IAI
Quality and Innovation

Tabletop Robot
With Battery-less Absolute Encoder as Standard

TTA Series

www.intelligentactuator.com

AC Servo Motor Specification Now Available for the Tabletop Robot! All Models Equipped with Battery-less Absolute Encoder as Standard!

1. Equipped with a Battery-less Absolute Encoder as Standard

All the conventional stepper motor types are equipped with a battery-less absolute encoder as standard.
An AC servo motor series is also now available.

Battery-less Absolute Encoder
No Battery, No Maintenance,
No Homing, and No Price Increase.
No Going Back to Incremental.

Encoder \ Motor	Stepper motor	AC servo motor
Incremental	Conventional models	-
Battery-less absolute	NEW	NEW

Built-in position memory system

The advantages of using an absolute encoder.

1. With an absolute encoder, home-return is not required.
2. No external home sensor is required since home-return is not necessary.
3. Removal of items being worked on is not necessary, even after an emergency stop.
4. The troublesome creation of home-return programs is not necessary even when stopping inside of a complex machine.

The advantages of battery-less.

1. No battery maintenance required.
2. No installation space for battery required.

- Reduced processes / Costs
- Shortened startup / adjustment time
- Increased production capacity

2. New High-precision AC Servo Motor Series Added

AC Servo Motor Specification

The equipped AC servo motor dramatically increases performance.
We have a wide range of specifications, from payload-focused low lead specifications to speed-focused high lead specifications.

		Conventional models	Low lead
Max. payload (kg)	Work side (X-axis)	20	**30**
	Tool side (Z-axis)	6	**15**

Max. 2.5 times

Payload focused → Low lead specification

		Conventional models	High lead
Max. speed (mm/s)	X-axis	800	**1,200 ***
	Y-axis	800	**1,200 ***
	Z-axis	400	**400 ***

Max. 1.5 times

Speed focused → High lead specification

* Max. speed differs depending on conditions.

	Conventional models	Low lead	High lead
Positioning repeatability (mm)	±0.02	**±0.005**	**±0.005**
Lost motion (mm)	0.1 or less	**0.025 or less**	**0.04 or less**

ZR-axis performance	Conventional models	AC servo motor
Max. speed (PTP drive)	1,000deg/s	**1,500deg/s**

* Max. speed differs depending on conditions.

3. Improved Positioning Repeatability and Lost Motion for Stepper Motor

Stepper Motor Specification

Due to the built-in high-resolution battery-less absolute encoder, positioning repeatability and lost motion are improved.

	Conventional models	Battery-less absolute encoder equipped
Positioning repeatability (mm)	±0.02	**±0.01**
Lost motion (mm)	0.1 or less	**0.05 or less**

4. Manual Programming Is No Longer Required

The SEL Program Generator eliminates the tedious work of program creation.

About the SEL Program Generator...

The SEL Program Generator is a PC tool that automatically generates a SEL program and positioning data simply by drawing the operation path on the screen.

* The first version only supports the application operations.

Until now — Creating SEL programs and positioning data from scratch required a lot of processes and time.

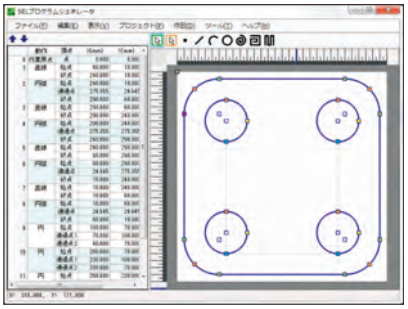
Using the SEL Program Generator...

The tedious work of program creation is eliminated for dramatically increased convenience.

● Reduced processes ● Shortened time ● Improved productivity

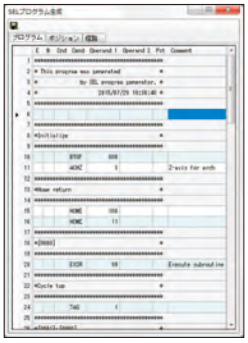
2 types of drawing methods can be used to create the operating path.

1. Reading DXF data
2. Drawing with the mouse

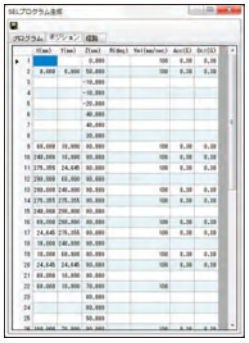


(E.g., for when using the mouse)

Automatic creation

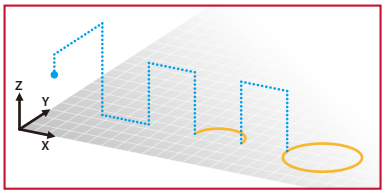


SEL Program (Application operation program)



Position data

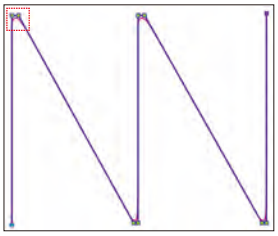
Drawing a pathway like the one at the right automatically generates a program for the robot.

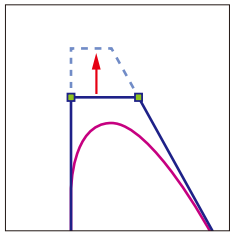


Simple simulation screen

Furthermore, the created pathway and actual traveled path are displayed on top of each other to allow for corrections to be made.

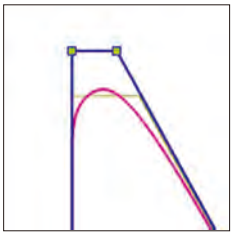
Patent pending





Enlarged view of the red box on the left

The operating path can be corrected by dragging the created path with the mouse to match the intended path.



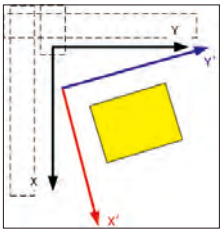
Correcting the operating path

Created path
Operating path
Ideal path

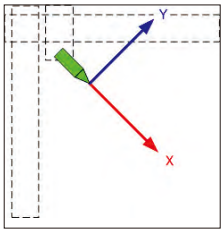
5. Work / Tool Coordinate Systems

Two types of coordinate systems can be used:
Work coordinate system: the coordinate system defined by offsetting each axis from the base coordinate system (max. 32 types)
Tool coordinate system: the coordinate system defined by the dimensions (offset) of the tool (gripper, etc.) mounted to the tool mounting surface (max. 128 types)

Work coordinate system



Tool coordinate system



* TB-01 is supported by Ver.1.50 or later, and PC compatible software is supported by Ver.12.03.00.00 or later.

No.	X[mm]	Y[mm]	Z[mm]	R[deg]
1	120.000	100.000	45.000	20.000
2	0.000	0.000	0.000	30.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	0.000

入力範囲：-99999.999 ～ 99999.999

Settings can be easily configured using the PC compatible software.

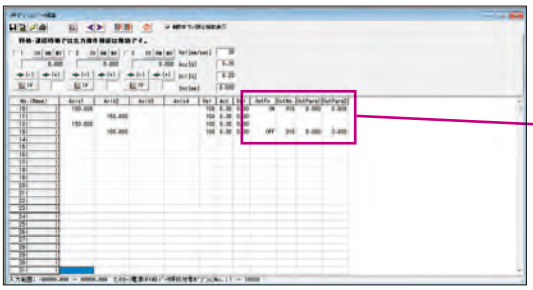
Coordinate system definition data editing screen

6. Expanded Serial Communication Port

Additional SIO module
RS232C and RS485 can be added.
Multiple channels of IAI protocol supported
The IAI protocol support makes communication with external equipment possible even when connected to a teaching pendant or PC software.

7. External Equipment Can Be Controlled Easily

Output operation data has been added to the positioning data.
Signals for controlling external equipment can be easily output for each target position.
This eliminates the conventionally required time to create a program to send the signal.



Positioning data editing screen

I	OutFn	OutNo.	OutPara1	OutPara2
30	ON	316	0.000	0.000
30				
30				
30	OFF	316	0.000	0.000

Output operation data

* TB-01 is supported by Ver.1.50 or later, and PC compatible software is supported by Ver.12.03.00.00 or later.

AC Servo Motor Type Lineup

<table>
<tr><td>Model</td><td colspan="12">TTA</td></tr>
<tr><td rowspan="2">Specification</td><td colspan="12">Gate Type</td></tr>
<tr><td colspan="4">A2SL: 2-axis low lead spec.
A2SLG: 2-axis low lead safety category spec.
A2SH: 2-axis high lead spec.
A2SHG: 2-axis high lead safety category spec.
  </td><td colspan="4">A3SL: 3-axis low lead spec.
A3SLG: 3-axis low lead safety category spec.
A3SH: 3-axis high lead spec.
A3SHG: 3-axis high lead safety category spec.
  </td><td colspan="4">A4SL: Low lead spec. with ZR-axis
A4SLG: Low lead safety category spec. with ZR-axis
A4SH: High lead spec. with ZR-axis
A4SHG: High lead safety category spec. with ZR-axis
  </td></tr>
<tr><td>X-axis/Y-axis Stroke (mm)</td><td>200×200 (Cantilever)</td><td>300×300</td><td>400×400</td><td>500×500</td><td>200×200 (Cantilever)</td><td>300×300</td><td>400×400</td><td>500×500</td><td>200×200 (Cantilever)</td><td>300×300</td><td>400×400</td><td>500×500</td></tr>
<tr><td>Z-axis Stroke (mm)</td><td colspan="4">-</td><td colspan="4">100/150</td><td colspan="4">100/150</td></tr>
<tr><td rowspan="3">Standard Price</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td colspan="4">R-axis operation range: ±180°</td></tr>
<tr><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td colspan="4">R-axis operation range: ±360°</td></tr>
<tr><td>Reference Page</td><td>P.11</td><td>P.13</td><td>P.15</td><td>P.17</td><td>P.19</td><td>P.21</td><td>P.23</td><td>P.25</td><td colspan="4">P.27</td></tr>
<tr><td rowspan="2">Specification</td><td colspan="12">Cantilever Type</td></tr>
<tr><td colspan="4">C2SL: 2-axis low lead spec.
C2SLG: 2-axis low lead safety category spec.
C2SH: 2-axis high lead spec.
C2SHG: 2-axis high lead safety category spec.
  </td><td colspan="4">C3SL: 3-axis low lead spec.
C3SLG: 3-axis low lead safety category spec.
C3SH: 3-axis high lead spec.
C3SHG: 3-axis high lead safety category spec.
  </td><td colspan="4">C4SL: Low lead spec. with ZR-axis
C4SLG: Low lead safety category spec. with ZR-axis
C4SH: High lead spec. with ZR-axis
C4SHG: High lead safety category spec. with ZR-axis
  </td></tr>
<tr><td>X-axis/Y-axis Stroke(mm)</td><td>200×150</td><td>300×250</td><td>400×350</td><td>500×450</td><td>200×150</td><td>300×250</td><td>400×350</td><td>500×450</td><td>200×150</td><td>300×250</td><td>400×350</td><td>500×450</td></tr>
<tr><td>Z-axis Stroke (mm)</td><td colspan="4">-</td><td colspan="4">100/150</td><td colspan="4">100/150</td></tr>
<tr><td rowspan="3">Standard Price</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td rowspan="3">-</td><td colspan="4">R-axis operation range: ±180°</td></tr>
<tr><td>-</td><td>-</td><td>-</td><td>-</td></tr>
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<tr><td>Reference Page</td><td>P.29</td><td>P.31</td><td>P.33</td><td>P.35</td><td>P.37</td><td>P.39</td><td>P.41</td><td>P.43</td><td colspan="4">P.45</td></tr>
</table>

Stepper Motor Type Lineup

Model	TTA											
Specification	Gate Type											
	A2 (2-axis standard spec.) A2G (2-axis safety category spec.) 				A3 (3-axis standard spec.) A3G (3-axis safety category spec.) 				A4 (ZR-axis standard spec.) A4G (ZR-axis safety category spec.) 			
X-axis/Y-axis Stroke (mm)	200×200 (Cantilever)	300×300	400×400	500×500	200×200 (Cantilever)	300×300	400×400	500×500	200×200 (Cantilever)	300×300	400×400	500×500
Z-axis Stroke (mm)	-				100/150				100/150			
Standard Price	-	-	-	-	-	-	-	-	R-axis operation range: ±180° -	-	-	-
									R-axis operation range: ±360° -	-	-	-
Reference Page	P.11	P.13	P.15	P.17	P.19	P.21	P.23	P.25	P.27			
Specification	Cantilever Type											
	C2 (2-axis standard spec.) C2G (2-axis safety category spec.) 				C3 (3-axis standard spec.) C3G (3-axis safety category spec.) 				C4 (ZR-axis standard spec.) C4G (ZR-axis safety category spec.) 			
X-axis/Y-axis Stroke (mm)	200×150	300×250	400×350	500×450	200×150	300×250	400×350	500×450	200×150	300×250	400×350	500×450
Z-axis Stroke (mm)	-				100/150				100/150			
Standard Price	-	-	-	-	-	-	-	-	R-axis operation range: ±180° -	-	-	-
									R-axis operation range: ±360° -	-	-	-
Reference Page	P.29	P.31	P.33	P.35	P.37	P.39	P.41	P.43	P.45			

AC Servo Motor Type Model Specification Items

Series	Type	Encoder Type	X-axis Contents		Y-axis Contents		Z-axis Contents		R-axis Contents		Standard I/O Slot	Expansion I/O Slot 1	Expansion I/O Slot 2	I/O Cable Length	Power Supply Cable Spec.	Options
TTA		WA														
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰

③ Encoder Type

WA	Battery-less absolute

② Type

Standard	Safety Category	
A2SL	A2SLG	2-axis Gate type, low lead
A2SH	A2SHG	2-axis Gate type, high lead
A3SL	A3SLG	3-axis Gate type, low lead
A3SH	A3SHG	3-axis Gate type, high lead
A4SL	A4SLG	4-axis Gate type, low lead (R180 deg. spec, R360 deg. spec.)
A4SH	A4SHG	4-axis Gate type, high lead (R180 deg. spec, R360 deg. spec.)
C2SL	C2SLG	2-axis Cantilever type, low lead
C2SH	C2SHG	2-axis Cantilever type, high lead
C3SL	C3SLG	3-axis Cantilever type, low lead
C3SH	C3SHG	3-axis Cantilever type, high lead
C4SL	C4SLG	4-axis Cantilever type, low lead (R180 deg. spec, R360 deg. spec.)
C4SH	C4SHG	4-axis Cantilever type, high lead (R180 deg. spec, R360 deg. spec.)

Note) Please select the safety category specification when it is necessary to comply with CE marking or Safety Category B ~ 3.

④ X-axis Stroke

20	200mm
30	300mm
40	400mm
50	500mm

⑤ X-axis Option

NM	Non-motor end spec.

⑥⑦ 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

⑦ Y-axis Option

NM	Non-motor end spec.

⑧ Z-axis Stroke

10	100mm
15	150mm

⑨ Z-axis Option

B	Brake (Standard equipment)	See P.50
CO	With cover (Dedicated for 4-axis spec.)	See P.50
NM	Non-motor end spec.	See P.51

⑩ R-axis stroke

18	±180 deg.
36L	±360 deg.

* Equipped with home limit switch

⑪ R-axis Option

ML	Motor side-mounted to the left
MR	Motor side-mounted to the right

* For A4, either ML or MR must be selected. Only MR can be selected for C4.

⑫ Standard I/O Slot

NP	NPN spec.
PN	PNP spec.

⑬⑭ Expansion I/O Slot 1 / Expansion I/O Slot 2

E	Not used
NP	Expansion PIO board (NPN spec.)
DV	DeviceNet connection board
CC	CC-Link connection board
PR	PROFIBUS-DP connection board
EP	EtherNet/IP connection board
EC	EtherCAT connection board
IA	IA Net connection board
SE1	RS232C connection board
SE2	RS485 connection board

* The IA Net connection board and EtherNet/IP connection board can be connected only in expansion slot 1. If another board is also used, it must be installed in expansion slot 2.

⑮ I/O Cable Length

0	None
2	2m
3	3m
5	5m

⑯ Power Supply Cable Spec.

PU	Power connector only
1	Power supply cable for 100VAC (2m) (Plug on end)
2	Power supply cable for 200VAC (2m) (Ring tongue terminal on end)

⑰ Options

Y-axis height and horizontal position change and additional pillar option	H1	Y-axis mounting position height 50mm up	See P.51
	H2	Y-axis mounting position height 100mm up	
	F1	Y-axis mounting position 90mm forward	See P.50
	F2	Y-axis mounting position 180mm forward	
	AP	Additional pillar for 20-15 and 20-20 types	
Installation bracket options	FT4	Foot bracket included (4 pcs)	See P.50
	FT6	Foot bracket included (6 pcs)	
Side slot options	SLT0	Side slot 180mm installation	See P.51
	SLT	Individual stroke side slot installation	
Side plate options	PTH	Installation side plate (with hole)	See P.51
	PTN	Installation side plate (without hole)	
Operation part options	OS	Detachable operation console	See P.52
	*	Additional switch	See P.52
ZR-axis position change option	FZ	ZR-axis mounting position 64.5mm forward	See P.50

* Additional switch models depend on the items selected. Please refer to P.52 for more information.

Stepper Motor Type Model Specification Items

Series	Type	Encoder Type	X-axis Contents		Y-axis Contents		Z-axis Contents		R-axis Contents		Standard I/O Slot	Expansion I/O Slot 1	Expansion I/O Slot 2	I/O Cable Length	Power Supply Cable Spec.	Options
TTA	–	– WA	–		–		–		–		–	–	–	–	–	–
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰

WA	Battery-less absolute

Standard	Safety Category	
A2	A2G	2-axis Gate type, standard
A3	A3G	3-axis Gate type, standard
A4	A4G	4-axis Gate type, standard (R180 deg. spec, R360 deg. spec.)
C2	C2G	2-axis Cantilever type, standard
C3	C3G	3-axis Cantilever type, standard
C4	C4G	4-axis Cantilever type, standard (R180 deg. spec, R360 deg. spec.)

Note) Please select the safety category specification when it is necessary to comply with CE marking or Safety Category B ~ 3.

NP	NPN spec.
PN	PNP spec.

E	Not used
NP	Expansion PIO board (NPN spec.)
DV	DeviceNet connection board
CC	CC-Link connection board
PR	PROFIBUS-DP connection board
EP	EtherNet/IP connection board
EC	EtherCAT connection board
IA	IA Net connection board
SE1	RS232C connection board
SE2	RS485 connection board

* The IA Net connection board and EtherNet/IP connection board can be connected only in expansion slot 1. If another board is also used, it must be installed in expansion slot 2.

0	None
2	2m
3	3m
5	5m

PU	Power connector only
1	Power supply cable for 100VAC (2m) (Plug on end)
2	Power supply cable for 200VAC (2m) (Ring tongue terminal on end)

X-axis Stroke

20	200mm
30	300mm
40	400mm
50	500mm

X-axis Option

NM	Non-motor end spec.

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	Non-motor end spec.

Z-axis Stroke

10	100mm
15	150mm

Z-axis Option

B	Brake (Standard equipment)	See P.50
CO	With cover (Dedicated for 4-axis spec.)	See P.50
NM	Non-motor end spec.	See P.51

R-axis stroke

18	±180 deg.
36L	±360 deg.

* Equipped with home limit switch

R-axis Option

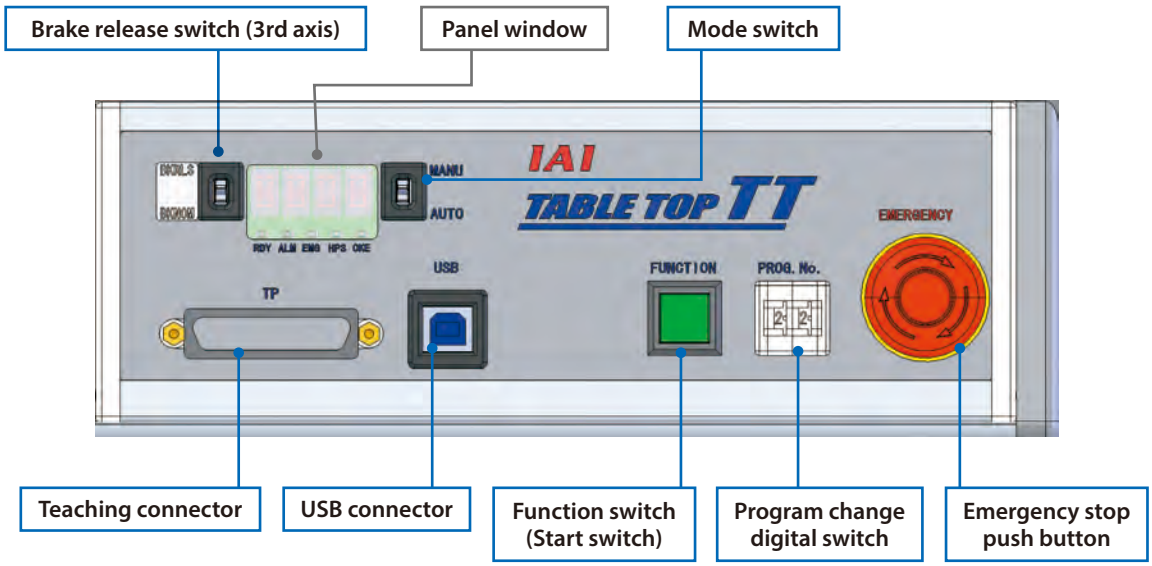
ML	Motor side-mounted to the left
MR	Motor side-mounted to the right

* For A4, either ML or MR must be selected. Only MR can be selected for C4.

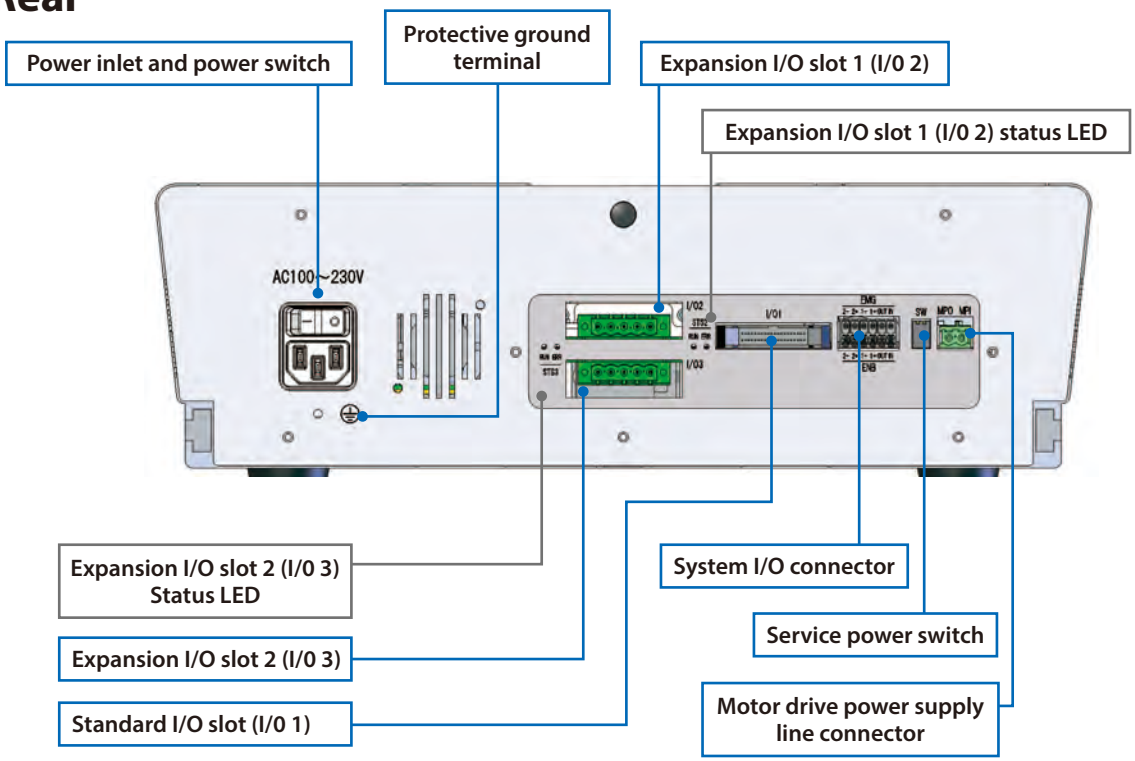
Y-axis height and horizontal position change and additional pillar option	H1	Y-axis mounting position height 50mm up	See P.51
	H2	Y-axis mounting position height 100mm up	
	F1	Y-axis mounting position 90mm forward	See P.50
	F2	Y-axis mounting position 180mm forward	
	AP	Additional pillar for 20-15 and 20-20 types	
Installation bracket options	FT4	Foot bracket included (4 pcs)	See P.50
	FT6	Foot bracket included (6 pcs)	
Side slot options	SLT0	Side slot 180mm installation	See P.51
	SLT	Individual stroke side slot installation	
Side plate options	PTH	Installation side plate (with hole)	See P.51
	PTN	Installation side plate (without hole)	
Operation part options	OS	Detachable operation console	See P.52
	*	Additional switch	See P.52
ZR-axis position change option	FZ	ZR-axis mounting position 64.5mm forward	See P.50

* Additional switch models depend on the items selected. Please refer to P.52 for more information.

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 x 2 contacts, enable input x 2 contacts
Motor power I/O connector	For external drive power supply shutoff

*1: For field network (CC-Link, DeviceNet, PROFIBUS-DP, EtherNet/IP, EtherCAT, IA Net, RS232C and RS485) 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 board.

Front Panel Wiring Layout

Teaching Pendent (Option)

Model: TB-01-S

5m

Dummy Plug

Model: DP-2

5m/3m

PC Connection Cable
(Supplied with the PC Compatible Software)
Model: CB-ST-E1MW050 (5m)
CB-SEL-USB030 (3m)
CB-ST-AIMW050 (5m)

PC Compatible Software (Option)

Model: IA-101-X-MW
IA-101-TTA-USB
IA-101-X-USBMW
IA-101-XA-MW

*Enclosed in safety category specification and PC compatible software (IA-101-TTA-USB)

Back Panel Wiring Layout

PLC

Variety of Field Networks (Option)

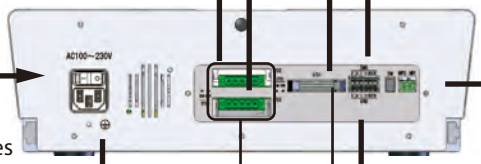
CC-Link
DeviceNet
PROFIBUS
EtherNet/IP
EtherCAT
RS232C
RS485

I/O Flat Cable (Accessory)

Model: CB-PAC-PIO020

2m

Emergency Stop Switch



Electromagnetic Relay

100~230VAC

Select from the following power cables
- Power connector only
- Power supply cable for 100VAC (2m)
- Power supply cable for 200VAC (2m)

Enable Switch

Protective Ground Terminal

Expansion I/O Slot

Standard I/O Service Power Connector

*Emergency stop switch, enable switch, electromagnetic relay, and other devices may be connected and wired if necessary.
The factory setting with no external devices connected still operate properly.

TTA-A2S□(G)-20-20 Tabletop Robot, Gate Type 2-axis, XY-axis 200mm, AC Servo Motor

TTA-A2(G)-20-20 Tabletop Robot, Gate Type 2-axis, XY-axis 200mm, Stepper Motor

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
A2SL: 2-axis low lead spec. A2SLG: 2-axis low lead safety category spec. A2SH: 2-axis high lead spec. A2SHG: 2-axis high lead safety category spec. A2: 2-axis standard spec. A2G: 2-axis safety category spec.		WA: Battery-less Abs.	20:200mm		20:200mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

*Only cantilever type is available for 20-20 model.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A2SL(G)-WA-20①-20②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	200	1~600	30
	Y-axis			8	200	1~600	20
TTA-A2SH(G)-WA-20①-20②-③-④-⑤-⑥-⑦-⑧	X-axis			16	200	1~1,000	15
	Y-axis			16	200	1~1,000	11
TTA-A2(G)-WA-20①-20②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	200	1~800	20
	Y-axis			24 or equiv.	200	1~800	10

Legend: ①②XY-axis options ③Standard I/O slot ④⑤Expansion I/O slots ⑥I/O cable length ⑦Power supply cable specification ⑧Options

①②⑧ Options

Name	Option Code	Reference Page
Additional pillar for 20-15 and 20-20 types	AP	See P.50
Y-axis mounting position 90mm forward	F1	See P.50
Y-axis mounting position 180mm forward	F2	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	FT4	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Installation side plate (with hole)	PTH	See P.51
Installation side plate (without hole)	PTN	See P.51
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (φ12mm, rolled C5 or equiv.)	Ball screw (φ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	20kg	
Unit weight	24kg	

* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

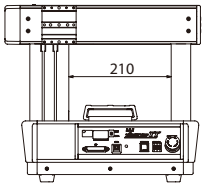
Dimensions

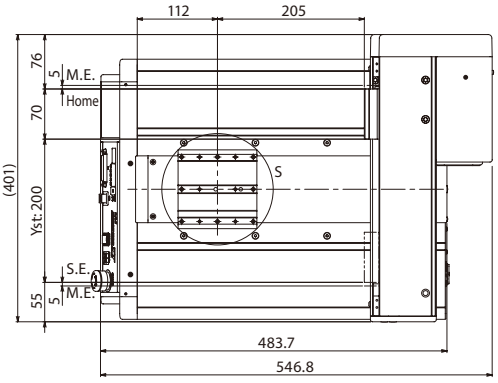
CAD drawings can be downloaded from our website.
www.intelligentactuator.com

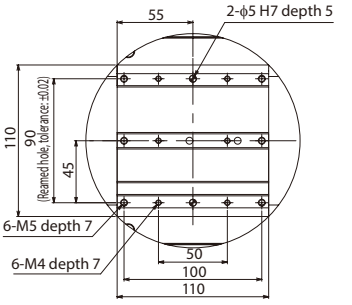
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

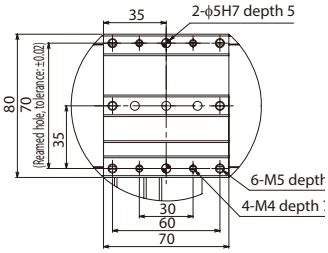
■ AP (Additional pillar option)
Dimensions





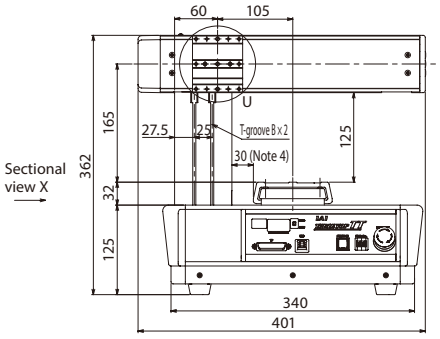


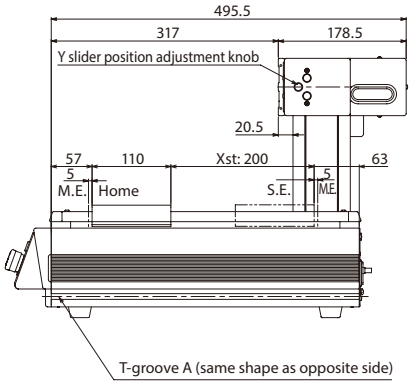
Detail view of S (X-axis slider details)

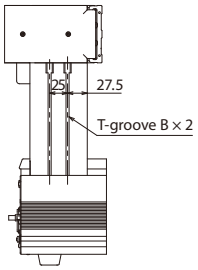


Detail view of U (Y-axis slider details)

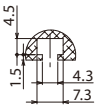
Sectional view X



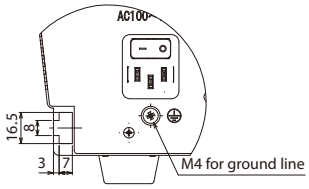




Sectional view X



T-groove B shape



T-groove A shape

TTA-A2S□(G)-30-30 Tabletop Robot, Gate Type 2-axis, XY-axis 300mm, AC Servo Motor

TTA-A2(G)-30-30 Tabletop Robot, Gate Type 2-axis, XY-axis 300mm, Stepper Motor

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
TTA	A2SL: 2-axis low lead spec. A2SLG: 2-axis low lead safety category spec. A2SH: 2-axis high lead spec. A2SHG: 2-axis high lead safety category spec. A2: 2-axis standard spec. A2G: 2-axis safety category spec.	WA: Battery-less Abs.	30:300mm		30:300mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A2SL(G)-WA-30①-30②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	300	1~600	30
	Y-axis			8	300	1~600	20
TTA-A2SH(G)-WA-30①-30②-③-④-⑤-⑥-⑦-⑧	X-axis			16	300	1~1,200	15
	Y-axis			16	300	1~1,200	11
TTA-A2(G)-WA-30①-30②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	300	1~800	20
	Y-axis			24 or equiv.	300	1~800	10

Legend: ①② XY-axis options ③ Standard I/O slot ④⑤ Expansion I/O slots ⑥ I/O cable length ⑦ Power supply cable specification ⑧ Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	**NP**
DeviceNet connection board	**DV**
CC-Link connection board	**CC**
PROFIBUS-DP connection board	**PR**
EtherNet/IP connection board	**EP**
EtherCAT connection board	**EC**
IA Net connection board	**IA**
RS232C connection board	**SE1**
RS485 connection board	**SE2**

①②⑧ Options

Name	Option Code	Reference Page
Y-axis mounting position 90mm forward	**F1**	See P.50
Y-axis mounting position 180mm forward	**F2**	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	**FT4**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Installation side plate (with hole)	**PTH**	See P.51
Installation side plate (without hole)	**PTN**	See P.51
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (ϕ12mm, rolled C5 or equiv.)	Ball screw (ϕ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	30kg	
Unit weight	31kg	

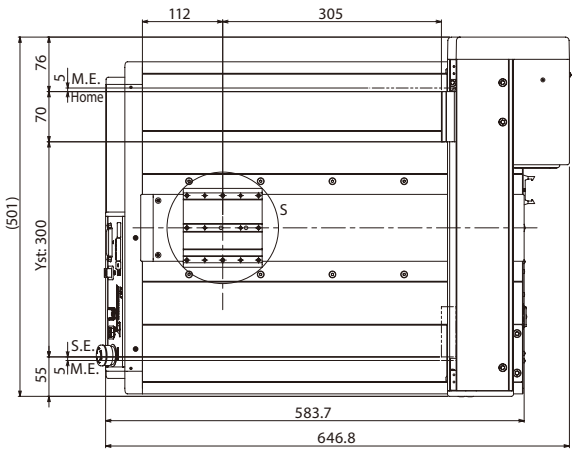
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

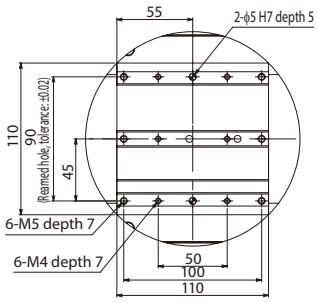
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

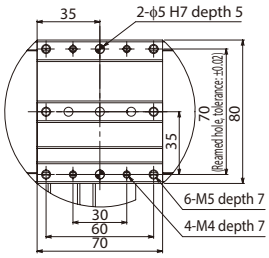
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

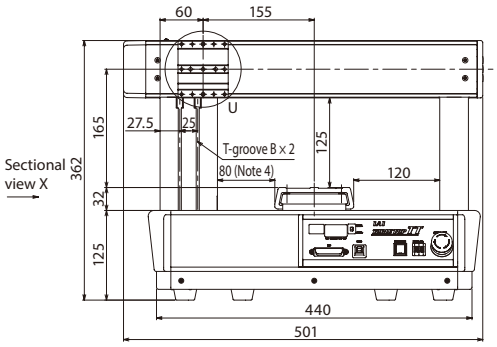


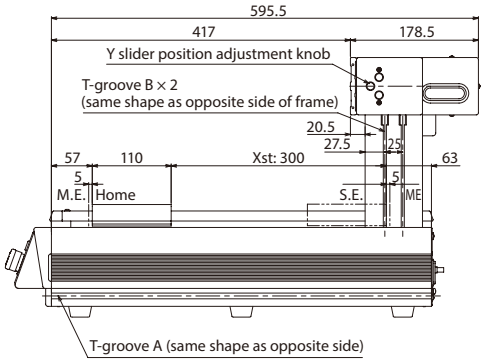


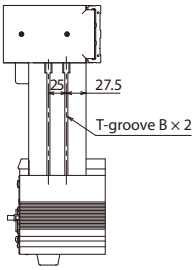
Detail view of S (X-axis slider details)



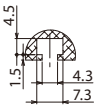
Detail view of U (Y-axis slider details)



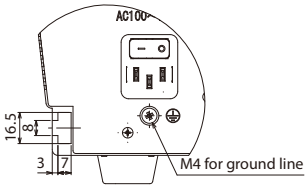




Sectional view X



T-groove B shape



T-groove A shape

TTA-A2S□(G)-40-40 Tabletop Robot, Gate Type 2-axis, XY-axis 400mm, AC Servo Motor

TTA-A2(G)-40-40 Tabletop Robot, Gate Type 2-axis, XY-axis 400mm, Stepper Motor

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
A2SL: 2-axis low lead spec. A2SLG: 2-axis low lead safety category spec. A2SH: 2-axis high lead spec. A2SHG: 2-axis high lead safety category spec. A2: 2-axis standard spec. A2G: 2-axis safety category spec.		WA: Battery-less Abs.	40:400mm	40:400mm NM: Non-motor end specification			NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A2SL(G)-WA-40①-40②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	400	1~600	30
	Y-axis			8	400	1~600	20
TTA-A2SH(G)-WA-40①-40②-③-④-⑤-⑥-⑦-⑧	X-axis			16	400	1~1,200	15
	Y-axis			16	400	1~1,200	11
TTA-A2(G)-WA-40①-40②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	400	1~800	20
	Y-axis			24 or equiv.	400	1~800	10

Legend: ①② XY-axis options ③ Standard I/O slot ④⑤ Expansion I/O slots ⑥ I/O cable length ⑦ Power supply cable specification ⑧ Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	**NP**
DeviceNet connection board	**DV**
CC-Link connection board	**CC**
PROFIBUS-DP connection board	**PR**
EtherNet/IP connection board	**EP**
EtherCAT connection board	**EC**
IA Net connection board	**IA**
RS232C connection board	**SE1**
RS485 connection board	**SE2**

①②⑧ Options

Name	Option Code	Reference Page
Y-axis mounting position 90mm forward	**F1**	See P.50
Y-axis mounting position 180mm forward	**F2**	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	**FT6**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Installation side plate (with hole)	**PTH**	See P.51
Installation side plate (without hole)	**PTN**	See P.51
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (φ12mm, rolled C5 or equiv.)	Ball screw (φ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	40kg	
Unit weight	37kg	

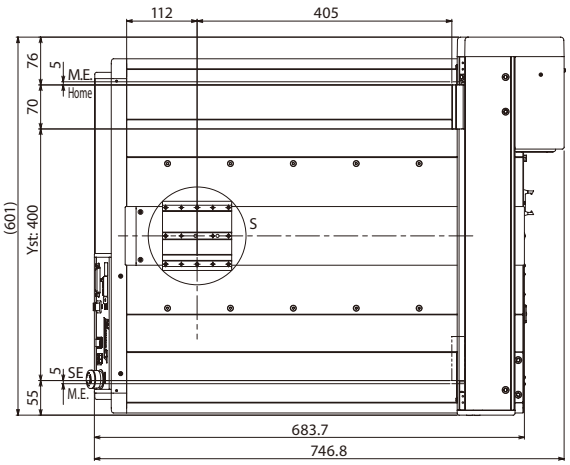
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

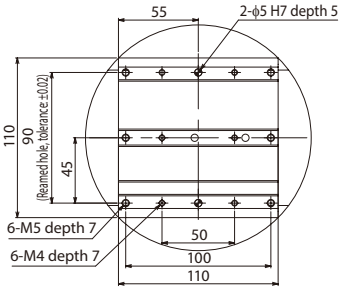
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

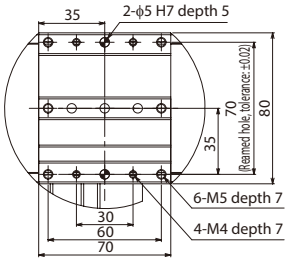
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

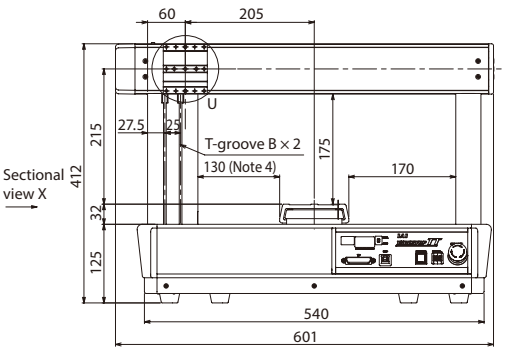


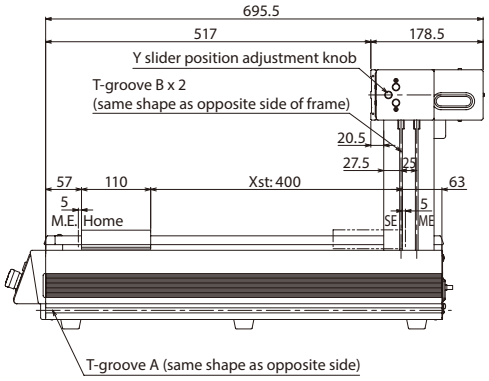


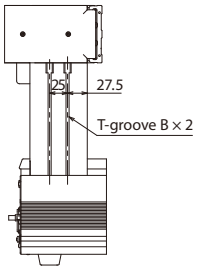
Detail view of S (X-axis slider details)



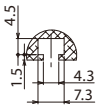
Detail view of U (Y-axis slider details)



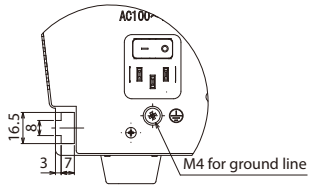




Sectional view X



T-groove B shape



T-groove A shape

TTA-A2S□(G)-50-50 Tabletop Robot, Gate Type 2-axis, XY-axis 500mm, AC Servo Motor

TTA-A2(G)-50-50 Tabletop Robot, Gate Type 2-axis, XY-axis 500mm, Stepper Motor

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
A2SL: 2-axis low lead spec. A2SLG: 2-axis low lead safety category spec. A2SH: 2-axis high lead spec. A2SHG: 2-axis high lead safety category spec. A2: 2-axis standard spec. A2G: 2-axis safety category spec.		WA: Battery-less Abs.	50:500mm		50:500mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A2SL(G)-WA-50①-50②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	500	1~600	30
	Y-axis			8	500	1~600	20
TTA-A2SH(G)-WA-50①-50②-③-④-⑤-⑥-⑦-⑧	X-axis			16	500	1~1,200	15
	Y-axis			16	500	1~1,200	11
TTA-A2(G)-WA-50①-50②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	500	1~800	20
	Y-axis			24 or equiv.	500	1~800	10

Legend: ①②XY-axis options ③Standard I/O slot ④⑤Expansion I/O slots ⑥I/O cable length ⑦Power supply cable specification ⑧Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

①②⑧ Options

Name	Option Code	Reference Page
Y-axis mounting position 90mm forward	F1	See P.50
Y-axis mounting position 180mm forward	F2	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	FT6	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Installation side plate (with hole)	PTH	See P.51
Installation side plate (without hole)	PTN	See P.51
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (ϕ12mm, rolled C5 or equiv.)	Ball screw (ϕ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	50kg	
Unit weight	44kg	

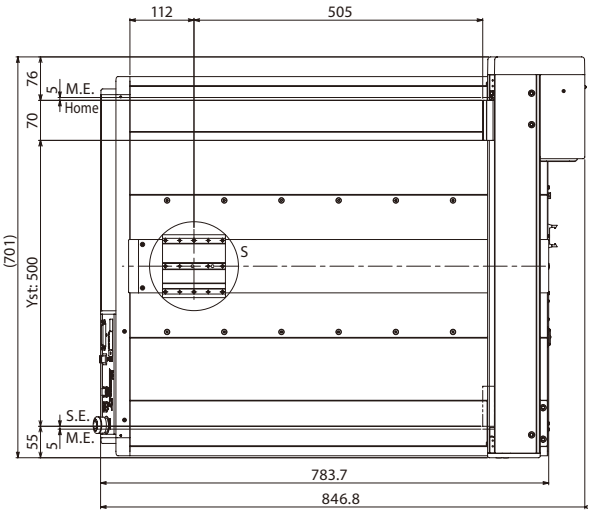
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

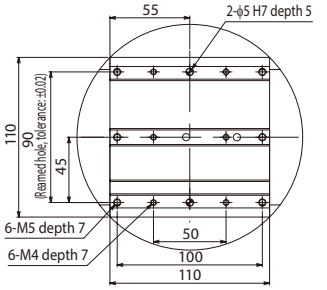
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

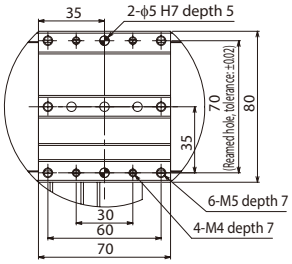
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

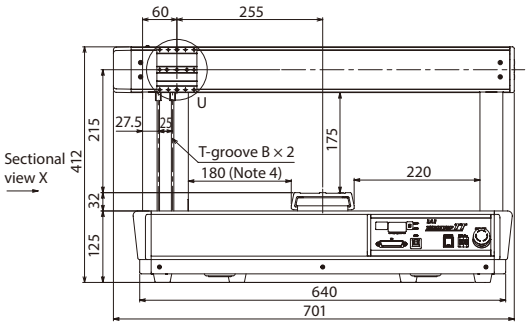


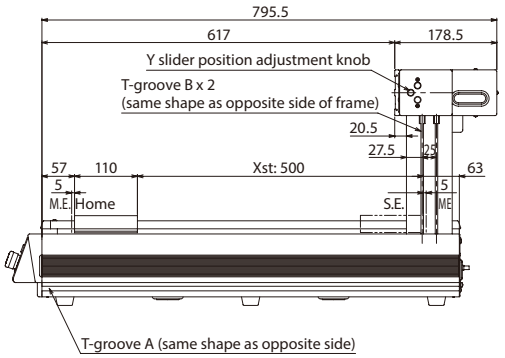


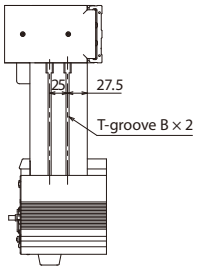
Detail view of S (X-axis slider details)



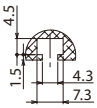
Detail view of U (Y-axis slider details)



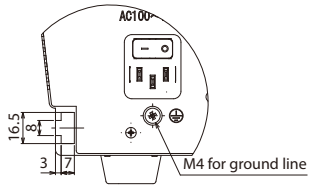




Sectional view X



T-groove B shape



T-groove A shape

TTA-A3S□(G)-20-20 Tabletop Robot, Gate Type 3-axis, XY-axis 200mm, Z-axis 100/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
A3SL: 3-axis low lead spec. A3SLG: 3-axis low lead safety category spec. A3SH: 3-axis high lead spec. A3SHG: 3-axis high lead safety category spec. A3: 3-axis standard spec. A3G: 3-axis safety category spec.		WA: Battery-less Abs.	20:200mm		20:200mm NM: Non-motor end specification		10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

*Only cantilever type is available for 20-20 model.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A3SL(G)-WA-20①-20②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	200	1~600	30
	Y-axis			8	200	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-A3SH(G)-WA-20①-20②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			16	200	1~1,000	15
	Y-axis			16	200	1~800	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3(G)-WA-20①-20②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	200	1~800	20
	Y-axis			24 or equiv.	200	1~800	-
	Z-axis			12	100/150	1~400	6

Legend: ①②XY-axis options ③Z-axis stroke ④Z-axis option ⑤Standard I/O slot ⑥⑦Expansion I/O slots ⑧I/O cable length ⑨Power supply cable specification ⑩Options

⑥⑦ Expansion I/O Slot

Name	Option Code	Name	Option Code
Expansion PIO board (NPN spec.)	**NP**	EtherCAT connection board	**EC**
DeviceNet connection board	**DV**	IA Net connection board	**IA**
CC-Link connection board	**CC**	RS232C connection board	**SE1**
PROFIBUS-DP connection board	**PR**	RS485 connection board	**SE2**
EtherNet/IP connection board	**EP**		

①②④⑩ Options

Name	Option Code	Reference Page
Additional pillar for 20-15 and 20-20 types	**AP**	See P.50
Brake (Standard equipment)	**B**	See P.50
Y-axis mounting position 90mm forward	**F1**	See P.50
Y-axis mounting position 180mm forward	**F2**	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	**FT4**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Installation side plate (with hole)	**PTH**	See P.51
Installation side plate (without hole)	**PTN**	See P.51
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	20kg	
Unit weight	27.3kg	

* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

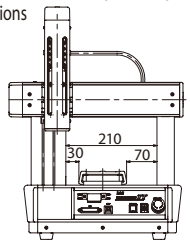
Dimensions

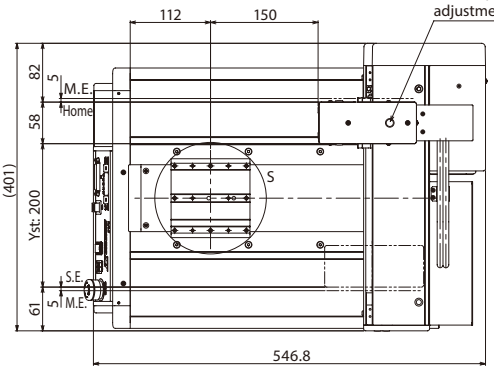
CAD drawings can be downloaded from our website.
www.intelligentactuator.com

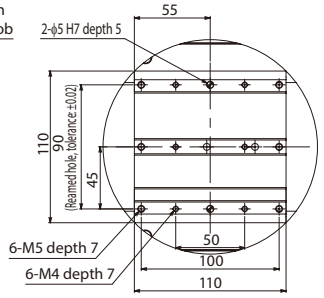
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

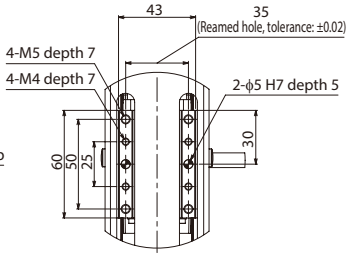
■ AP (Additional pillar option)
Dimensions





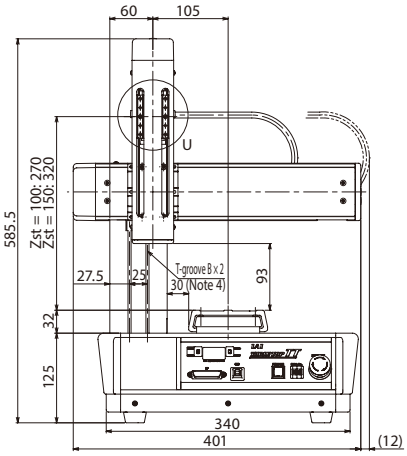


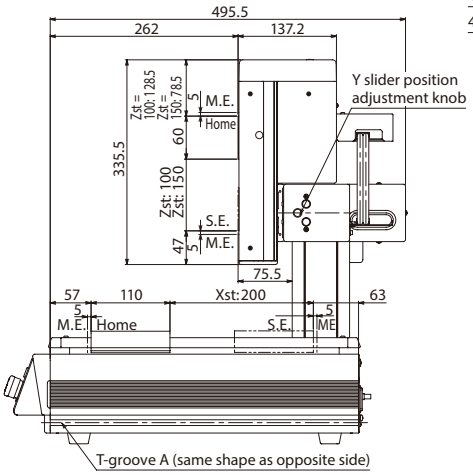
Detail view of S (X-axis slider details)

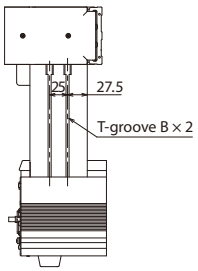


Detail view of U (Z-axis slider details)

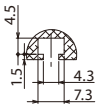
Sectional view X



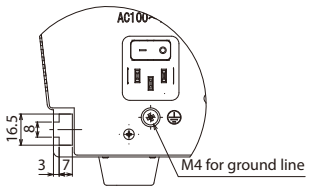




Sectional view X



T-groove B shape



T-groove A shape

TTA-A3S□(G)-30-30 Tabletop Robot, Gate Type 3-axis, XY-axis 300mm, Z-axis 100/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
A3SL: 3-axis low lead spec. A3SLG: 3-axis low lead safety category spec. A3SH: 3-axis high lead spec. A3SHG: 3-axis high lead safety category spec. A3: 3-axis standard spec. A3G: 3-axis safety category spec.		WA: Battery-less Abs.	30:300mm		30:300mm NM: Non-motor end specification		10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A3SL(G)-WA-30①-30②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	300	1~600	30
	Y-axis			8	300	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-A3SH(G)-WA-30①-30②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			16	300	1~1,200	15
	Y-axis			16	300	1~1,000	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3(G)-WA-30①-30②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	300	1~800	20
	Y-axis			24 or equiv.	300	1~800	-
	Z-axis			12	100/150	1~400	6

Legend: ① ② XY-axis options ③ Z-axis stroke ④ Z-axis option ⑤ Standard I/O slot ⑥ ⑦ Expansion I/O slots ⑧ I/O cable length ⑨ Power supply cable specification ⑩ Options

⑥⑦ Expansion I/O Slot

Name	Option Code	Name	Option Code
Expansion PIO board (NPN spec.)	**NP**	EtherCAT connection board	**EC**
DeviceNet connection board	**DV**	IA Net connection board	**IA**
CC-Link connection board	**CC**	RS232C connection board	**SE1**
PROFIBUS-DP connection board	**PR**	RS485 connection board	**SE2**
EtherNet/IP connection board	**EP**		

①②④⑩ Options

Name	Option Code	Reference Page
Brake (Standard equipment)	**B**	See P.50
Y-axis mounting position 90mm forward	**F1**	See P.50
Y-axis mounting position 180mm forward	**F2**	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	**FT4**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Installation side plate (with hole)	**PTH**	See P.51
Installation side plate (without hole)	**PTN**	See P.51
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	30kg	
Unit weight	34.3kg	

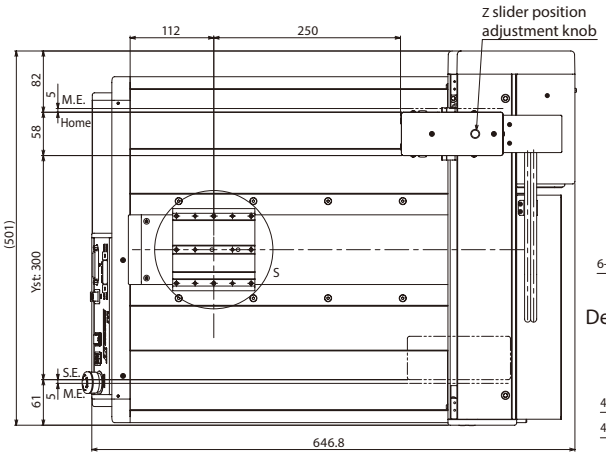
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

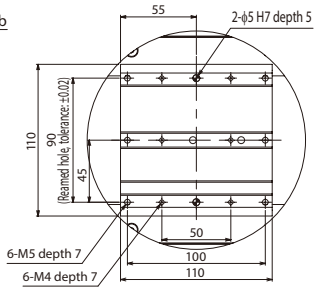
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

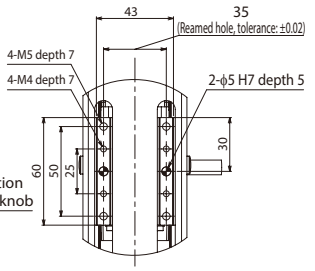
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

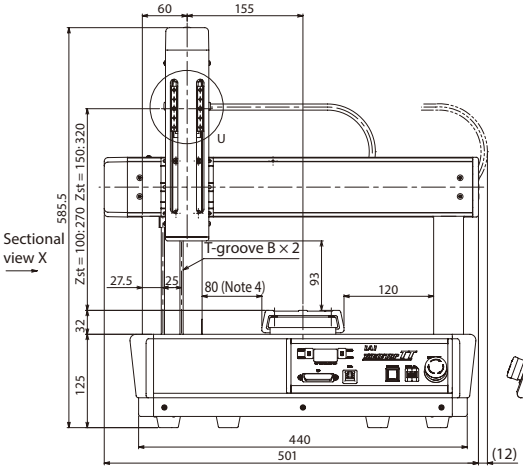


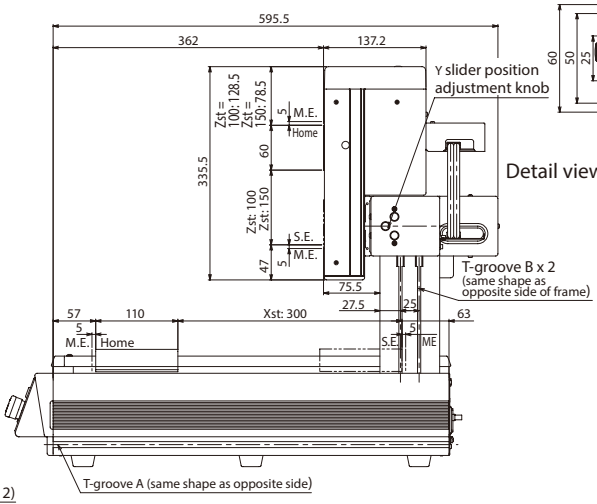


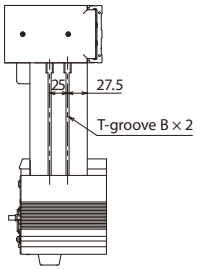
Detail view of S (X-axis slider details)



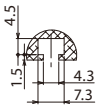
Detail view of U (Z-axis slider details)



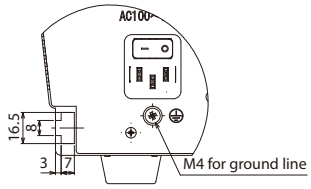




Sectional view X



T-groove B shape



T-groove A shape

TTA-A3S□(G)-40-40 Tabletop Robot, Gate Type 3-axis, XY-axis 400mm, Z-axis 100/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
TTA	A3SL: 3-axis low lead spec. A3SLG: 3-axis low lead safety category spec. A3SH: 3-axis high lead spec. A3SHG: 3-axis high lead safety category spec. A3: 3-axis standard spec. A3G: 3-axis safety category spec.	WA: Battery-less Abs.	40:400mm		40:400mm NM: Non-motor end specification		10:100mm 15:150mm	B: Brake (Standard) NM: Non-motor end specification	NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A3SL(G)-WA-40①-40②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	400	1~600	30
	Y-axis			8	400	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-A3SH(G)-WA-40①-40②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			16	400	1~1,200	15
	Y-axis			16	400	1~1,200	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3(G)-WA-40①-40②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	400	1~800	20
	Y-axis			24 or equiv.	400	1~800	-
	Z-axis			12	100/150	1~400	6

Legend: ①②XY-axis options ③Z-axis stroke ④Z-axis option ⑤Standard I/O slot ⑥⑦Expansion I/O slots ⑧I/O cable length ⑨Power supply cable specification ⑩Options

⑥⑦ Expansion I/O Slot

Name	Option Code	Name	Option Code
Expansion PIO board (NPN spec.)	**NP**	EtherCAT connection board	**EC**
DeviceNet connection board	**DV**	IA Net connection board	**IA**
CC-Link connection board	**CC**	RS232C connection board	**SE1**
PROFIBUS-DP connection board	**PR**	RS485 connection board	**SE2**
EtherNet/IP connection board	**EP**		

①②④⑩ Options

Name	Option Code	Reference Page
Brake (Standard equipment)	**B**	See P.50
Y-axis mounting position 90mm forward	**F1**	See P.50
Y-axis mounting position 180mm forward	**F2**	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	**FT6**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Installation side plate (with hole)	**PTH**	See P.51
Installation side plate (without hole)	**PTN**	See P.51
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	40kg	
Unit weight	40.3kg	

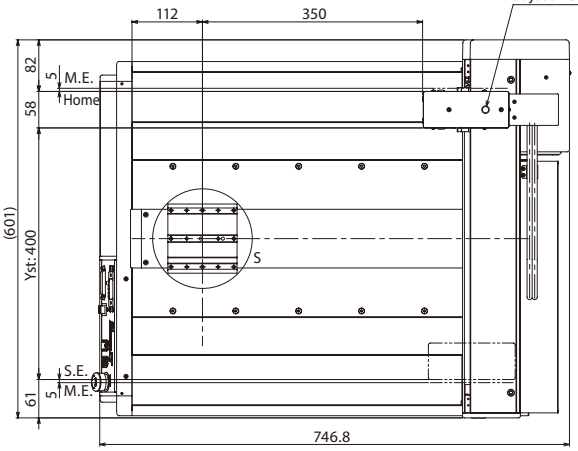
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

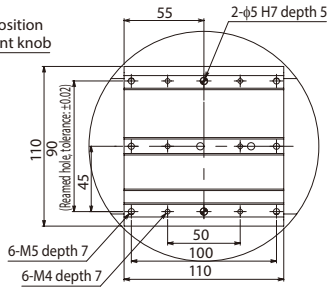
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

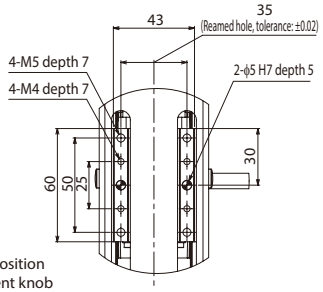
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

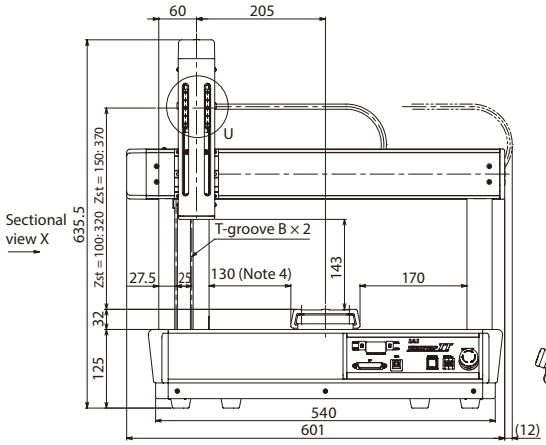


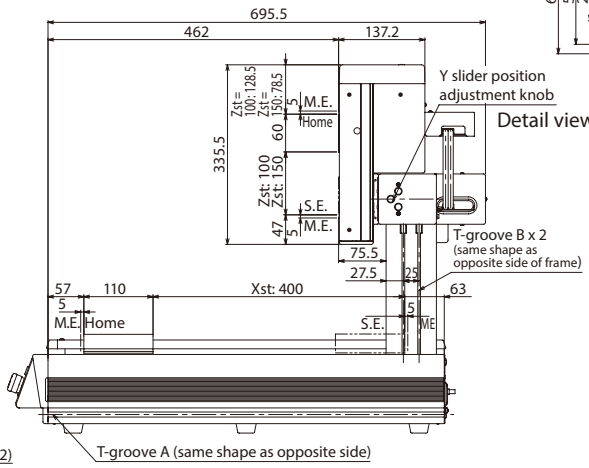


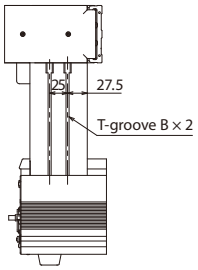
Detail view of S (X-axis slider details)



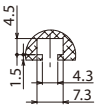
Detail view of U (Z-axis slider details)



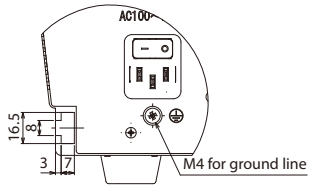




Sectional view X



T-groove B shape



T-groove A shape

TTA-A3S□(G)-50-50 Tabletop Robot, Gate Type 3-axis, XY-axis 500mm, Z-axis 100/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 50 □ — 50 □ - □ □ — □ — □ — □ — □ — □ — □ — □ — □

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 Spec.	Options
A3SL: 3-axis low lead spec. A3SLG: 3-axis low lead safety category spec. A3SH: 3-axis high lead spec. A3SHG: 3-axis high lead safety category spec. A3: 3-axis standard spec. A3G: 3-axis safety category spec.		WA: Battery-less Abs.	50:500mm		50:500mm NM: Non-motor end specification		10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-A3SL(G)-WA-50①-50②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	500	1~600	30
	Y-axis			8	500	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-A3SH(G)-WA-50①-50②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			16	500	1~1,200	15
	Y-axis			16	500	1~1,200	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3(G)-WA-50①-50②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	500	1~800	20
	Y-axis			24 or equiv.	500	1~800	-
	Z-axis			12	100/150	1~400	6

Legend: ① ② XY-axis options ③ Z-axis stroke ④ Z-axis option ⑤ Standard I/O slot ⑥ ⑦ Expansion I/O slots ⑧ I/O cable length ⑨ Power supply cable specification ⑩ Options

⑥⑦ Expansion I/O Slot

Name	Option Code	Name	Option Code
Expansion PIO board (NPN spec.)	**NP**	EtherCAT connection board	**EC**
DeviceNet connection board	**DV**	IA Net connection board	**IA**
CC-Link connection board	**CC**	RS232C connection board	**SE1**
PROFIBUS-DP connection board	**PR**	RS485 connection board	**SE2**
EtherNet/IP connection board	**EP**		

①②④⑩ Options

Name	Option Code	Reference Page
Brake (Standard equipment)	**B**	See P.50
Y-axis mounting position 90mm forward	**F1**	See P.50
Y-axis mounting position 180mm forward	**F2**	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	**FT6**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Installation side plate (with hole)	**PTH**	See P.51
Installation side plate (without hole)	**PTN**	See P.51
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*	50kg	
Unit weight	47.3kg	

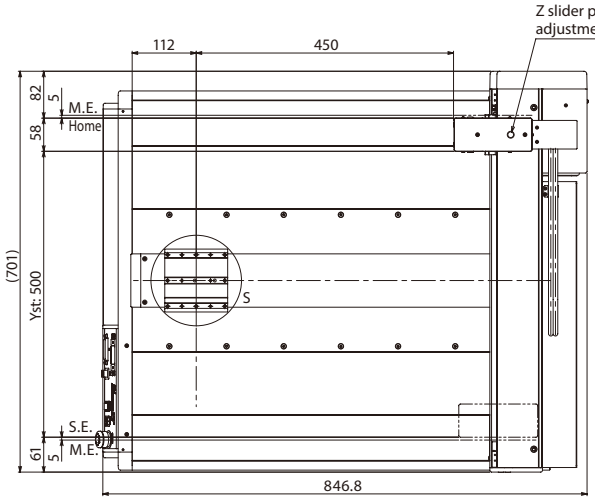
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

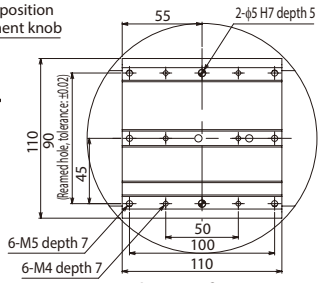
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

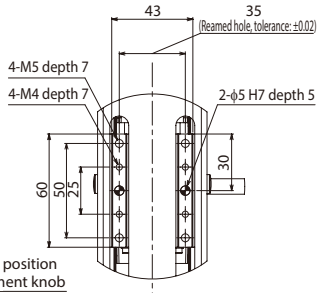
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

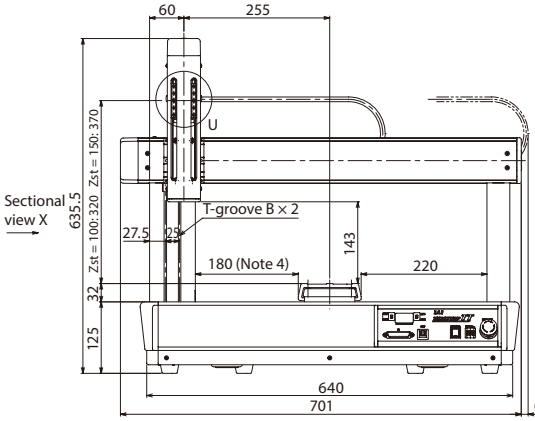


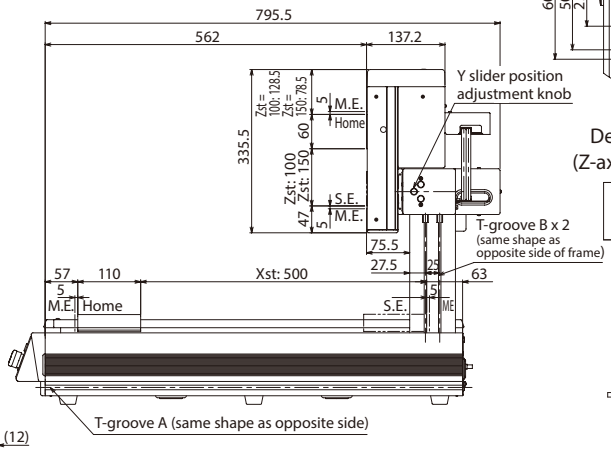


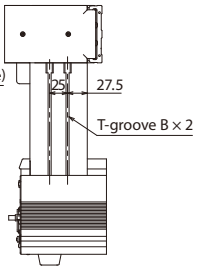
Detail view of S
(X-axis slider details)



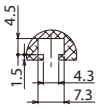
Detail view of U
(Z-axis slider details)



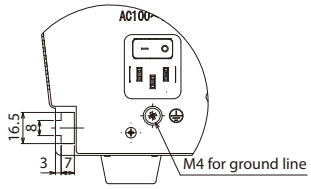




Sectional view X



T-groove B shape



T-groove A shape

TTA-A4S□(G)-□-□ Tabletop Robot, Gate Type 4-axis, AC Servo Motor

TTA-A4(G)-□-□ Tabletop Robot, Gate Type 4-axis, Stepper Motor

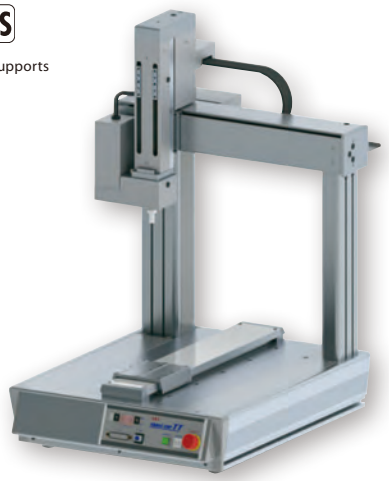
■ Model Spec. Items

TTA - □ — WA - □ □ - □ □ - □ □ - □ □ - □ □ - □ □ — □ — □ — □ — □ — □ — □

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 Spec.	Options
TTA	A4SL: 4-axis ZR type, low lead spec. A4SLG: 4-axis ZR type, low lead Safety category specification A4SH: 4-axis ZR type, high lead spec. A4SHG: 4-axis ZR type, high lead Safety category specification A4: 4-axis ZR type, standard spec. A4G: 4-axis ZR type, safety category spec.	WA: Battery-less Abs.	20: 200mm 30: 300mm 40: 400mm 50: 500mm	20: 200mm 30: 300mm 40: 400mm 50: 500mm NM: Non-motor end specification	20: 200mm 30: 300mm 40: 400mm 50: 500mm NM: Non-motor end specification	B: Brake (Standard) CO: With cover NM: Non-motor end spec.	10: 100mm 15: 150mm	B: Brake (Standard) CO: With cover NM: Non-motor end spec.	18: ±180° 36L: ±360° (with home limit switch)	ML: Motor side-mounted to the left MR: Motor side-mounted to the right *One of these must be selected.	NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.	Refer to the expansion I/O slot table below. * Enter [E] if unused.	0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57) Please note that depending on the load moment of inertia, the rotational axis may not reach the maximum speed. (See P.58 and 60)

(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)

(Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg)(Note 1)	Max. Load Inertia Moment (kg-m²)
TTA-A4SL(G)-WA-{20/30/40/50}□-{20/30/40/50}□	X-axis	8	200~500	1~600	30	-
	Y-axis	8	200~500	1~600	-	-
	Z-axis	2.14 or equiv.	100/150	1~170	15	-
	R-axis	-	18: ±180°, 36L: ±360°	1,500deg./s		0.01
TTA-A4SH(G)-WA-{20/30/40/50}□-{20/30/40/50}□	X-axis	16	200	1,000	15	-
			300~500	1,200		
	Y-axis	16	200	700	-	-
			300	900		
			400	1,050		
			500	1,200		
	Z-axis	5 or equiv.	100/150	1~400	7	-
	R-axis	-	18: ±180°, 36L: ±360°	1,500deg./s		0.01
TTA-A4(G)-WA-{20/30/40/50}□-{20/30/40/50}□	X-axis	24 or equiv.	200~500	1~800	20	-
	Y-axis	24 or equiv.	200~500	1~800	-	-
	Z-axis	12	100/150	1~400	6	-
	R-axis	-	18: ±180°, 36L: ±360°	1,000deg./s		0.01

Options

Name	Option Code	Reference Page
Additional pillar for 20-15 and 20-20 types	AP	See P.50
Brake (Standard equipment)	B	See P.50
Z-axis cover included	CO	See P.50
Y-axis mounting position 90mm forward	F1	See P.50
Y-axis mounting position 180mm forward	F2	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	FT4	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	FT6	See P.50
ZR-axis mounting position 64.5mm forward	FZ	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Motor side-mounted to the left	ML	See P.51
Motor side-mounted to the right	MR	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Installation side plate (with hole)	PTH	See P.51
Installation side plate (without hole)	PTN	See P.51
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	SLTO	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Expansion I/O Slot

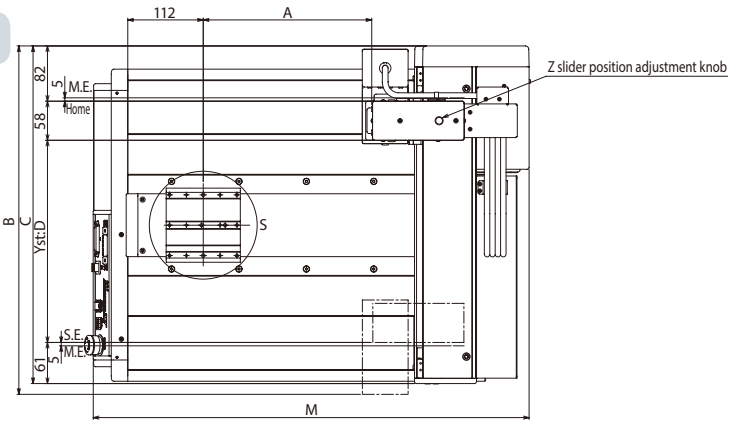
Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

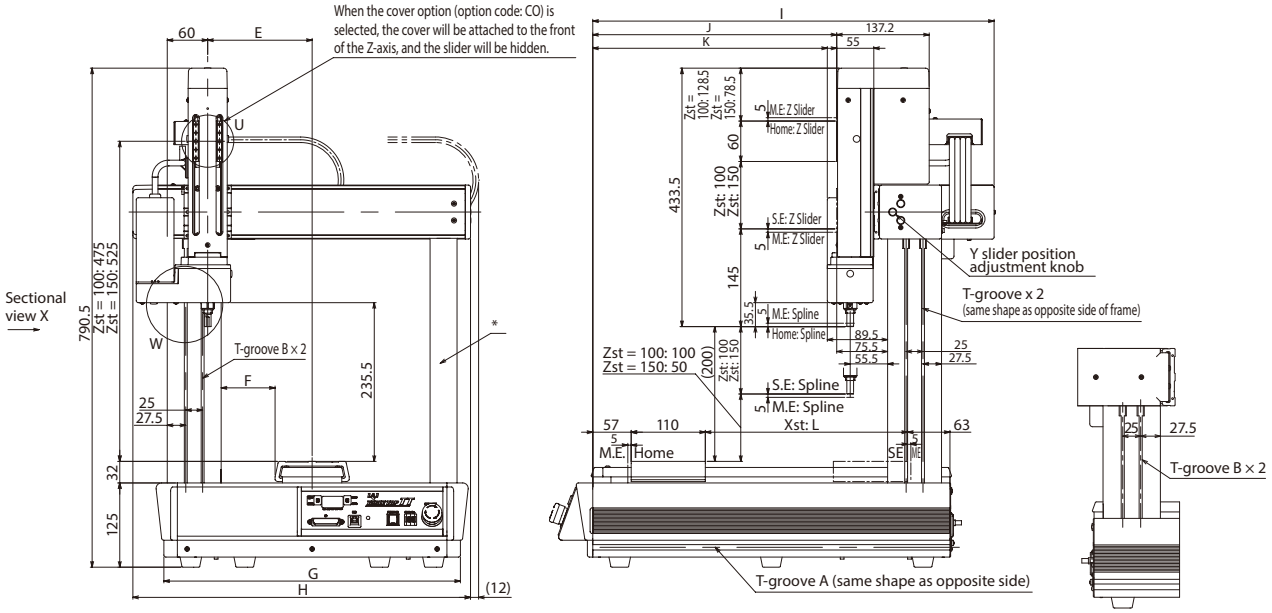
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

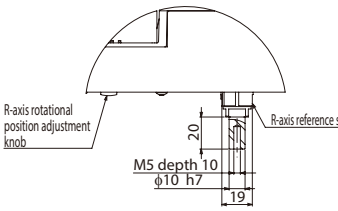
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

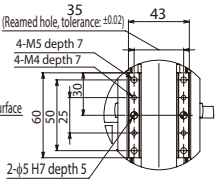




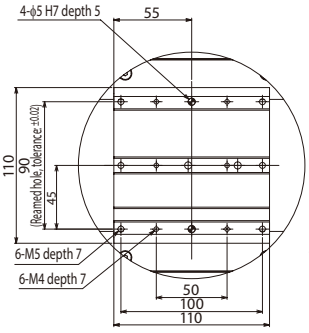
*Not available for A4-20-20 model.



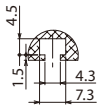
Detail view of W (R spline tip details)



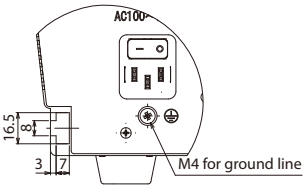
Detail view of U
(Z-axis slider details)



Detail view of S
(X-axis slider details)



T-groove B shape



T-groove A shape

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, Rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm, R-axis: ±0.008°	±0.01mm, R-axis: ±0.01°
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less, R-axis: 0.06° or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less, R-axis: 0.06° or less	X, Y, Z-axis: 0.05mm or less R-axis: 0.06° or less
Dynamic allowable moment(Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m ZR-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m *1	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table*2	20-20: 20kg, 30-30: 30kg, 40-40: 40kg, 50-50: 50kg	
Unit weight	20-20: 29.3kg 30-30: 36.3kg 40-40: 42.3kg 50-50: 49.3kg	20-20: 28.3kg 30-30: 35.3kg 40-40: 41.3kg 50-50: 48.3kg

	20-20	30-30	40-40	50-50
A	150	250	350	450
B	421.2	521.2	621.2	721.2
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

* Reference for overhang load length / R-axis: r=100mm or less
*1 Ma and Mb for ZR-axis are the total of those for the Z-axis and R-axis. Mc is the value of the Z-axis only.
*2 The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

TTA-C2S□(G)-20-15 Tabletop Robot, Cantilever Type 2-axis, X-axis 200mm, Y-axis 150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
C2SL: 2-axis low lead spec. C2SLG: 2-axis low lead safety category spec. C2SH: 2-axis high lead spec. C2SHG: 2-axis high lead safety category spec. C2: 2-axis standard spec. C2G: 2-axis safety category spec.		WA: Battery-less Abs.	20:200mm		15:150mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C2SL(G)-WA-20①-15②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	200	1~600	-
	Y-axis			8	150	1~600	20
TTA-C2SH(G)-WA-20①-15②-③-④-⑤-⑥-⑦-⑧	X-axis			13.3 or equiv.	200	1~700	-
	Y-axis			13.3 or equiv.	150	1~600	15
TTA-C2(G)-WA-20①-15②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	200	1~600	-
	Y-axis			24 or equiv.	150	1~540	10

Legend: ①② XY-axis options ③ Standard I/O slot ④⑤ Expansion I/O slots ⑥ I/O cable length ⑦ Power supply cable specification ⑧ Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	**NP**
DeviceNet connection board	**DV**
CC-Link connection board	**CC**
PROFIBUS-DP connection board	**PR**
EtherNet/IP connection board	**EP**
EtherCAT connection board	**EC**
IA Net connection board	**IA**
RS232C connection board	**SE1**
RS485 connection board	**SE2**

①②⑧ Options

Name	Option Code	Reference Page
Additional pillar for 20-15 and 20-20 types *1	**AP**	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	**FT4**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.
*1 Additional pillar for 20-15/20-20 types (AP) can only be selected for the stepper motor specification.
AC servo motor specification is equipped with a support pillar as standard.

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (ϕ12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ϕ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	40kg	
Unit weight	25kg	

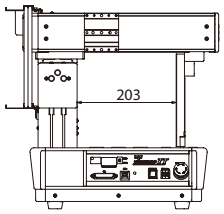
Dimensions

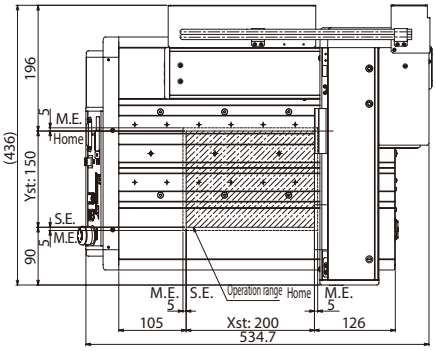
CAD drawings can be downloaded from our website.
www.intelligentactuator.com

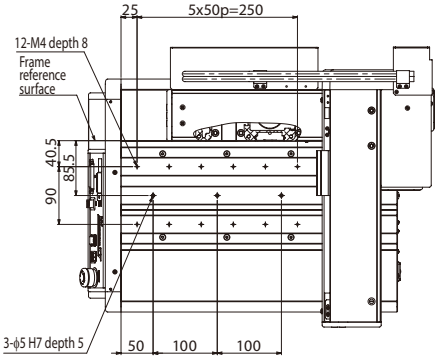
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

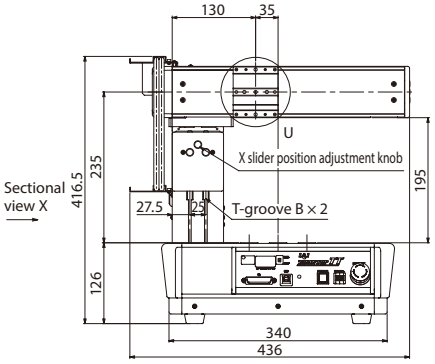
■ Dimensions for AC servo motor type and stepper motor type with the additional pillar option (AP)

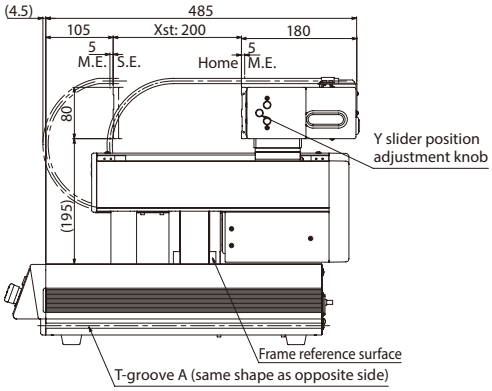


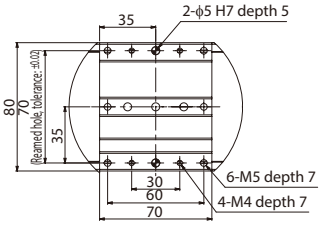




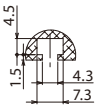
Top base hole layout



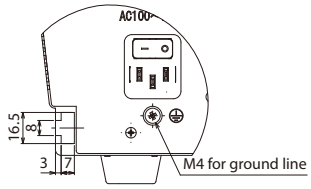




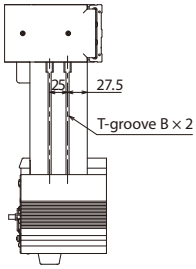
Detail view of U (Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C2S□(G)-30-25 Tabletop Robot, Cantilever Type 2-axis, X-axis 300mm, Y-axis 250mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
C2SL: 2-axis low lead spec. C2SLG: 2-axis low lead safety category spec. C2SH: 2-axis high lead spec. C2SHG: 2-axis high lead safety category spec. C2: 2-axis standard spec. C2G: 2-axis safety category spec.		WA: Battery-less Abs.	30:300mm		25:250mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C2SL(G)-WA-30①-25②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	300	1~600	-
	Y-axis			8	250	1~600	20
TTA-C2SH(G)-WA-30①-25②-③-④-⑤-⑥-⑦-⑧	X-axis			13.3 or equiv.	300	1~900	-
	Y-axis			13.3 or equiv.	250	1~800	15
TTA-C2(G)-WA-30①-25②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	300	1~700	-
	Y-axis			24 or equiv.	250	1~640	10

Legend: ①②XY-axis options ③Standard I/O slot ④⑤Expansion I/O slots ⑥I/O cable length ⑦Power supply cable specification ⑧Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

①②⑧ Options

Name	Option Code	Reference Page
Foot bracket included specification (4 pcs) X-axis stroke 20/30	FT4	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

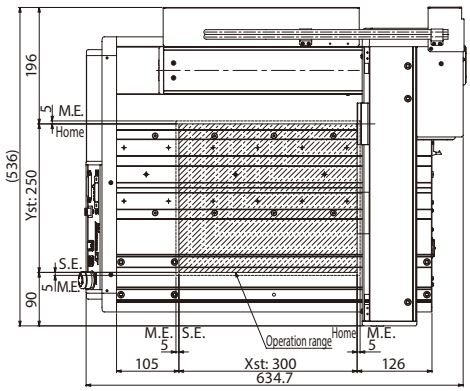
Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (ϕ12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ϕ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	60kg	
Unit weight	33kg	

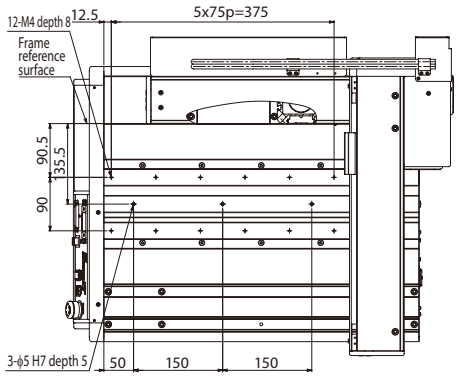
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

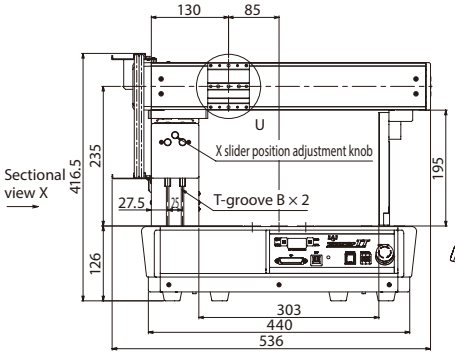
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

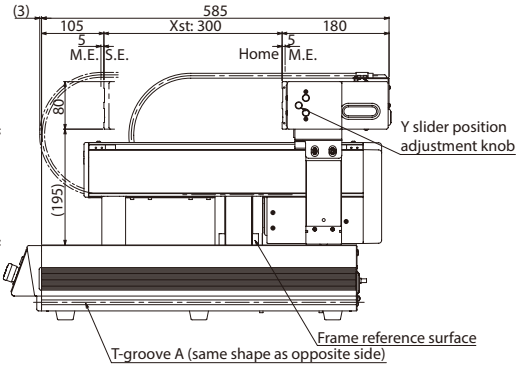
S.E: Stroke end
M.E: Mechanical end

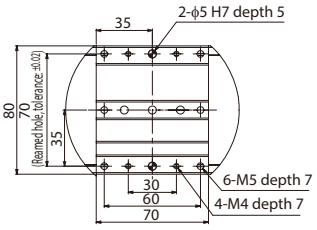




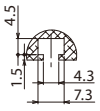
Top base hole layout



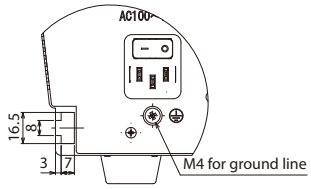




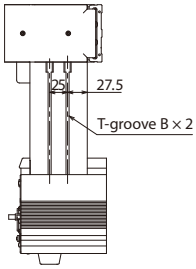
Detail view of U (Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C2S□(G)-40-35 Tabletop Robot, Cantilever Type 2-axis, X-axis 400mm, Y-axis 350mm, AC Servo Motor

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

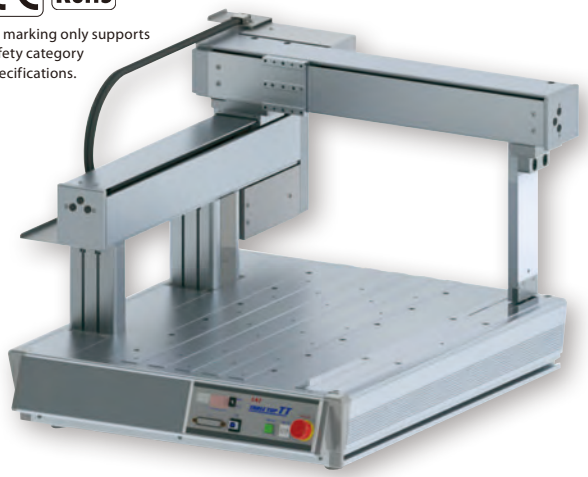
■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
C2SL: 2-axis low lead spec. C2SLG: 2-axis low lead safety category spec. C2SH: 2-axis high lead spec. C2SHG: 2-axis high lead safety category spec. C2: 2-axis standard spec. C2G: 2-axis safety category spec.		WA: Battery-less Abs.	40:400mm		35:350mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C2SL(G)-WA-40①-35②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	400	1~600	-
	Y-axis			8	350	1~600	20
TTA-C2SH(G)-WA-40①-35②-③-④-⑤-⑥-⑦-⑧	X-axis			13.3 or equiv.	400	1~1,000	-
	Y-axis			13.3 or equiv.	350	1~1,000	15
TTA-C2(G)-WA-40①-35②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	400	1~800	-
	Y-axis			24 or equiv.	350	1~800	10

Legend: ①②XY-axis options ③Standard I/O slot ④⑤Expansion I/O slots ⑥I/O cable length ⑦Power supply cable specification ⑧Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

①②⑧ Options

Name	Option Code	Reference Page
Foot bracket included specification (6 pcs) X-axis stroke 40/50	FT6	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

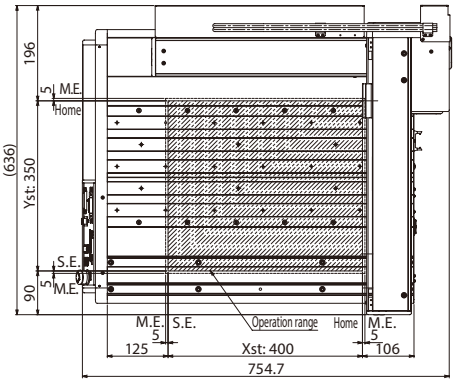
Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (ϕ12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ϕ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	80kg	
Unit weight	40kg	

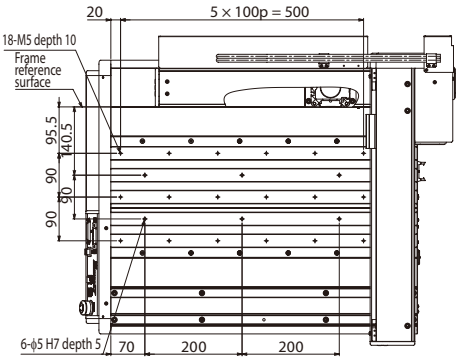
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

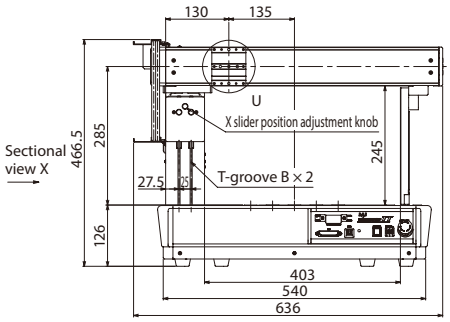
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

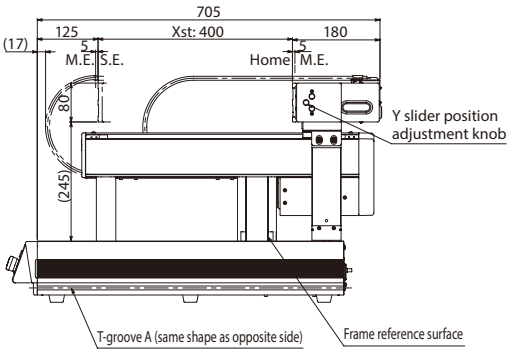
S.E: Stroke end
M.E: Mechanical end

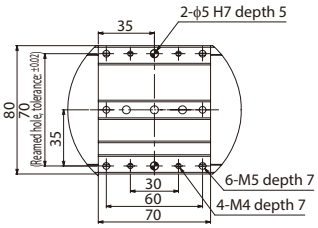




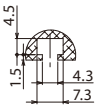
Top base hole layout



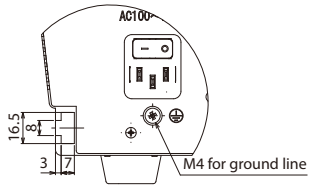




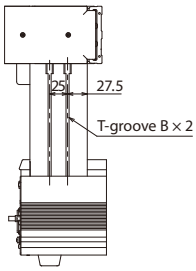
Detail view of U (Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C2S□(G)-50-45 Tabletop Robot, Cantilever Type 2-axis, X-axis 500mm, Y-axis 450mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
C2SL: 2-axis low lead spec. C2SLG: 2-axis low lead safety category spec. C2SH: 2-axis high lead spec. C2SHG: 2-axis high lead safety category spec. C2: 2-axis standard spec. C2G: 2-axis safety category spec.		WA: Battery-less Abs.	50:500mm		45:450mm NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C2SL(G)-WA-50①-45②-③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	500	1~600	-
	Y-axis			8	450	1~600	20
TTA-C2SH(G)-WA-50①-45②-③-④-⑤-⑥-⑦-⑧	X-axis			13.3 or equiv.	500	1~1,000	-
	Y-axis			13.3 or equiv.	450	1~1,000	15
TTA-C2(G)-WA-50①-45②-③-④-⑤-⑥-⑦-⑧	X-axis		Stepper motor	24 or equiv.	500	1~800	-
	Y-axis			24 or equiv.	450	1~800	10

Legend: ①②XY-axis options ③Standard I/O slot ④⑤Expansion I/O slots ⑥I/O cable length ⑦Power supply cable specification ⑧Options

④⑤ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	**NP**
DeviceNet connection board	**DV**
CC-Link connection board	**CC**
PROFIBUS-DP connection board	**PR**
EtherNet/IP connection board	**EP**
EtherCAT connection board	**EC**
IA Net connection board	**IA**
RS232C connection board	**SE1**
RS485 connection board	**SE2**

①②⑧ Options

Name	Option Code	Reference Page
Foot bracket included specification (6 pcs) X-axis stroke 40/50	**FT6**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

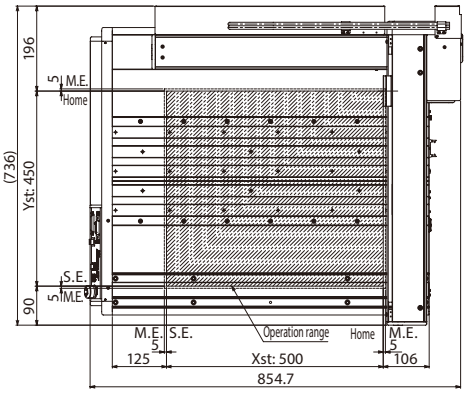
Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (ϕ12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ϕ12mm, rolled C10) 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead: 0.025mm or less High lead: 0.04mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	100kg	
Unit weight	47kg	

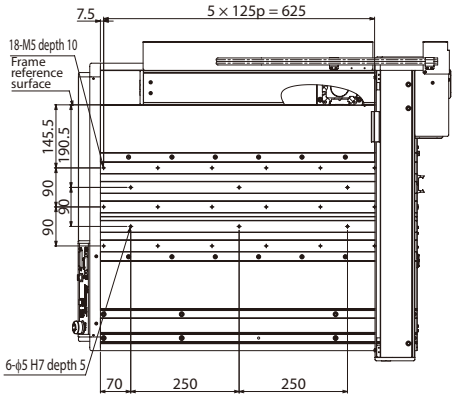
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

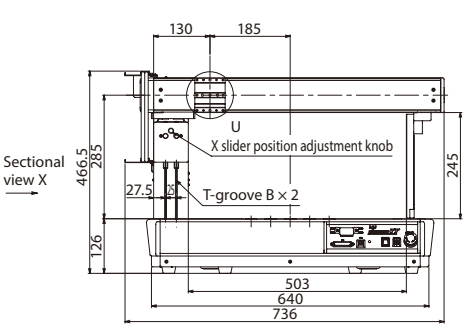
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

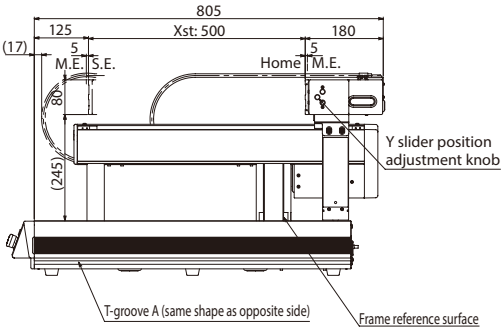
S.E: Stroke end
M.E: Mechanical end

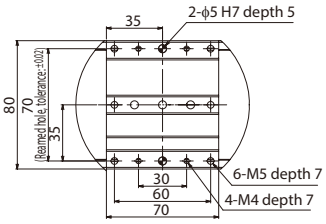




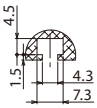
Top base hole layout



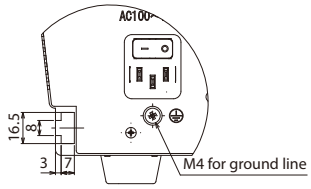




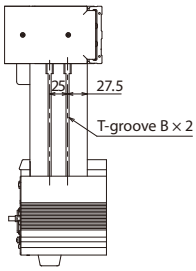
Detail view of U
(Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C3S□(G)-20-15 Tabletop Robot, Cantilever Type 3-axis, X-axis 200mm, Y-axis 150Mm, Z-axis 100mm/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
TTA	C3SL: 3-axis low lead spec. C3SLG: 3-axis low lead safety category spec. C3SH: 3-axis high lead spec. C3SHG: 3-axis high lead safety category spec. C3: 3-axis standard spec. C3G: 3-axis safety category spec.	WA: Battery-less Abs.	20:200mm		15:150mm NM: Non-motor end specification		10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C3SL(G)-WA-20①-15②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	200	1~600	-
	Y-axis			8	150	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-C3SH(G)-WA-20①-15②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			13.3 or equiv.	200	1~600	-
	Y-axis			13.3 or equiv.	150	1~600	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-C3(G)-WA-20①-15②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	200	1~600	-
	Y-axis			24 or equiv.	150	1~540	-
	Z-axis			12	100/150	1~400	6

Legend: ①②XY-axis options ③Z-axis stroke ④Z-axis option ⑤Standard I/O slot ⑥⑦Expansion I/O slots ⑧I/O cable length ⑨Power supply cable specification ⑩Options

①②④⑩ Options

Name	Option Code	Reference Page
Additional pillar for 20-15 and 20-20 types *1	AP	See P.50
Brake (Standard equipment)	B	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	FT4	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.
*1 Additional pillar for 20-15/20-20 types (AP) can only be selected for the stepper motor specification.
AC servo motor specification is equipped with a support pillar as standard.

⑥⑦ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	40kg	
Unit weight	29.3kg	

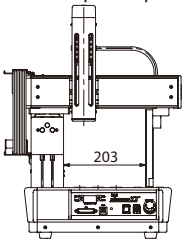
Dimensions

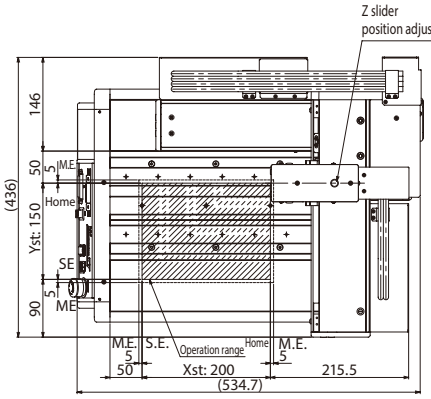
CAD drawings can be downloaded from our website.
www.intelligentactuator.com

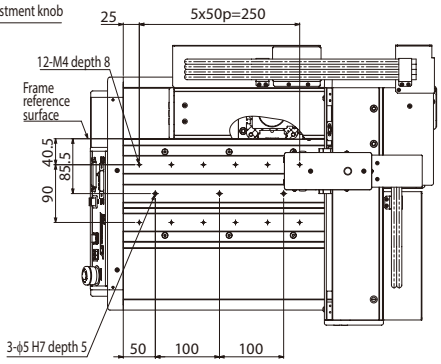
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

S.E: Stroke end
M.E: Mechanical end

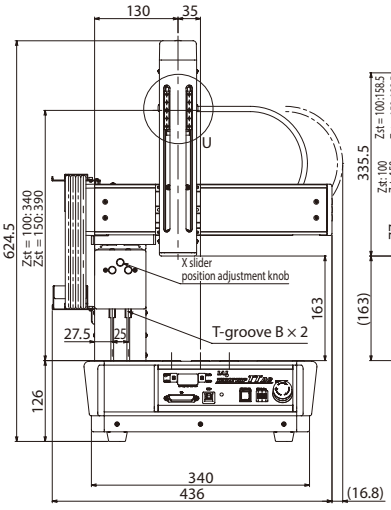
■ Dimensions for AC servo motor type and stepper motor type with the additional pillar option (AP)



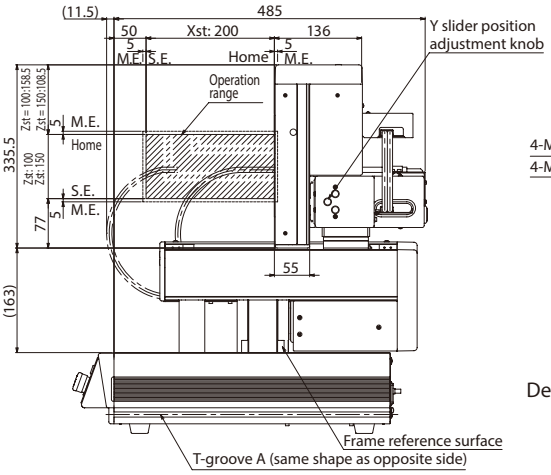


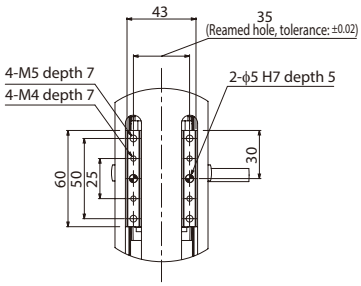


Top base hole layout

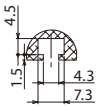


Sectional view X

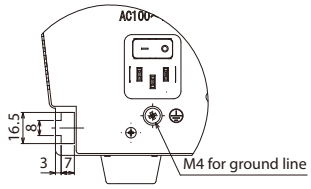




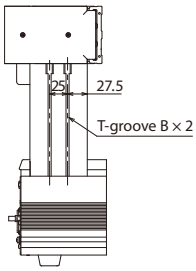
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C3S□(G)-30-25 Tabletop Robot, Cantilever Type 3-axis, X-axis 300mm, Y-axis 250mm, Z-axis 100mm/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 30 □ — 25 □ - □ □ — □ — □ □ — □ — □ — □ — □ — □ — □

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 Spec.	Options
TTA	C3SL: 3-axis low lead spec. C3SLG: 3-axis low lead safety category spec. C3SH: 3-axis high lead spec. C3SHG: 3-axis high lead safety category spec. C3: 3-axis standard spec. C3G: 3-axis safety category spec.	WA: Battery-less Abs.	30:300mm		25:250mm NM: Non-motor end specification		10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C3SL(G)-WA-30①-25②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	300	1~600	-
	Y-axis			8	250	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-C3SH(G)-WA-30①-25②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			13.3 or equiv.	300	1~750	-
	Y-axis			13.3 or equiv.	250	1~800	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-C3(G)-WA-30①-25②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	300	1~700	-
	Y-axis			24 or equiv.	250	1~640	-
	Z-axis			12	100/150	1~400	6

Legend: ①②XY-axis options ③Z-axis stroke ④Z-axis option ⑤Standard I/O slot ⑥⑦Expansion I/O slots ⑧I/O cable length ⑨Power supply cable specification ⑩Options

⑥⑦ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

①②④⑩ Options

Name	Option Code	Reference Page
Brake (Standard equipment)	B	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	FT4	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

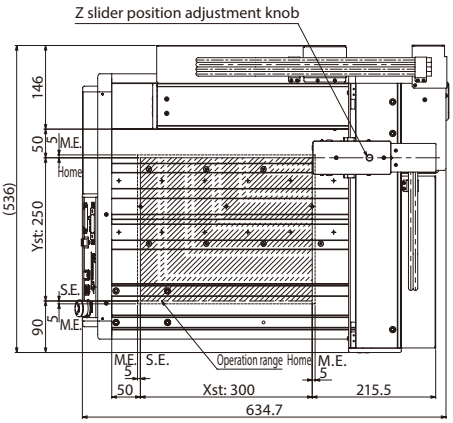
Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	60kg	
Unit weight	37.3kg	

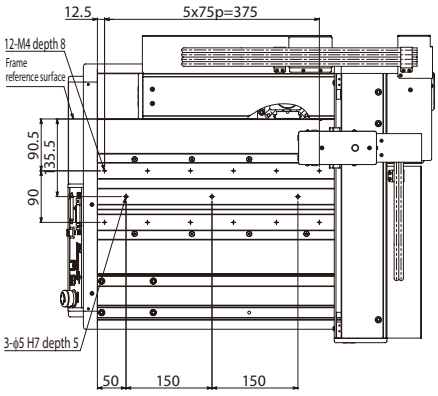
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

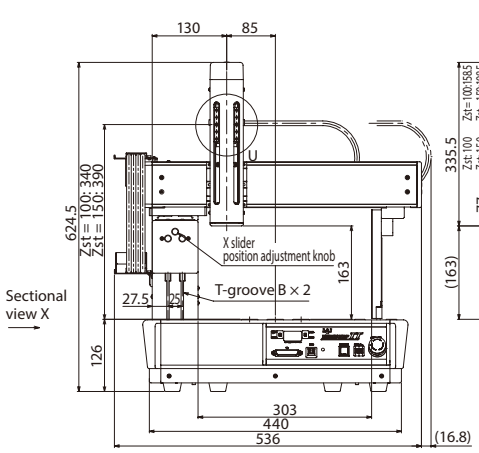
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

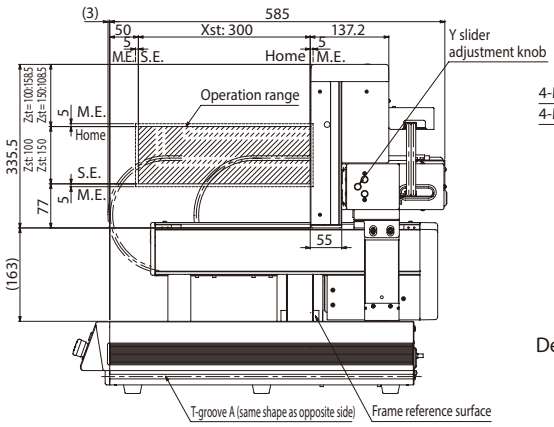
S.E: Stroke end
M.E: Mechanical end

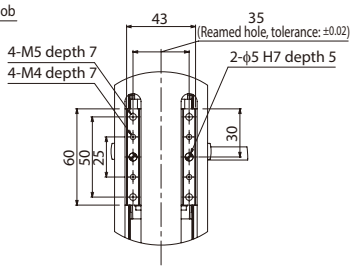




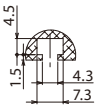
Top base hole layout



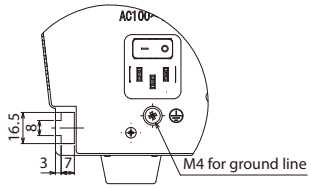




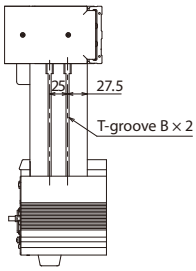
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C3S□(G)-40-35 Tabletop Robot, Cantilever Type 3-axis, X-axis 400mm, Y-axis 350mm, Z-axis 100mm/150mm, AC Servo Motor

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

■ Model Specification Items

TTA — □ — WA — 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 Spec.	Options
C3SL: 3-axis low lead spec. C3SLG: 3-axis low lead safety category spec. C3SH: 3-axis high lead spec. C3SHG: 3-axis high lead safety category spec. C3: 3-axis standard spec. C3G: 3-axis safety category spec.		WA: Battery-less Abs.	40:400mm		35:350mm NM: Non-motor end specification		10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C3SL(G)-WA-40①-35②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	400	1~600	-
	Y-axis			8	350	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-C3SH(G)-WA-40①-35②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			13.3 or equiv.	400	1~850	-
	Y-axis			13.3 or equiv.	350	1~1,000	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-C3(G)-WA-40①-35②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	400	1~800	-
	Y-axis			24 or equiv.	350	1~800	-
	Z-axis			12	100/150	1~400	6

Legend: ① ② XY-axis options ③ Z-axis stroke ④ Z-axis option ⑤ Standard I/O slot ⑥ ⑦ Expansion I/O slots ⑧ I/O cable length ⑨ Power supply cable specification ⑩ Options

⑥⑦ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	**NP**
DeviceNet connection board	**DV**
CC-Link connection board	**CC**
PROFIBUS-DP connection board	**PR**
EtherNet/IP connection board	**EP**
EtherCAT connection board	**EC**
IA Net connection board	**IA**
RS232C connection board	**SE1**
RS485 connection board	**SE2**

①②④⑩ Options

Name	Option Code	Reference Page
Brake (Standard equipment)	**B**	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	**FT6**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

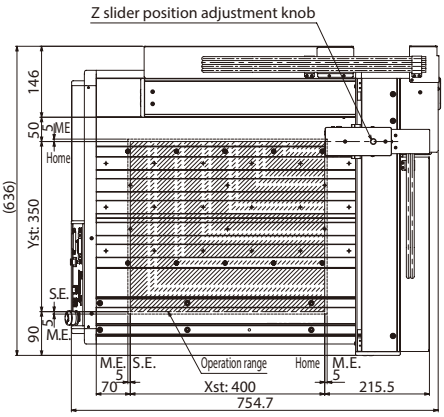
Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	80kg	
Unit weight	44.3kg	

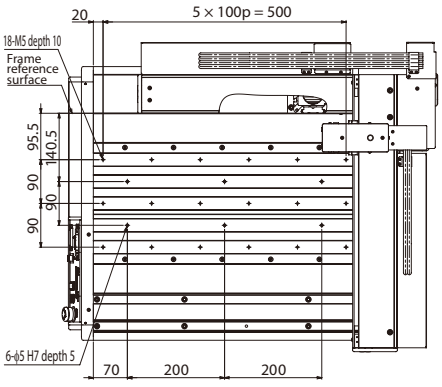
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

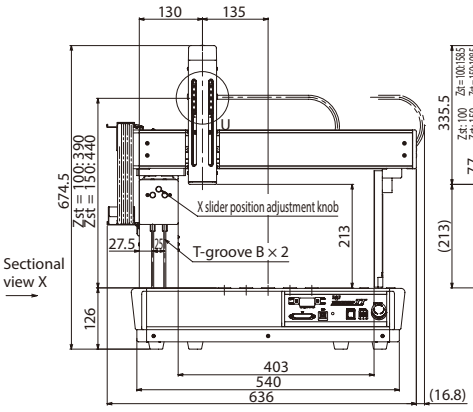
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

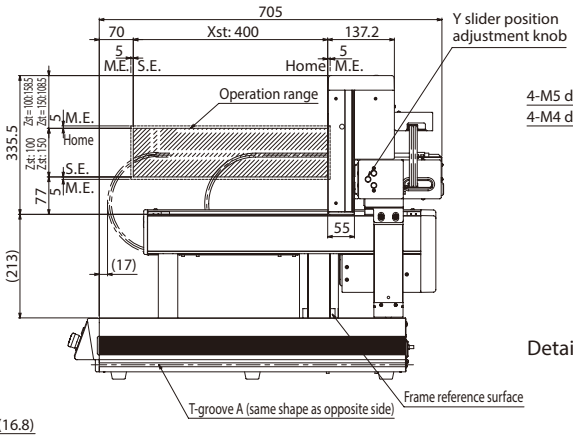
S.E: Stroke end
M.E: Mechanical end

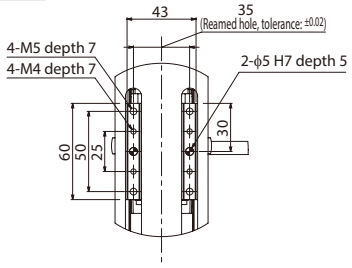




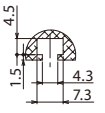
Top base hole layout



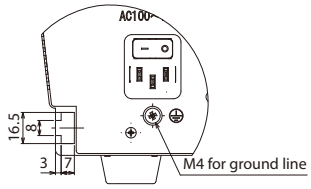




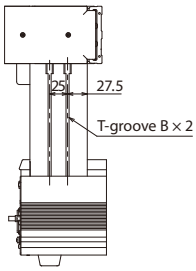
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C3S□(G)-50-45 Tabletop Robot, Cantilever Type 3-axis, X-axis 500mm, Y-axis 450mm, Z-axis 100mm/150mm, AC Servo Motor

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

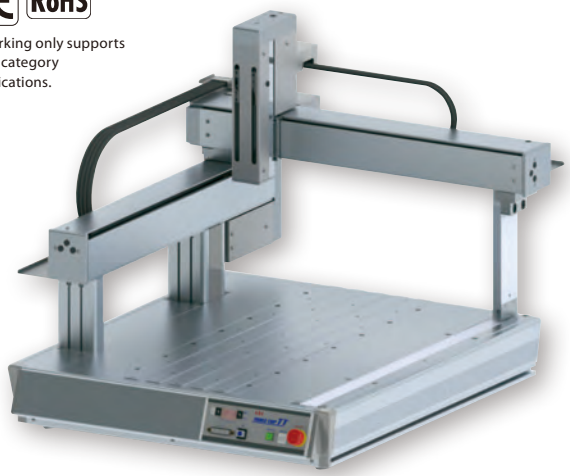
■ Model Specification Items

TTA — □ — WA — 50 □ — 45 □ - □ □ — □ — □ — □ — □ — □ — □ — □

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 Spec.	Options
TTA	C3SL: 3-axis low lead spec. C3SLG: 3-axis low lead safety category spec. C3SH: 3-axis high lead spec. C3SHG: 3-axis high lead safety category spec. C3: 3-axis standard spec. C3G: 3-axis safety category spec.	WA: Battery-less Abs.	50:500mm	45:450mm NM: Non-motor end specification			10:100mm 15:150mm B: Brake (Standard) NM: Non-motor end specification		NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.		0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)
(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Encoder Type	Motor Type	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg) (Note 1)
TTA-C3SL(G)-WA-50①-45②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis	Battery-less absolute	AC servo motor	8	500	1~600	-
	Y-axis			8	450	1~600	-
	Z-axis			2.14 or equiv.	100/150	1~170	15
TTA-C3SH(G)-WA-50①-45②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis			13.3 or equiv.	500	1~1,000	-
	Y-axis			13.3 or equiv.	450	1~1,000	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-C3(G)-WA-50①-45②-③B④-⑤-⑥-⑦-⑧-⑨-⑩	X-axis		Stepper motor	24 or equiv.	500	1~800	-
	Y-axis			24 or equiv.	450	1~800	-
	Z-axis			12	100/150	1~400	6

Legend: ①②XY-axis options ③Z-axis stroke ④Z-axis option ⑤Standard I/O slot ⑥⑦Expansion I/O slots ⑧I/O cable length ⑨Power supply cable specification ⑩Options

⑥⑦ Expansion I/O Slot

Name	Option Code
Expansion PIO board (NPN spec.)	**NP**
DeviceNet connection board	**DV**
CC-Link connection board	**CC**
PROFIBUS-DP connection board	**PR**
EtherNet/IP connection board	**EP**
EtherCAT connection board	**EC**
IA Net connection board	**IA**
RS232C connection board	**SE1**
RS485 connection board	**SE2**

①②④⑩ Options

Name	Option Code	Reference Page
Brake (Standard equipment)	**B**	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	**FT6**	See P.50
Y-axis mounting position height 50mm up	**H1**	See P.51
Y-axis mounting position height 100mm up	**H2**	See P.51
Non-motor end specification	**NM**	See P.51
Detachable operation console	**OS**	See P.52
Individual stroke side slot installation specification	**SLT**	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	**SLTO**	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

Actuator Specifications

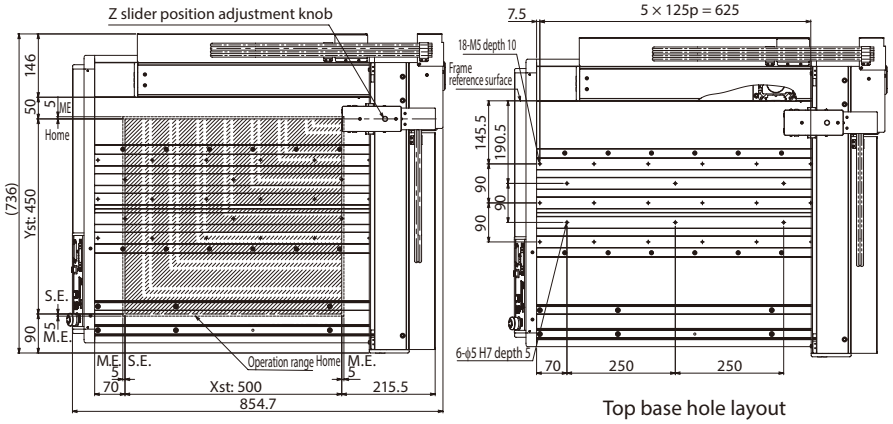
Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm	±0.01mm
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less	0.05mm or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m Z-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	100kg	
Unit weight	51.3kg	

Dimensions

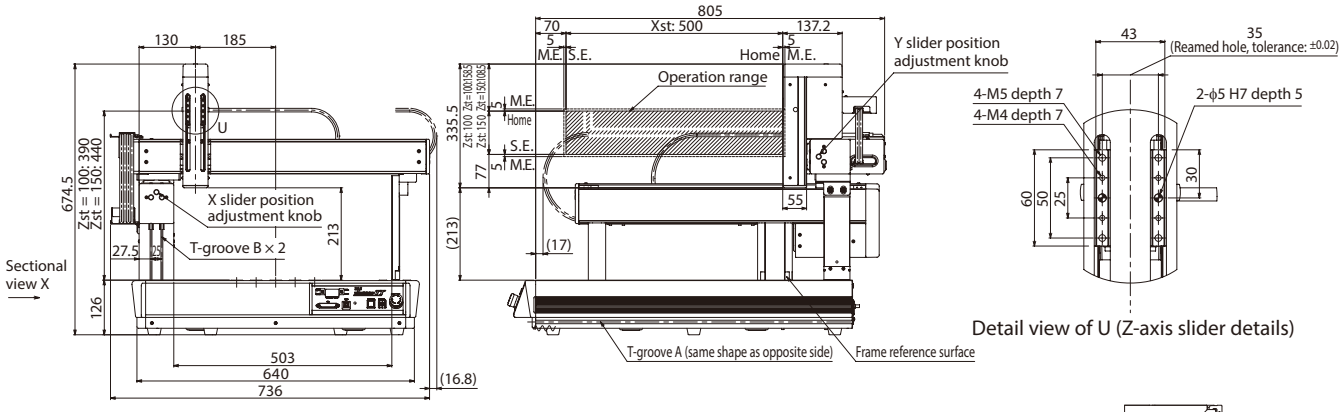
CAD drawings can be downloaded from our website.
www.intelligentactuator.com

*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

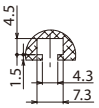
S.E: Stroke end
M.E: Mechanical end



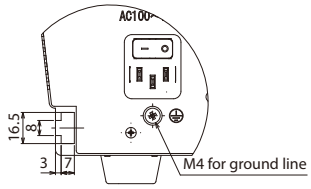
Top base hole layout



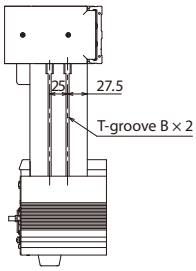
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C4S□(G)-□-□ Tabletop Robot, Cantilever Type 4-axis, AC Servo Motor

TTA-C4(G)-□-□ Tabletop Robot, Cantilever Type 4-axis, Stepper Motor

■ Model Spec. Items: TTA – □ — WA – □ – □ – □ – □ – □ – □ – □ – □ – □ – □ – □ – □ – □ – □

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 Spec.	Options
TTA	C4SL: 4-axis ZR type, low lead spec. C4SLG: 4-axis ZR type, low lead Safety category specification C4SH: 4-axis ZR type, high lead spec. C4SHG: 4-axis ZR type, high lead Safety category specification C4: 4-axis ZR type, standard spec. C4G: 4-axis ZR type, safety category spec.	WA: Battery-less Abs.	20: 200mm 30: 300mm 40: 400mm 50: 500mm	15: 150mm 25: 250mm 35: 350mm 45: 450mm NM: Non-motor end specification	15: 150mm 25: 250mm 35: 350mm 45: 450mm		10: 100mm 15: 150mm	B: Brake (Standard) CO: With cover NM: Non-motor end spec.	18: ±180° 36L: ±360° (with home limit switch)	MR: Motor side-mounted to the right	NP: NPN spec. PN: PNP spec.	Refer to the expansion I/O slot table below. * Enter [E] if unused.	Refer to the expansion I/O slot table below. * Enter [E] if unused.	0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m)	Please refer to the options table below

CE RoHS

*CE marking only supports safety category specifications.

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57) Please note that depending on the load moment of inertia, the rotational axis may not reach the maximum speed. (See P.58 and 60)

(Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.

(Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)

(Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

■ Lead and Payload

Model Number	Axis Configuration	Lead (mm)	Stroke (mm)	Speed (mm/s)	Payload (kg)(Note 1)	Max. Load Inertia Moment (kg·m²)
TTA-C4SL(G)-WA-{20/30/40/50}□-{15/25/35/45}□	X-axis	8	200~500	1~600	-	-
	Y-axis	8	150~450	1~600	-	-
	Z-axis	2.14 or equiv.	100/150	1~170	15	-
	R-axis	-	18: ±180°, 36L: ±360°	1,500deg./s		0.01
TTA-C4SH(G)-WA-{20/30/40/50}□-{15/25/35/45}□	X-axis	13.3 or equiv.	200	600	-	-
			300	750		
			400	850		
			500	1,000		
	Y-axis	13.3 or equiv.	150	600	-	-
			250	800		
			350~450	1,000		
	Z-axis	5 or equiv.	100/150	1~400	7	-
	R-axis	-	18: ±180°, 36L: ±360°	1,500deg./s		0.01
TTA-C4(G)-WA-{20/30/40/50}□-{15/25/35/45}□	X-axis	24 or equiv.	200	600	-	-
			300	700		
			400~500	800		
	Y-axis	24 or equiv.	150	540	-	-
			250	640		
			350~450	800		
	Z-axis	12	100/150	1~400	6	-
	R-axis	-	18: ±180°, 36L: ±360°	1,000deg./s		0.01

Options

Name	Option Code	Reference Page
Additional pillar for 20-15 and 20-20 types *1	AP	See P.50
Brake (Standard equipment)	B	See P.50
Z-axis cover included	CO	See P.50
Foot bracket included specification (4 pcs) X-axis stroke 20/30	FT4	See P.50
Foot bracket included specification (6 pcs) X-axis stroke 40/50	FT6	See P.50
Y-axis mounting position height 50mm up	H1	See P.51
Y-axis mounting position height 100mm up	H2	See P.51
Motor side-mounted to the right	MR	See P.51
Non-motor end specification	NM	See P.51
Detachable operation console	OS	See P.52
Individual stroke side slot installation specification	SLT	See P.51
Side slot 180mm installation specification X-axis stroke 20/30	SLTO	See P.51
Side slot 180mm installation specification X-axis stroke 40/50	SLTO	See P.51
Additional switch	*	See P.52

* The option code for the additional switch(es) depends on the items selected by the customer. Please refer to P.52 for more information.

*1 Additional pillar for 20-15/20-20 types (AP) can only be selected for the stepper motor specification.
AC servo motor specification is equipped with a support pillar as standard.

Expansion I/O Slot

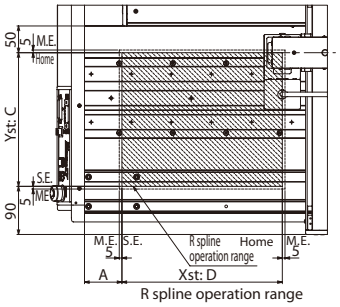
Name	Option Code
Expansion PIO board (NPN spec.)	NP
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
IA Net connection board	IA
RS232C connection board	SE1
RS485 connection board	SE2

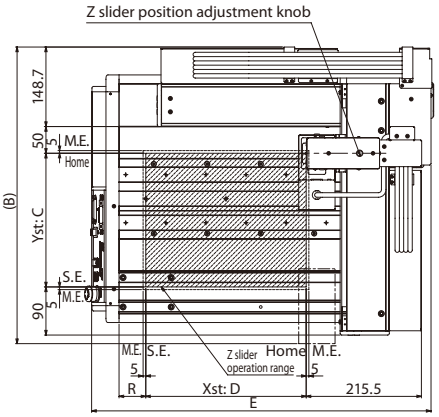
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

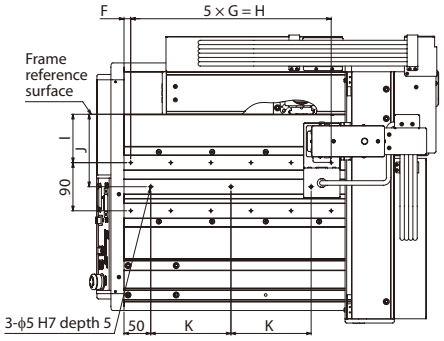
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

SE: Stroke end, ME: Mechanical end



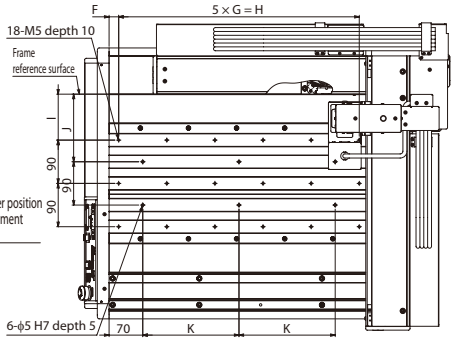


20-15 / 30-25

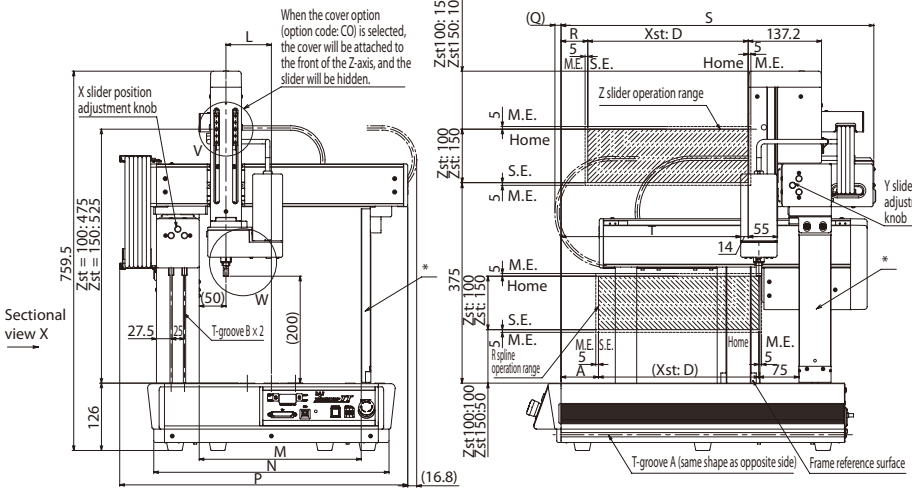


Top base hole layout

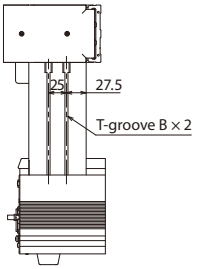
40-35 / 50-45



Top base hole layout

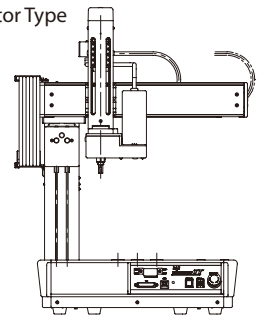


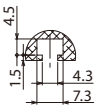
* Only available when the additional pillar option (AP) is selected for 20-15 stepper motor type.



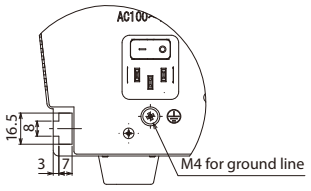
Sectional view X

■ Stepper Motor Type
20-15 size

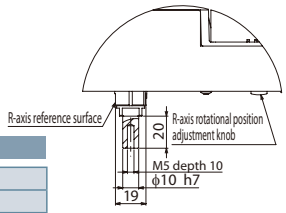




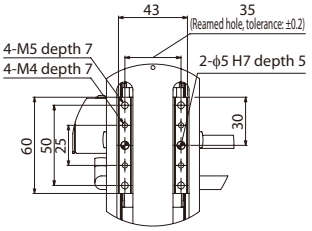
T-groove B shape



T-groove A shape



Detail view of W
(R spline tip details)



Detail view of V
(Z-axis slider details)

Actuator Specifications

Item	Description	
	AC Servo Motor	Stepper Motor
Drive system	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt	Ball screw (X, Y-axis: ϕ12mm, Z-axis: ϕ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt
Positioning repeatability (Note 2)	±0.005mm, R-axis: ±0.008°	±0.01mm, R-axis: ±0.01°
Lost motion	Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less, R-axis: 0.06° or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less, R-axis: 0.06° or less	X, Y, Z-axis: 0.05mm or less R-axis: 0.06° or less
Dynamic allowable moment (Note 3)	X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m ZR-axis: Ma: 11.5N·m Mb: 11.5N·m Mc: 24.3N·m *1	
Ambient temp./humidity	0~40°C, 85% RH or less (Non-condensing)	
Max. weight on table	20-15: 40kg, 30-25: 60kg, 40-35: 80kg, 50-45: 100kg	
Unit weight	20-15: 31.3kg 30-25: 39.3kg 40-35: 46.3kg 50-45: 53.3kg	20-15: 36.3kg 30-25: 41.3kg 40-35: 48.3kg 50-45: 56.3kg

* Reference for overhang load length / R-axis: r=100mm or less

*1 Ma and Mb for ZR-axis are the total of those for the Z-axis and R-axis. Mc is the value of the Z-axis only.

	20-15	30-25	40-35	50-45
A	70	70	90	90
B	455.8	555.8	655.8	755.8
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	90	140
M	203	303	403	503
N	340	440	540	640
P	439.7	539.7	639.7	739.7
Q	11.5	11.5	17	17
R	50	50	70	70
S	485	585	705	805

Tabletop Robot Series PIO Signal Chart

PIO Signal Chart

Standard Pio Connector Pin Layout

Pin No.	Category	Assignment	Pin No.	Category	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

* When the internal/external I/O power switch is off, the I/O power supply ([24V] [0V]) is externally supplied while when it's on, the power is supplied internally from the TTA.
* When the internal/external I/O power switch is on, do not externally supply the I/O power ([24V][0V]).

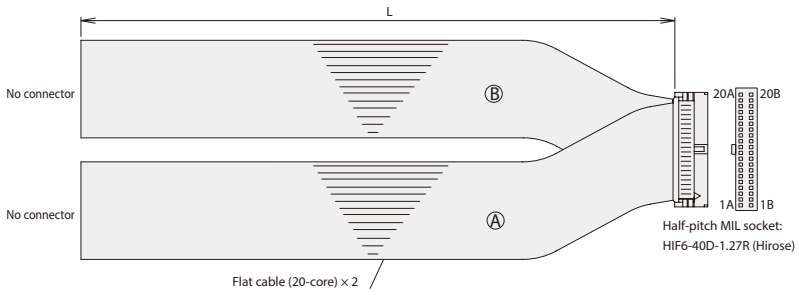
Expansion Pio Connector Pin Layout

Pin No.	Category	Assignment	Pin No.	Category	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

* The internal/external I/O power switch does not apply to the expansion I/O (only to the standard I/O). The expansion I/O always requires the external I/O power supply ([24V][0V]).

I/O Cable (CB-PAC-PIO□□□)

* Please indicate the cable length (L) in □□□, maximum 10m, e.g.) 080 = 8m



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

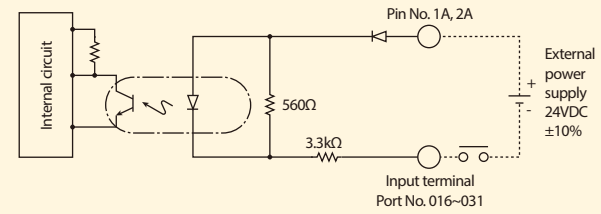
Standard PIO

■ Input External input specification (NPN specification)

Item	Specification
Input voltage	24VDC +10%
Input current	7mA, 1 circuit
ON/OFF voltage	ON voltage: 16.0VDC min. OFF voltage: 5.0VDC max.
Insulation method	Photocoupler isolation

* The circuit diagram below shows external power input (I/O power supply output is off).
* The port numbers in the circuit diagram below are the default port numbers at time of shipping.
* The allowable leak current when input is off is 1mA or less.

[Input circuit]



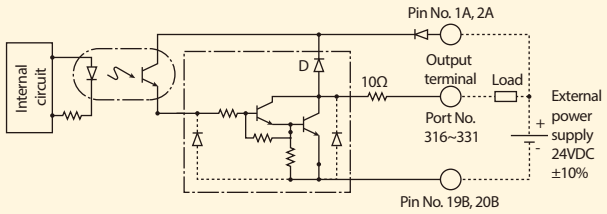
■ Output External output specification (NPN specification)

Item	Specification	
Load voltage	24VDC	TD62084 (or equivalent) Usage
Max. load current	100mA/1 contact, 400mA/8 ports. (Note)	
Leak current	0.1m max. 1 contact	
Insulation method	Photocoupler isolation	

* This circuit diagram shows external power input (I/O power supply output is off).
* The port numbers in the circuit diagram below are the default port numbers at time of shipping.

Note: The total load current from standard I/O number 316 onwards is 400mA per 8 points. (100mA maximum per 1 point)

[Output circuit]

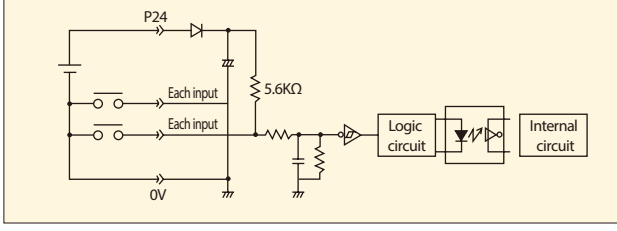


Expansion PIO

■ Input External input specification

Item	Specification
No. of input	16 points
Input voltage	24VDC +10%
Input current	4mA, 1 circuit
ON/OFF voltage	ON voltage: 18VDC min. (3.5mA) OFF voltage: 6VDC max. (1mA)
Insulation method	Photocoupler isolation

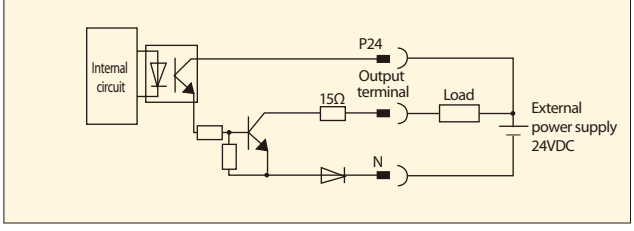
[NPN specification]



■ Output External output specification

Item	Specification
No. of output	16 points
Rated load voltage	24VDC
Max. current	50mA, 1 circuit
Insulation method	Photocoupler isolation

[NPN specification]



Tabletop Robot Series Controller Specification

Controller Specification

Item			
Motor type			Ac full digital servo motor, stepper motor (servo control)
Compatible encoder			Battery-less absolute encoder
Data recording device			Flash ROM/FRAM
Number of program steps			9,999
Number of positions			30,000
Number of programs			255
Number of multi-tasks			16
Operation mode	Serial communication		○
	Program		○
	Positioner		×
	Pulse train		×
SIO interface	Communication method		RS232
	Communication speed		9.6, 19.2, 38.4, 57.6, 76.8, 115.2kpps
	Hot swapping	TP port	×
		USB	○
Standard I/O interface	Input specification	Number of input	16 points
		Input voltage	24VDC±10%
		Input current	7mA/1 circuit
		ON voltage	16VDC min.
		OFF voltage	5VDC max.
		Leak current	Allowable leak current: 1mA max.
		Insulation method	Photocoupler isolation
	Output specification	Number of output	16 points
		Load voltage	24VDC±10%
		Max. current	100mA/1 point, 400mA/8 points (Note 1)
		Saturation voltage	3V max.
		Leak current	0.1mA max.
		Insulation method	Photocoupler isolation
Applicable expansion I/O interface			Expansion PIO NPN specification (16IN/16OUT)
			CC-Link (remote device)
			DeviceNet
			PROFIBUS-DP
			EtherNet/IP
			EtherCAT
			IA Net
			RS232C
			RS485
Brake output voltage			24VDC±10%
Connectable break power			5W max.
Calendar/clock function	Retention time		Approx. 10 days
	Charging time		Approx. 100 hours
Protection functionality			Overcurrent, fan speed drop monitoring, etc.
Power supply capacity			100V: 2.9A, 200V: 1.2A

(Note 1): The total load current from standard I/O No. 316 onwards is 400mA per 8 points. (100mA maximum per 1 point)

Tabletop Robot Series Options

Additional pillar for 20-15 and 20-20 types

Option code **AP**

Description This option can change a cantilever type to a gate type.

Brake (Standard equipment)

Option code **B**

Description When used vertically, this works as a holding mechanism that prevents the Z-axis slider from falling and damaging any attached tooling when the power or servo is turned off.

With cover (Dedicated for 4-axis specification)

Option code **CO**

Description Equips the 4-axis TTA with a slider cover for when the z-axis slider is not in use.

Foot bracket included specification (4 pcs)

Option code **FT4**

Description For X-axis stroke of 20/30

Foot bracket included specification (6 pcs)

Option code **FT6**

Description For X-axis stroke of 40/50

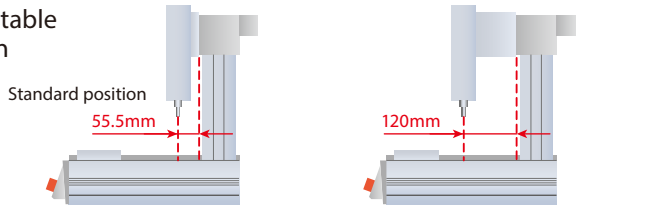
ZR-axis position change option (TTA-A type only)

Option code **FZ**

Description Moves the ZR-axis mounting position 64.5mm closer to the front than standard.

	Standard	Standard +64.5mm to the front
ZR-axis w/ adjustable mounting position	-	FZ

ZR-axis with adjustable mounting position



(Standard) FZ (64.5mm closer to front than standard)

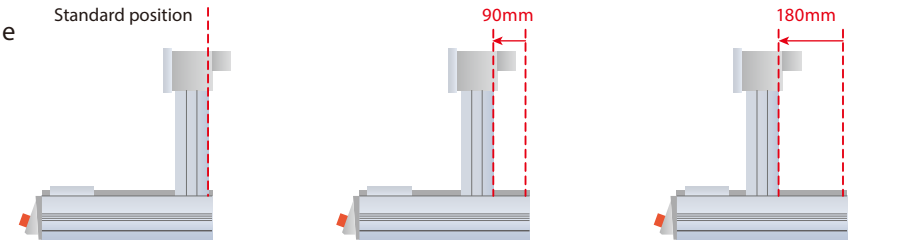
Y-axis adjustable mounting position (TTA-A type only)

Option code **F1 / F2**

Description Moves the Y-axis mounting position 90mm (F1) or 180mm (F2) closer to the front than standard.

	Standard	Standard +90mm to the front	Standard +180mm to the front
Y-axis w/ adjustable mounting position	-	F1	F2

Y-axis with adjustable mounting position (TTA-A type only)



(Standard) F1 (90mm closer to front than standard) F2 (180mm closer to front than standard)

* When both changing the Y-axis height and moving the Y-axis forward or backward, please list the option codes alphabetically in the model number. (E.g. AP-F1-FT-H2-OS)

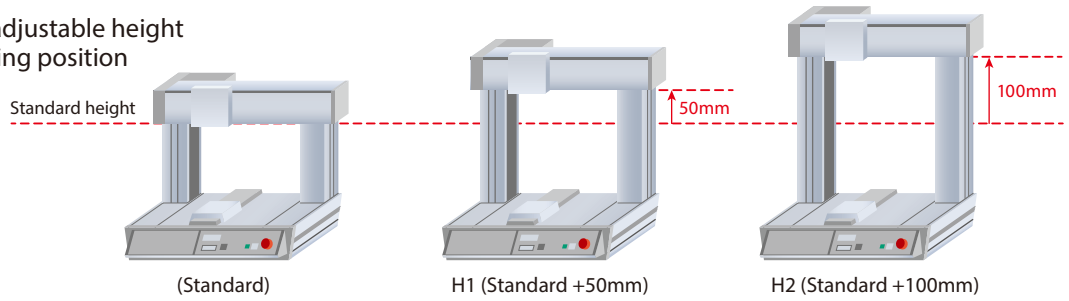
Tabletop Robot Series Options

Y-axis adjustable height mounting position

Option code **H1 / H2**

Description Moves the Y-axis mounting position 50mm (H1) or 100mm (H2) higher than the standard.

	Standard	Standard + 50mm higher	Standard +100mm higher
Y-axis adjustable height mounting position	-	H1	H2



* When both changing the Y-axis height and moving the Y-axis forward or backward, please list the option codes alphabetically in the model number. (E.g. AP-F1-FT-H2-OS)

Side-mounted motor direction

Option code **ML / MR**

Description This option allows you to specify the direction of the side-mounted motor R-axis when selecting TTA-A4(G).
ML specifies motor mounting left, and MR specifies motor mounting right, when viewed from the motor side of the actuator.
Be sure to enter one of the option codes when specifying the model. * TTA-C4(G) is only available as MR.

Non-motor end specification

Option code **NM**

Description The normal home position is set to the motor side, but this is the option to set the home position on the other side in order to accommodate variations in equipment layout, etc.

Installation side plate

Option code **PTH** (with holes) **/ PTN** (without holes)

Description Resized to accommodate each Y-axis mounting position; standard position, F1, and F2 types.
*TTA-A type only

Side slot 180mm installation specification

Option code **SLT0**

Description Select to choose slot specification if FT4 or FT6 has been selected.
Types with a 20/30 X-axis stroke can have two 180mm side slots, while 40/50 types can have four.

Individual stroke side slot installation specification

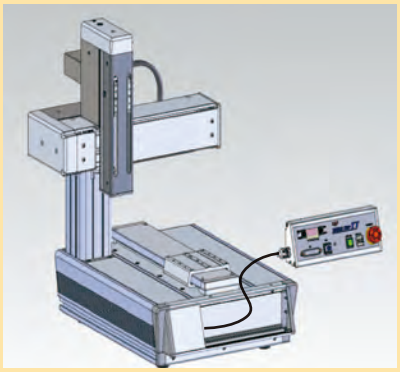
Option code **SLT**

Description Side slot specification. Slot length varies depending on the TTA body size.
*The FT4 and FT6 options are not compatible with this option.

Detachable operation console

Option code **OS**

Description Removable controller section for handheld operation.
(Cable length: 0.9m)



Additional switch

Option code **Refer to below** (differs depending on customer's selections)

Description Additional switches can be added to the controller section, depending on the customer's application. (Max. 4)
Internal input (001, 005, 006, 015) switches are assigned and can be used as external inputs.
For the 20-20 and 20-15 stroke types, this option is incompatible with the detachable operation console (OS) option.

Switch No. | Color | Specification

- Specification
  - Blank
  - L : Locking type
  - C : With cover
  - LC : With locking cover
- Color
  - B : Blue switch color
  - G : Green switch color
  - R : Red switch color
  - W : White switch color
  - Y : Yellow switch color
- Switch No.
  - 1 : Switch No.1
  - 2 : Switch No.2
  - 3 : Switch No.3
  - 4 : Switch No.4

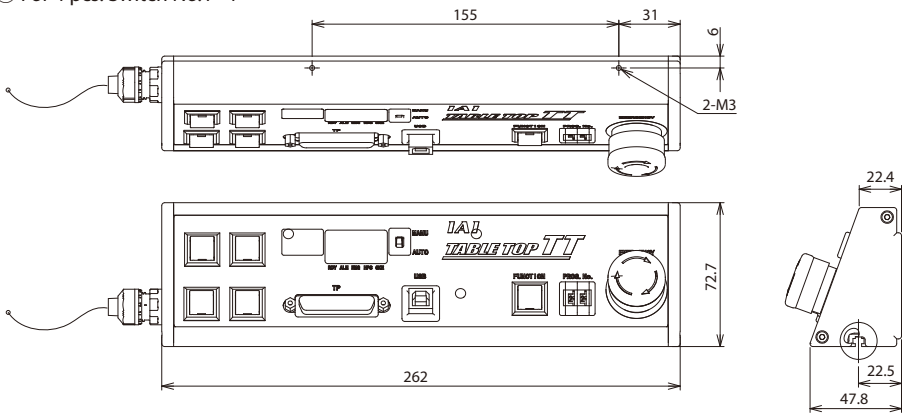
Switch No.

Switch No.4 shows an image of the switch with a cover.

E.g. To specify switch No. 1 in blue as a lockable type, enter **1BL**

*Use the following pattern when selecting switch numbers.

① For 1 pc: Switch No.1
② For 2 pcs: Switch No.1, 2
③ For 3 pcs: Switch No.1~3
④ For 4 pcs: Switch No.1~4



Tabletop Robot Series Side Slot Options

Side slots are a selectable option. These are ideal for mounting equipment to the TTA.
Side slots are available with lengths that vary depending on the stroke (Option code: SLT) and in 180mm length specifications (Option code: SLT0).

■ Side Slots by Stroke (Option Code: SLT)

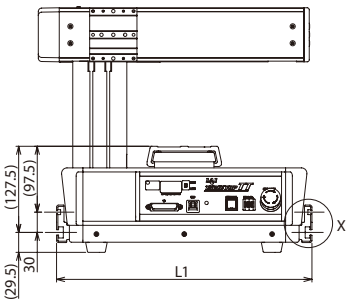
Side slot lengths vary depending on the size of the TTA.
This option is not compatible with the FT4 or FT6 options.

Dimensions Chart

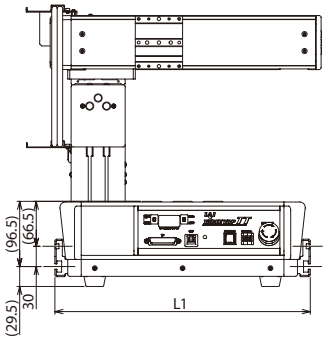
Model	L1	L2
20-20 / 20-15	378	430
30-30 / 30-25	478	530
40-40 / 40-35	578	630
50-50 / 50-45	678	730

■ Front View

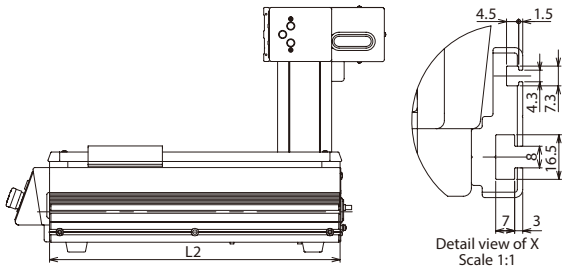
TTA-A type



TTA-C type



■ Side View (TTA-A, TTA-C)

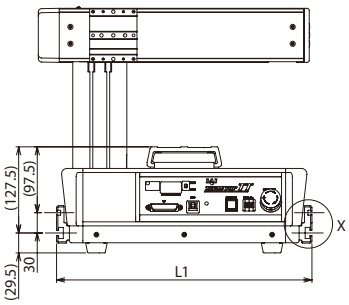


■ Side Slot 180mm Mounting Specification (Option Code: SLT0)

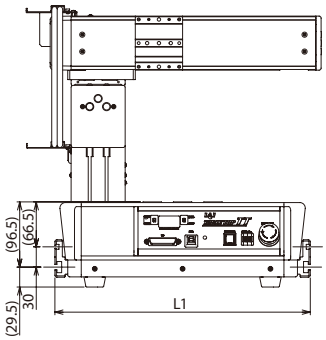
Select this option to add 180mm long side slots if the FT4 or FT6 option has been selected.
Types with a 20/30 X-axis stroke can have two 180mm side slots, while 40/50 types can have four.

■ Front View

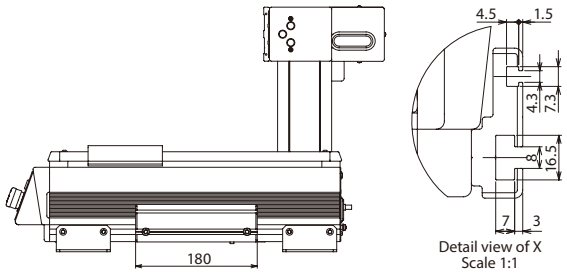
TTA-A type



TTA-C type



■ Side View (TTA-A, TTA-C)



Tabletop Robot Series Side Plate Options

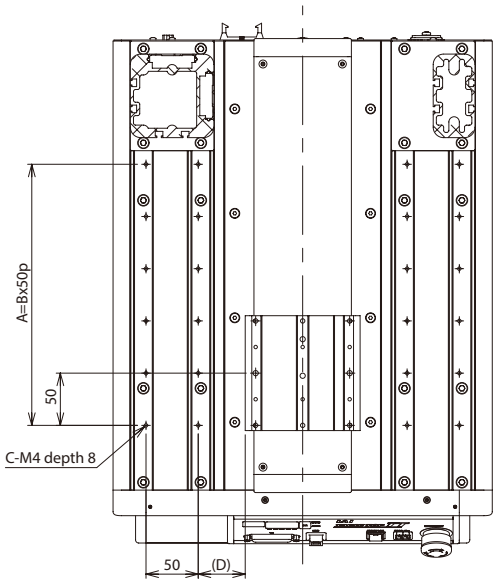
Side plates are a selectable option. These are ideal for mounting equipment to the TTA.
Side plates are available in types that have pre-drilled mounting holes (Option code: PTH) and types that require the customer to drill their own mounting holes (Option code: PTN).

* These options are only available with the TTA-A types.
* Option code, PTN is a plate without the M4 depth 8 holes shown in the figure below.

■ Standard Specification Hole Positions

Dimensions Chart

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

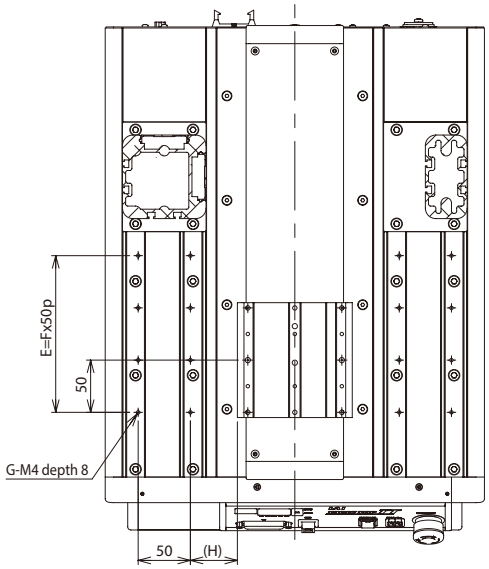


■ Frame Position F1 Specification Hole Positions

When option F1 is selected

Dimensions Chart

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

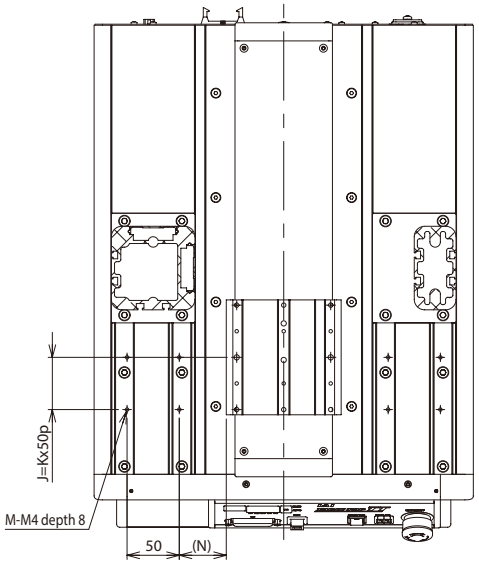


■ Frame Position F2 Specification Hole Positions

When option F2 is selected

Dimensions Chart

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



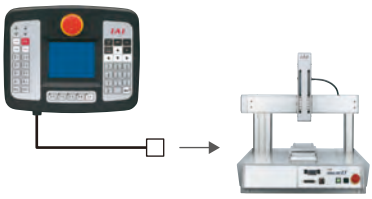
Tabletop Robot Series Options

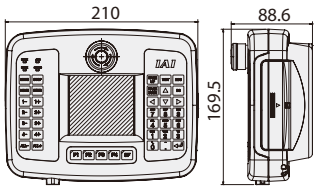
Touch Panel Teaching

Features: A teaching device equipped with functions such as program and position input, trial operation, monitoring, etc.

Model **TB-01-□**

Configuration





Specification

Item	TB-01-S
Rated voltage	24VDC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0~50°C
Ambient operating humidity	20~ 85% RH (Non-condensing)
Environmental resistance	IP40 (initial state)
Weight	507g (TB-01-S unit only)

* AC servo motor specification is supported by Ver. 1.40 or later, stepper motor specification is supported by Ver. 1.50 or later.

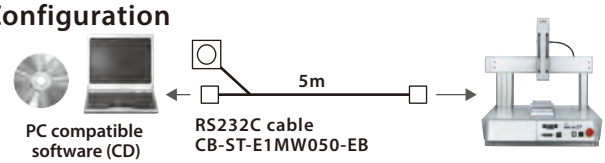
PC Compatible Software (for Windows)

Features: This is start-up support software which comes equipped with functions such as program/position input, trial operation, monitoring, etc. Improve functions requiring debugging work contributes to a reduced start-up time.

* AC servo motor specification is supported by Ver. 12.02.06.00 or later, stepper motor specification is supported by Ver. 12.03.00.00 or later.

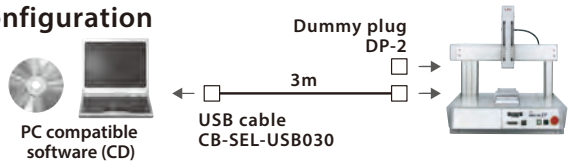
Model **IA-101-X-MW**
(Supplied with RS232C cable)

Configuration



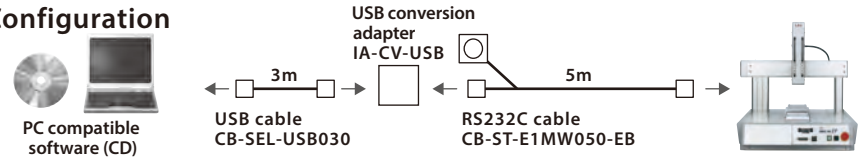
Model **IA-101-TTA-USB**
(Supplied with USB cable)

Configuration



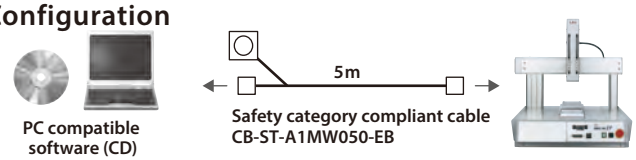
Model **IA-101-X-USBMW** (Supplied with USB adapter + cable)

Configuration



Model **IA-101-XA-MW** (Supplied with safety category 3 compliant cable)

Configuration

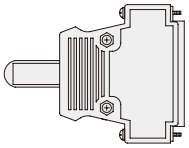


<For IA-101-TT-USB>
- It can be used with TTA by upgrading the version of the software.
- The dummy plug (DP-1) supplied with IA-101-TT-USB is not safety category compliant. [DP-2] is required for compliance.

Dummy Plug

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

Model **DP-2** Supplied with the safety category specifications (TTA-A□G / TTA-C□G) and PC compatible software (IA-101-TTA-USB).



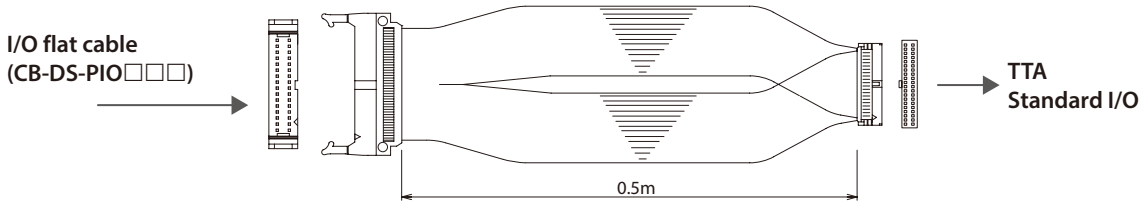
- Compatible with emergency stop and redundant enable circuit (up to Category 3).

Tabletop Robot Series Options

I/O Adapter Cable

Features: This is an adapter cable for connecting conventional I/O flat cable for TT (CB-DS-PIO□□□) to TTA's standard I/O connector.

Model **CB-TTA-PIOJ005**



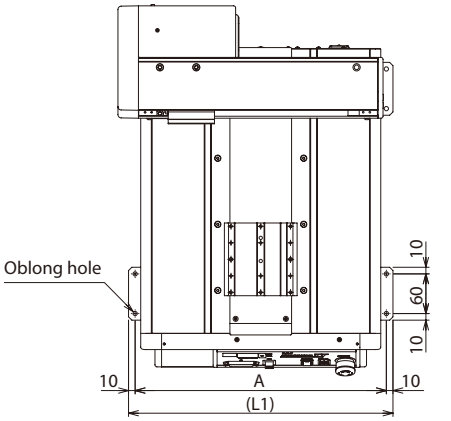
Foot Bracket (4 or 6 pcs to 1 set, bolts and nuts for mounting to body supplied)

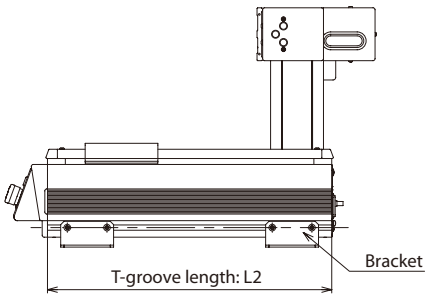
Model **TTA-FT-4** (for X-axis stroke of 20/30)
TTA-FT-6 (for X-axis stroke of 40/50)

* Types with a 20/30 X-axis stroke have 4 foot brackets, while 40/50 types have 6.

Dimensions

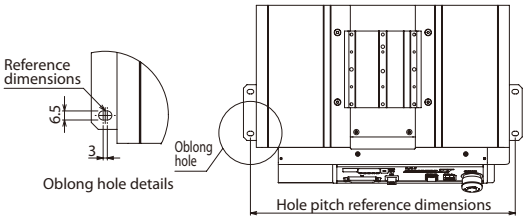
X-Y stroke	L1	L2	A	No. of brackets
20-20 / 20-15	400	430	380	4
30-30 / 30-25	500	530	480	
40-40 / 40-35	600	630	580	6
50-50 / 50-45	700	730	680	

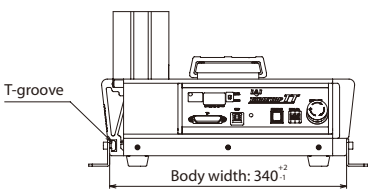




When making custom brackets

When making customer's own brackets, please make the oblong holes with 3mm or more in the horizontal direction.





AC Servo Motor Type Cautionary Notes

■ Tables of Payload by Acceleration/Deceleration

Check the table below to verify if both acceleration/deceleration rate and payload requirements are satisfied.

Type	Axis	Specification	Payload by Acceleration/Deceleration (kg)						
			0.1G	0.2G	0.3G	0.4G	0.5G	0.6G	0.7G
TTA-A (Gate Type)	X-axis	Low lead	30	17	10	6	3	-	-
		High lead	15	15	8	5	3	1.8	1
	Y-axis	Low lead	20	17	10	6	3	-	-
		High lead	11	11	8	5	3	1.8	1
	Z-axis	Low lead	15	12	9	-	-	-	-
		High lead	7	7	5.5	4	3	-	-
TTA-C (Cantilever Type)	X-axis	Low lead	30	17	-	-	-	-	-
		High lead	22	17	12	-	-	-	-
	Y-axis	Low lead	20	15	10	-	-	-	-
		High lead	12	12	10	-	-	-	-
	Z-axis	Low lead	15	12	9	-	-	-	-
		High lead	7	7	5.5	4	3	-	-

■ Tables of Payload by Acceleration/Deceleration

TTA-A type (gate type) and TTA-C type (cantilever type) Z-axis / ZR-axis payload differs depending on Y-axis acceleration/deceleration.
For TTA-C type (cantilever type), Y-axis / Z-axis / ZR-axis payload differs depending on X-axis acceleration/deceleration.

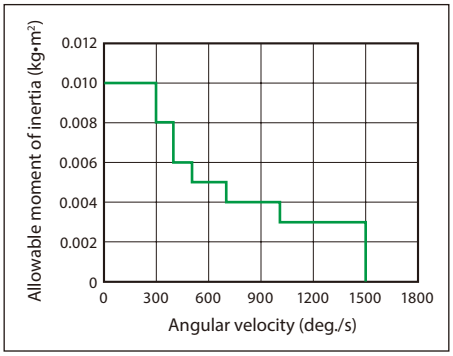
Type	Specification	Y-axis Acceleration/Deceleration and Z-axis Payload (kg)			
		0.1G	0.2G	0.3G	0.4G
TTA-A (Gate Type)	Low lead	15	13	6	2
	High lead	7	7	4	1
TTA-C (Cantilever Type)	Low lead	15	11	6	-
	High lead	7	7	6	-

Type	Specification	Y-axis Acceleration/Deceleration and ZR-axis Payload (kg)			
		0.1G	0.2G	0.3G	0.4G
TTA-A (Gate Type)	Low lead	15	11	4	-
	High lead	7	7	2	-
TTA-C (Cantilever Type)	Low lead	15	9	4	-
	High lead	7	7	4	-

Type	Specification	X-axis Acceleration/Deceleration and Y-axis Payload (kg)			
		0.1G	0.2G	0.3G	0.4G
TTA-C (Cantilever Type)	Low lead	20	7	-	-
	High lead	12	7	2	-
	Specification	X-axis Acceleration/Deceleration and Z-axis Payload (kg)			
		0.1G	0.2G	0.3G	0.4G
	Low lead	15	3	-	-
	High lead	7	3	-	-
	Specification	X-axis Acceleration/Deceleration and ZR-axis Payload (kg)			
		0.1G	0.2G	0.3G	0.4G
	Low lead	15	1	-	-
	High lead	7	1	-	-

■ Correlation Diagram of Allowable Moment of Inertia and Angular Velocity (R-axis)

R-axis



Allowable Moment of Inertia, and Angular Velocity and Angular Acceleration/Deceleration (R)

Allowable Moment of Inertia	Angular Velocity	Acceleration/Deceleration
0.010kg·m²	300deg./s	490deg./s²
0.008kg·m²	400deg./s	980deg./s²
0.006kg·m²	500deg./s	1,960deg./s²
0.005kg·m²	700deg./s	4,900deg./s²
0.004kg·m²	1,000deg./s	9,800deg./s²
0.003kg·m²	1,500deg./s	14,700deg./s²

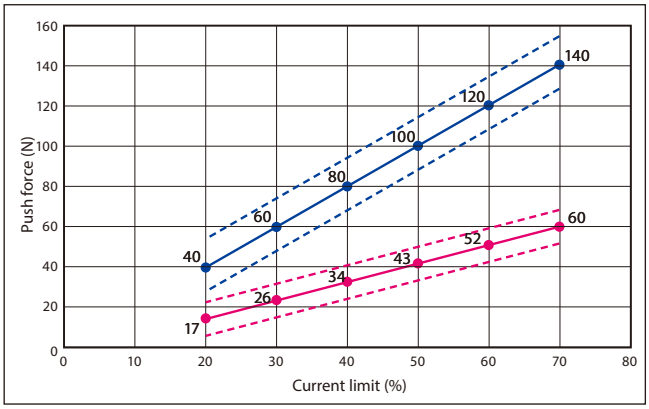
(Note) Use G to convert for configuration using PC compatible software and other teaching tools.
(1G=9,800deg./s²).

■ Correlation Diagram of Push Force and Current Limit

The push force during push-motion operation can be freely adjusted by changing the current limit of the controller (TTA-A series only).

The push forces listed below are for reference only.

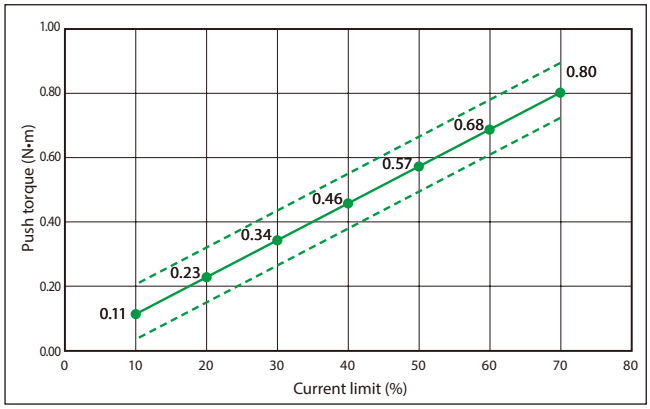
Z-axis



* Maximum push force has a variance of ±10% (dashed lines).

Please consult with IAI if push force control using the rotational axis (R-axis) is desired.
The graph below is for reference only.

R-axis



* Maximum push torque has a variance of ±10% (dashed lines).

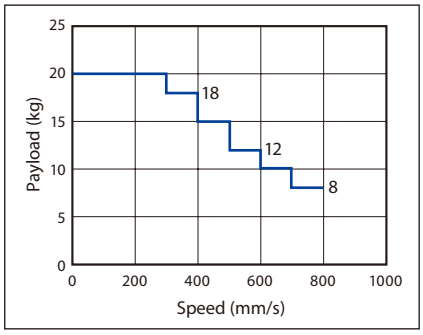
Stepper Motor Type Cautionary Notes

■ Correlation Diagrams of Payload and Speed (X/Y/Z-axis)

Due to the characteristics of the stepper motor, the maximum payload decreases as speed increases.
Check the table below to verify that both speed and payload requirements are satisfied.

[TTA-A series]

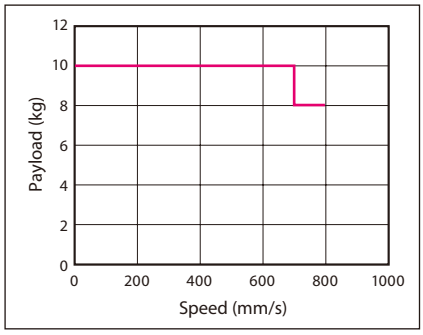
X-axis



Payload and Acceleration/Deceleration

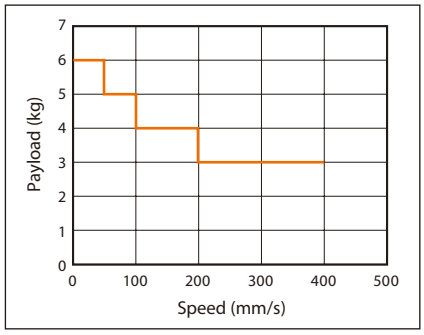
Payload	Acceleration/Deceleration
20kg	0.2G or less
18kg	0.2G or less
15kg	0.3G or less
12kg	0.3G or less
10kg	0.4G or less
8kg	0.4G or less

Y-axis



· Set the acceleration/deceleration to 0.4G or less

Z-axis



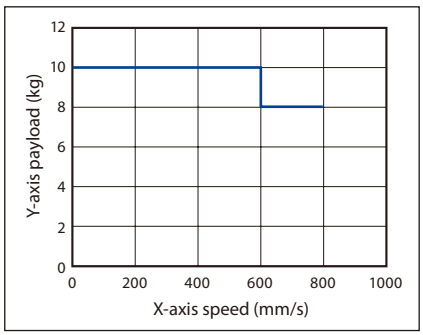
· Set the acceleration/deceleration to 0.2G or less

[TTA-C series]

The maximum X-axis speed of the TTA-C2 varies depending on the Y-axis payload. For TTA-C3 and TTA-C4, the maximum X-axis and Y-axis speeds vary depending on the Z-axis payload.

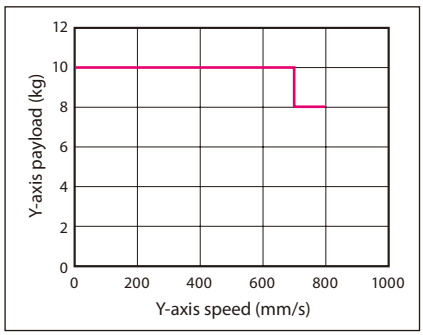
TTA-C2

X-axis



· Set the acceleration/deceleration to 0.2G or less

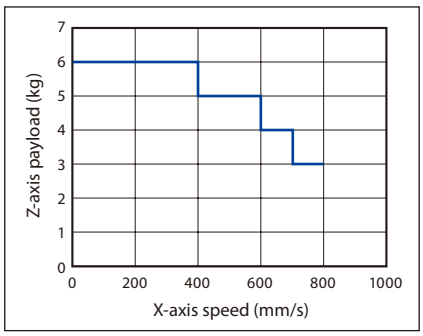
Y-axis



· Set the acceleration/deceleration to 0.2G or less

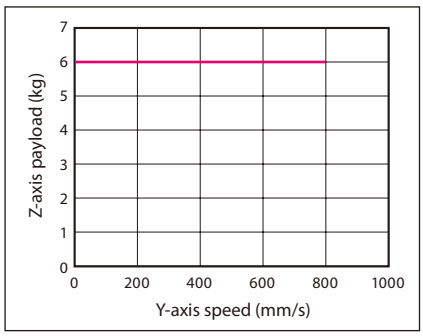
TTA-C3 / C4

X-axis



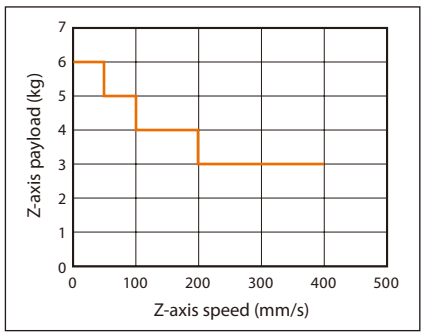
· Set the acceleration/deceleration to 0.2G or less

Y-axis



· Set the acceleration/deceleration to 0.2G or less

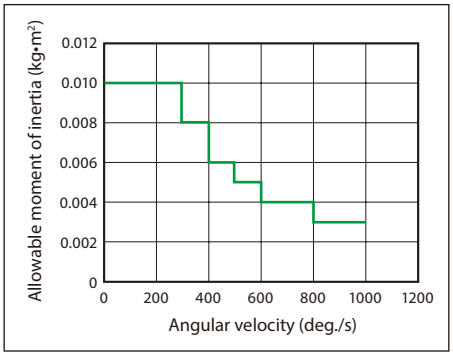
Z-axis



· Set the acceleration/deceleration to 0.2G or less

■ Correlation Diagram of Allowable Moment of Inertia and Angular Velocity (R-axis)

R-axis



Allowable Moment of Inertia, and Angular Velocity and Angular Acceleration/Deceleration (R)

Allowable Moment of Inertia	Angular Velocity	Acceleration/Deceleration
0.010kg·m²	100deg./s	1,000deg./s²
0.010kg·m²	200deg./s	1,000deg./s²
0.010kg·m²	300deg./s	1,000deg./s²
0.008kg·m²	400deg./s	1,778deg./s²
0.006kg·m²	500deg./s	2,778deg./s²
0.005kg·m²	600deg./s	4,000deg./s²
0.004kg·m²	700deg./s	5,444deg./s²
0.004kg·m²	800deg./s	7,111deg./s²
0.003kg·m²	900deg./s	9,000deg./s²
0.003kg·m²	1,000deg./s	11,111deg./s²

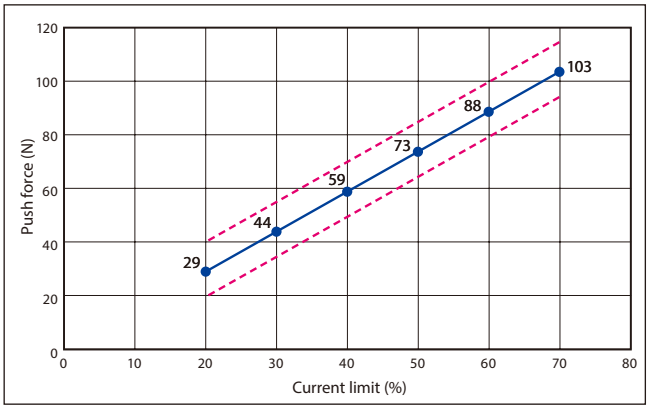
(Note) Use G to convert for configuration using PC compatible software and other teaching tools. (1G=9,800deg./s²).

■ Correlation Diagram of Push Force and Current Limit

The push force during push-motion operation can be freely adjusted by changing the current limit of the controller (TTA-A series only).

The push forces listed below are for reference only.

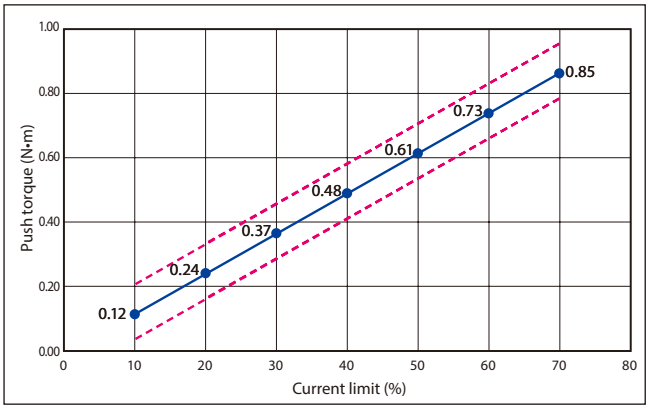
Z-axis



* Maximum push force has a variance of ±10% (dashed lines).

Please consult with IAI if push force control using the rotational axis (R-axis) is desired.
The graph below is for reference only.

R-axis



* Maximum push torque has a variance of ±10% (dashed lines).

Tabletop Robot Series Cautionary Notes

Notes about catalog specs

Speed

"Speed" refers to the rate of movement while the actuator is in motion.
The slider accelerates from a stationary state until the designated speed is reached. Once the desired speed is reached, the slider will continue at that rate until immediately before reaching the target position (specified position), where the slider will then decelerate to a stop.

Acceleration/ Deceleration

"Acceleration" refers to the rate at which the speed increases from a stationary state until the set speed is reached. "Deceleration" refers to the rate at which the speed decreases from the set speed until the slider comes to a stop. Acceleration and deceleration are set in "G" (0.3G = 2,940mm/s^2. For the rotational axis, 0.3G = 2,940deg./s^2)

Duty Cycle

The tabletop robot with a stepper motor can be operated at a duty cycle of 100%. For AC servo motor specification, duty cycle varies depending on the operation conditions (payload, acceleration/deceleration, etc.). Please refer to the "Reference Data" of the catalog for more details.

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

Positioning Repeatability

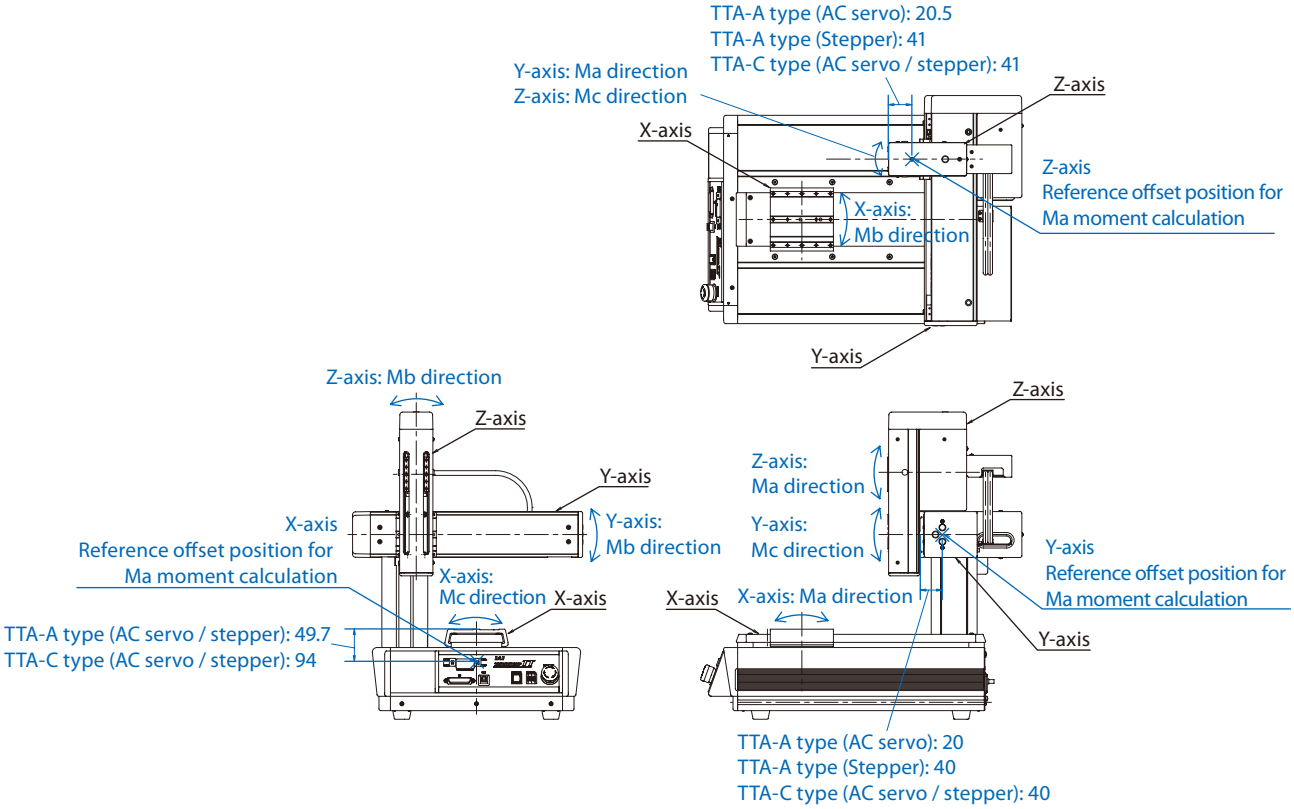
"Positioning repeatability" refers to the accuracy of repeated movements to a predetermined position. This is not the same as "absolute positioning accuracy."

Home

"Home" is located on the motor side of the actuator for standard specification and on the non-motor side for non-motor end specification. (The x-axis of the gate type is on the controller side). During home return the slider moves until it reaches the mechanical end before reversing its direction. Please take caution and prevent contact from any surrounding objects.

Dynamic Allowable Moment (Ma, Mb, Mc)

"Load moment" is the value expected for 5,000km. Please note that exceeding the moment specifications may reduce the service life of the guide. See the figures below for the moment directions and reference points.



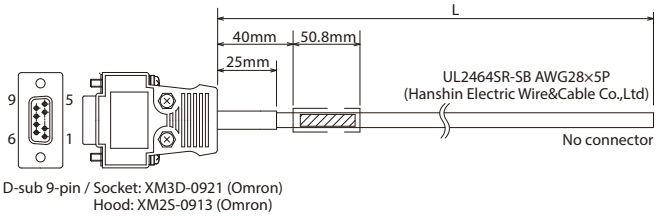
Tabletop Robot Series Options

Expansion SIO Board Connection Cables

A separate connection cable is required when an expansion SIO board (RS232C board, RS485 board) is selected.

Model CB-TTA-232□□□ (for RS232C connection board)

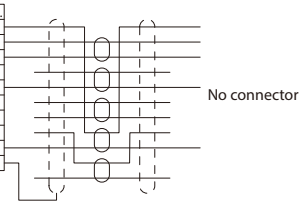
* Please indicate the cable length (L) in □□□, maximum 10m, e.g.) 030 = 3m



D-sub 9-pin / Socket: XM3D-0921 (Omron)
Hood: XM2S-0913 (Omron)

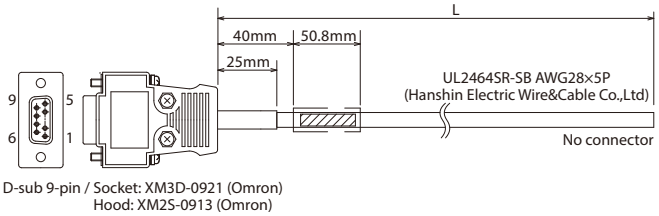
Controller side
XM3D-0921

CH	Color		Dot marks / color		Signal	No.
2	AWG28	Orange	•	Red	RXD2	1
1		Orange	•	Black	RXD	2
1		White	•	Red	TXD	3
1		-	-	-	NC	4
1		Pink	•	Red	SG	5
1		-	-	-	NC	6
1		-	-	-	NC	7
1		-	-	-	NC	8
2		Yellow	•	Black	TXD2	9
Shield is clamped to the hood (FG)						



Model CB-TTA-485□□□ (for RS485 connection board, without termination)

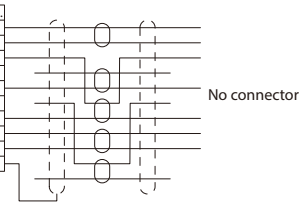
* Please indicate the cable length (L) in □□□, maximum 10m, e.g.) 030 = 3m



D-sub 9-pin / Socket: XM3D-0921 (Omron)
Hood: XM2S-0913 (Omron)

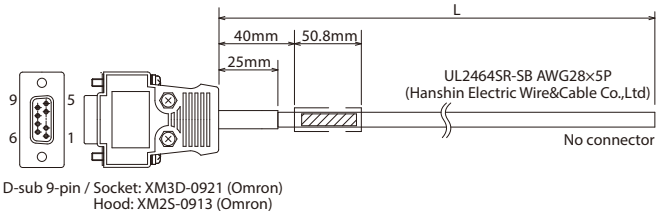
Controller side
XM3D-0921

CH	Color		Dot marks / color		Signal	No.
1	AWG28	Orange	•	Red	SRD1+	1
1		Orange	•	Black	SRD1-	2
1		White	•	Red	SRD1+	3
-		-	-	-	(E)	4
1		Pink	•	Red	SG	5
-		-	-	-	(E2)	6
1		White	•	Black	SRD1-	7
2		Yellow	•	Red	SRD2+	8
2		Yellow	•	Black	SRD2-	9
Shield is clamped to the hood (FG)						



Model CB-TTA-485□□□-TERM (for RS485 connection board, with termination)

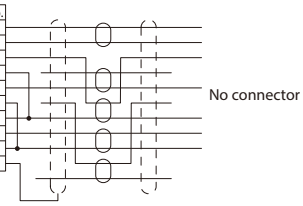
* Please indicate the cable length (L) in □□□, maximum 10m, e.g.) 030 = 3m



D-sub 9-pin / Socket: XM3D-0921 (Omron)
Hood: XM2S-0913 (Omron)

Controller side
XM3D-0921

CH	Color		Dot marks / color		Signal	No.
1	AWG28	Orange	•	Red	SRD1+	1
1		Orange	•	Black	SRD1-	2
1		White	•	Red	SRD1+	3
1		Black	-	-	E	4
1		Pink	•	Red	SG	5
2		Black	-	-	E2	6
1		White	•	Black	SRD1-	7
2		Yellow	•	Red	SRD2+	8
2		Yellow	•	Black	SRD2-	9
Shield is clamped to the hood (FG)						



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