Single-phase) / 50 or 60 Hz ±5%
Motor power capacity 2-axis type / 3-axis type / 4-axis type	Rated 182 VA, max. 352 VA / Rated 215 VA, max. 470 VA / Rated 248 VA, max. 588 VA
Number of program steps / positions / programs / multi-tasking programs	9999 / 30000 / 255 / 16
Operation mode	Serial communication, Program
SIO interface	RS232 (Baud rate : 9.6, 19.2, 38.4, 57.6, 76.8, 115.2 kpps), USB (Live wire insertion/removal)
Standard I/O interface: Inputs / Outputs / Load voltage / Isolation method	16 points IN / 16 points OUT / 24 VDC ±10% / Photocoupler isolation
Conforming expansion I/O interfaces	Expansion PIO NPN/PNP spec. (16 IN / 16 OUT), CC-Link, DeviceNet, PROFIBUS-DP, EtherNet/IP, EtherCAT
Calendar (clock) function: Retention time / Charge time	Approx. 10 days / Approx. 100 hours
Protective functions / Protecion class	Monitoring of overcurrent, fan speed drop, etc. / IP20

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