

Tabletop Robot **TTA Series**

**AC Servo Motor
Series Added**
All Models Equipped with
**Battery-less Absolute
Encoder as Standard**

Table Top TTA Series



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 pulse 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	Pulse 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)	1000deg/s	1500deg/s

* Max. speed differs depending on conditions.

3. Improved Positioning Repeatability and Lost Motion for Pulse Motor

Pulse 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.

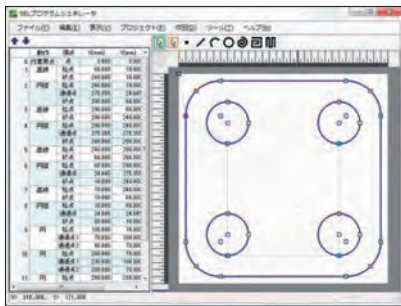
Using the SEL Program Generator...

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

- Reduced processes
- Shortened time
- Improved productivity

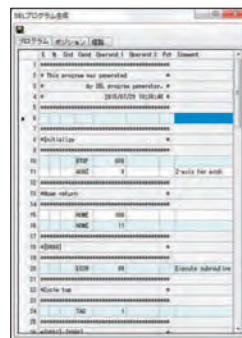
2 types of drawing methods can be used to create the operating path.

1. Reading DXF data
2. Drawing with the mouse

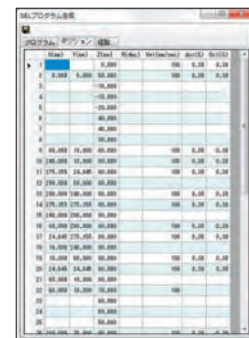


(E.g., for when using the mouse)

Automatic creation

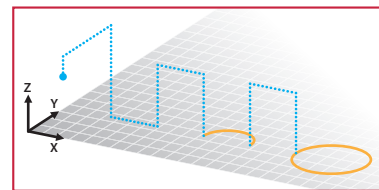


SEL Program
(Application operation program)



Position data

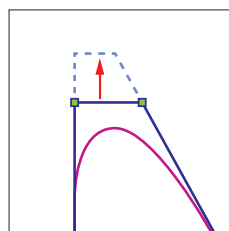
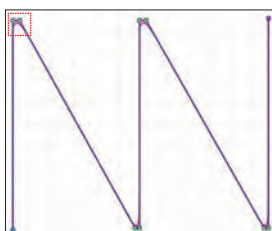
Drawing a pathway like the one at the right automatically generates a program for the robot.



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.

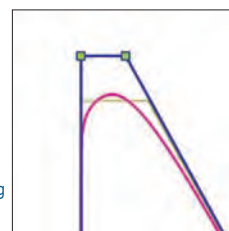
Patent pending



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

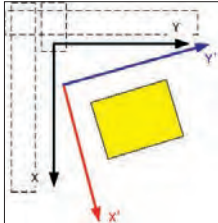


Two types of coordinate systems can be used:

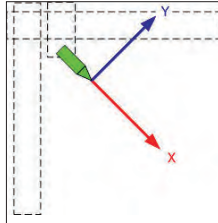
Work coordinate system: the coordinate system defined by offsetting each axis from the base coordinate system (max. 32 types)

Tool coordinate system: the coordinate system defined by the dimensions (offset) of the tool (grripper, etc.) mounted to the tool mounting surface (max. 128 types)

Work coordinate system



Tool coordinate system



* TB-02 is supported by Ver.1.00 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	100.000	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

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.







	OutFn	OutNo.	OutPara1	OutPara2
30	ON	318	0.000	0.000
30				
30	OFF	318	0.000	0.000

Output operation data

* TB-02 is supported by Ver.1.00 or later, and PC compatible software is supported by Ver.12.03.00.00 or later.

Positioning data editing screen

AC Servo Motor Type Lineup

Type		TTA-ASG/CSG*											
Specification	Gate servo motor type (code "AS")												
	A2SLG (global 2-axis low-speed type) [A2SHG (global 2-axis high-speed type)]				A3SLG (global 3-axis low-speed type) [A3SHG (global 3-axis high-speed type)]				A4SLG (global 4-axis low-speed type)** [A4SHG (global 4-axis high-speed type)]**				
													
Stroke X/Y-axis (mm)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	
Stroke Z-axis (mm)	—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)				
Max. speed (mm/s)	X-axis	600 [1000]	600 [1200]		600 [1000]	600 [1200]			600 [1000]	600 [1200]			
	Y-axis	600 [1000]	600 [1200]		600 [800]	600 [1000]	600 [1200]		600 [700]	600 [900]	600 [1050]	600 [1200]	
	Z-axis	—				170 [400]				170 [400]			
	R-axis	—				—				1500 °/s [1500 °/s]			
Max. load capacity (kg)	X-axis	30 [15]			30 [15]			30 [15]					
	Y-axis	20 [11]			—			—					
	Z-axis	—			15 [7]			15 [7]					
	R-axis	—			—			0.01 kg·m ² [0.01 kg·m ²]**					
Reference Page	P.11	P.13	P.15	P.17	P.19	P.21	P.23	P.25	P.27				
		Cantilever servo motor type (code "CS")											
Specification	C2SLG (global 2-axis low-speed type) [C2SHG (global 2-axis high-speed type)]				C3SLG (global 3-axis low-speed type) [C3SHG (global 3-axis high-speed type)]				C4SLG (global 4-axis low-speed type)** [C4SHG (global 4-axis high-speed type)]**				
													
Stroke X/Y-axis (mm)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	
Stroke Z-axis (mm)	—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)				
Max. speed (mm/s)	X-axis	600 [700]	600 [900]	600 [1000]	600 [600]	600 [750]	600 [850]	600 [1000]	600 [600]	600 [750]	600 [850]	600 [1000]	
	Y-axis	600 [600]	600 [800]	600 [1000]	600 [600]	600 [800]	600 [1000]		600 [600]	600 [800]	600 [1000]		
	Z-axis	—				170 [400]				170 [400]			
	R-axis	—				—				1500 °/s [1500 °/s]			
Max. load capacity (kg)	X-axis	—			—			—					
	Y-axis	20 [12]			—			—					
	Z-axis	—			15 [7]			15 [7]					
	R-axis	—			—			0.01 kg·m ² [0.01 kg·m ²]**					
Reference Page	P.29	P.31	P.33	P.35	P.37	P.39	P.41	P.43	P.45				

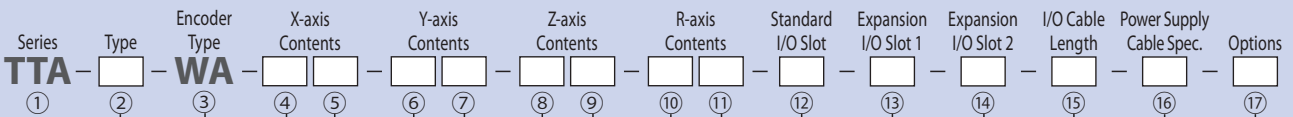
*Global version (code „G“) with safety category specification. **4-axis type with ZR rotary axis. ***Allowable load moment of inertia at velocity of 300 °/s or less.

Pulse Motor Type Lineup

Type	TTA-AG/CG*												
External view	Gate pulse motor type (Code "A")												
	A2G (global 2-axis type)				A3G (global 3-axis type)				A4G (global 4-axis type)**				
Stroke X/Y-axis (mm)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	200x200 (with single pillar)	300x300 (with double pillar)	400x400 (with double pillar)	500x500 (with double pillar)	
Stroke Z-axis (mm)	—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)				
Max. speed (mm/s)	X-axis	800			800				800				
	Y-axis	800			800				800				
	Z-axis	—			400				400				
	R-axis	—			—				1000 °/s				
Max. load capacity (kg)	X-axis	20			20				20				
	Y-axis	10			—				—				
	Z-axis	—			6				6				
	R-axis	—			—				0.01 kg·m ² ***				
Reference Page	P.11	P.13	P.15	P.17	P.19	P.21	P.23	P.25	P.27				
External view	Cantilever pulse motor type (code "C")												
	C2G (global 2-axis type)				C3G (global 3-axis type)				C4G (global 4-axis type)**				
Stroke X/Y-axis (mm)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	200x150 (with single pillar)	300x250 (with double pillar)	400x350 (with double pillar)	500x450 (with double pillar)	
Stroke Z-axis (mm)	—				100/150				100/150 (Stroke R-axis: ±180/360 deg.)				
Max. speed (mm/s)	X-axis	600	700	800	600	700	800	600	700	800	600	700	800
	Y-axis	540	640	800	540	640	800	540	640	800	540	640	800
	Z-axis	—			400				400				
	R-axis	—			—				1000 °/s				
Max. load capacity (kg)	X-axis	—			—				—				
	Y-axis	10			—				—				
	Z-axis	—			6				6				
	R-axis	—			—				0.01 kg·m ² ***				
Reference Page	P.29	P.31	P.33	P.35	P.37	P.39	P.41	P.43	P.45				

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

AC Servo Motor Type Model Specification Items



WA Battery-less absolute

Global Specification

A2SLG	2-axis Gate type, low lead
A2SHG	2-axis Gate type, high lead
A3SLG	3-axis Gate type, low lead
A3SHG	3-axis Gate type, high lead
A4SLG	4-axis Gate type, low lead (R180 deg. spec, R360 deg. spec.)
A4SHG	4-axis Gate type, high lead (R180 deg. spec, R360 deg. spec.)
C2SLG	2-axis Cantilever type, low lead
C2SHG	2-axis Cantilever type, high lead
C3SLG	3-axis Cantilever type, low lead
C3SHG	3-axis Cantilever type, high lead
C4SLG	4-axis Cantilever type, low lead (R180 deg. spec, R360 deg. spec.)
C4SHG	4-axis Cantilever type, high lead (R180 deg. spec, R360 deg. spec.)

Note) The global specification types apply for CE marking and Safety Category B ~ 4.

NP	NPN spec.
PN	PNP spec.

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

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

0	None
2	2m
3	3m
5	5m

PU	Power connector only
2	Power supply cable for 230VAC (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	20	200mm
	30	300mm
	40	400mm
	50	500mm
TTA-C Series	15	150mm
	25	250mm
	35	350mm
	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

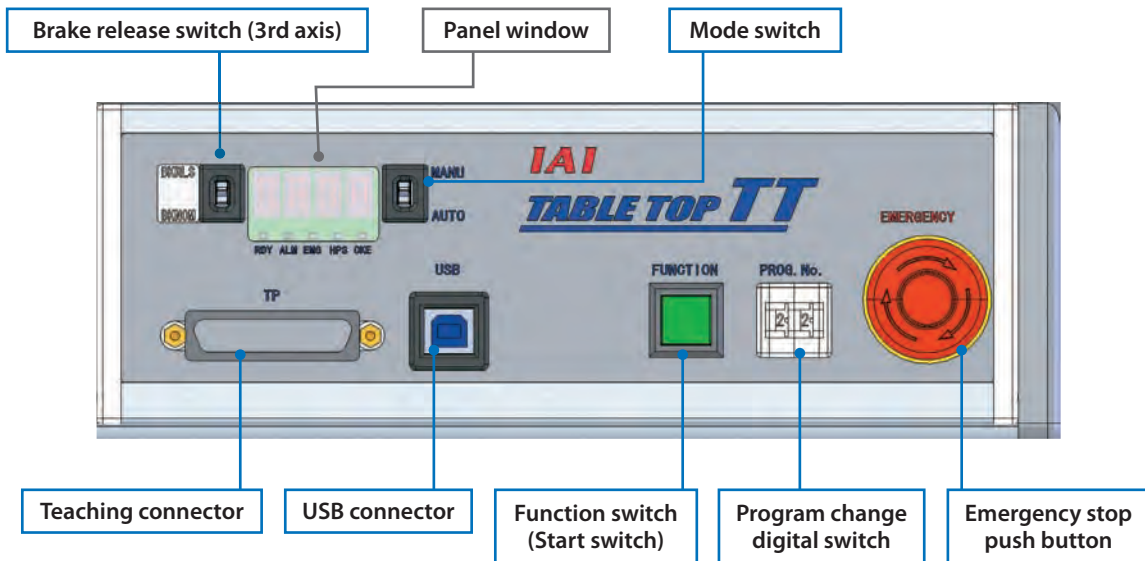
* For A4SLG/A4SHG, either ML or MR must be selected. Only MR can be selected for C4SLG/C4SHG.

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

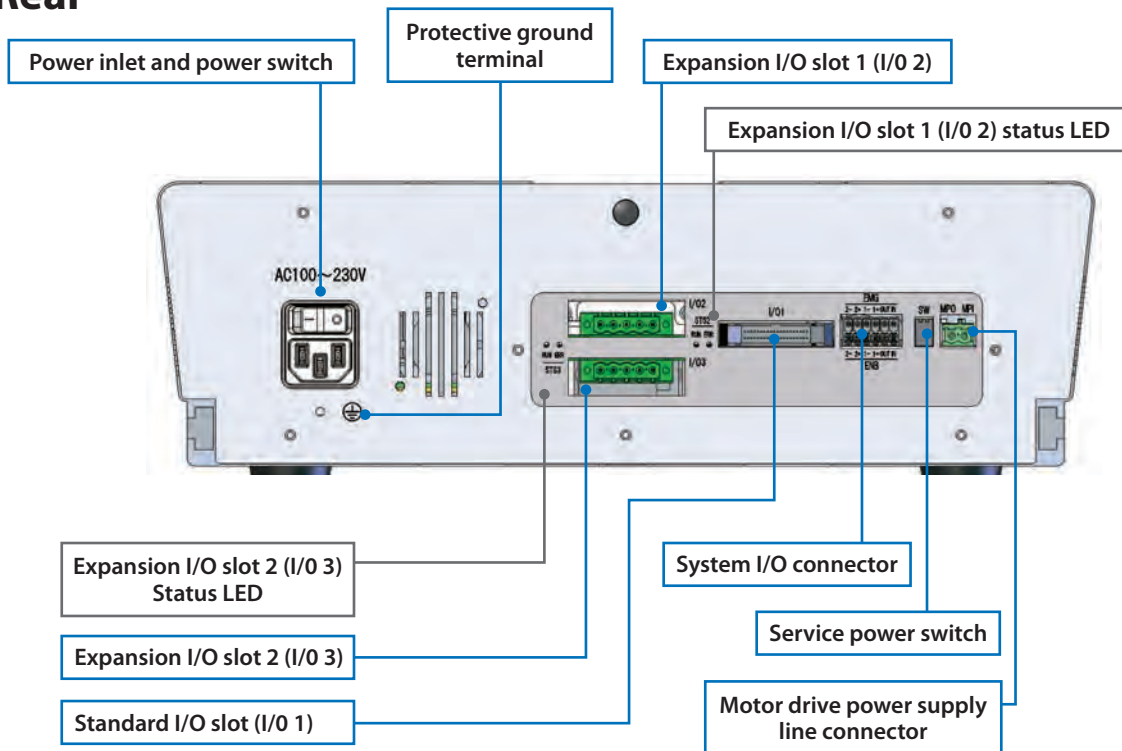
* Additional switch models depend on the items selected. Please refer to P.52 for more information.

Tabletop Robot Series Names of Each Part

Front



Rear



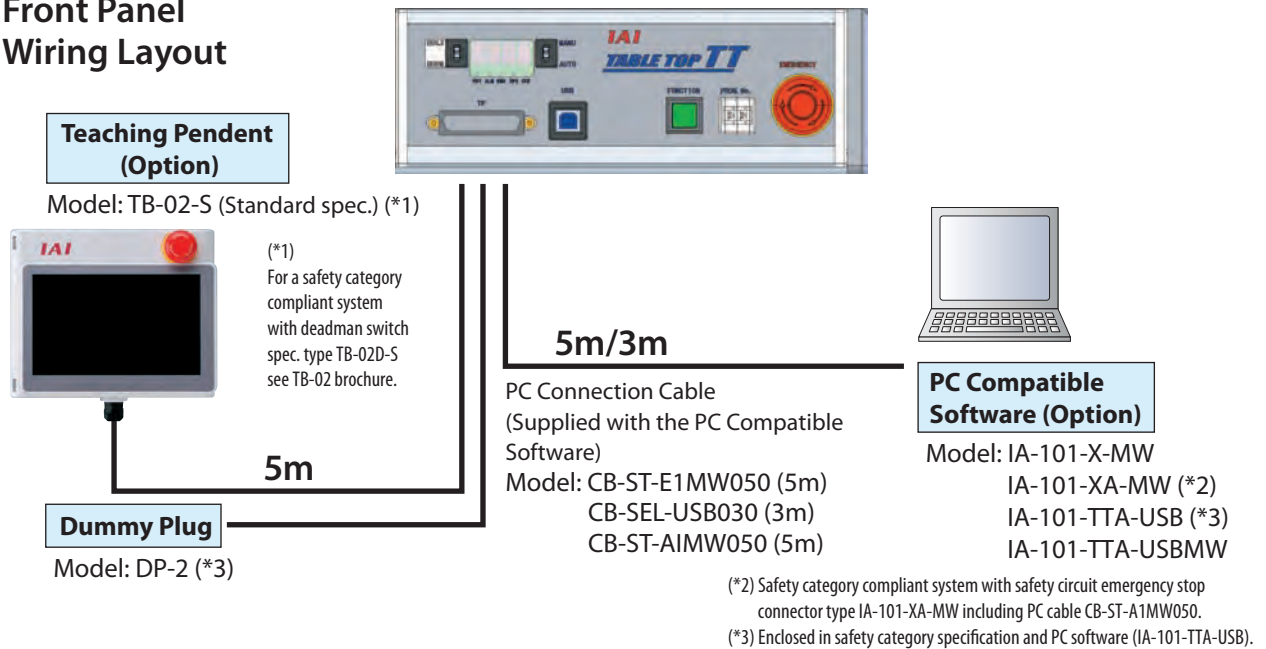
I/O Interface

Standard I/O slot	Standard PIO (input 16 points / output 16 points)
Expansion I/O slot 1 [option]	Expansion PIO (input 16 points / output 16 points) or field network (*1)
Expansion I/O slot 2 [option]	Expansion PIO (input 16 points / output 16 points) or field network (*1)
System I/O slot	Emergency stop input x 2 contacts, enable input x 2 contacts
Motor power I/O connector	For external drive power supply shutoff

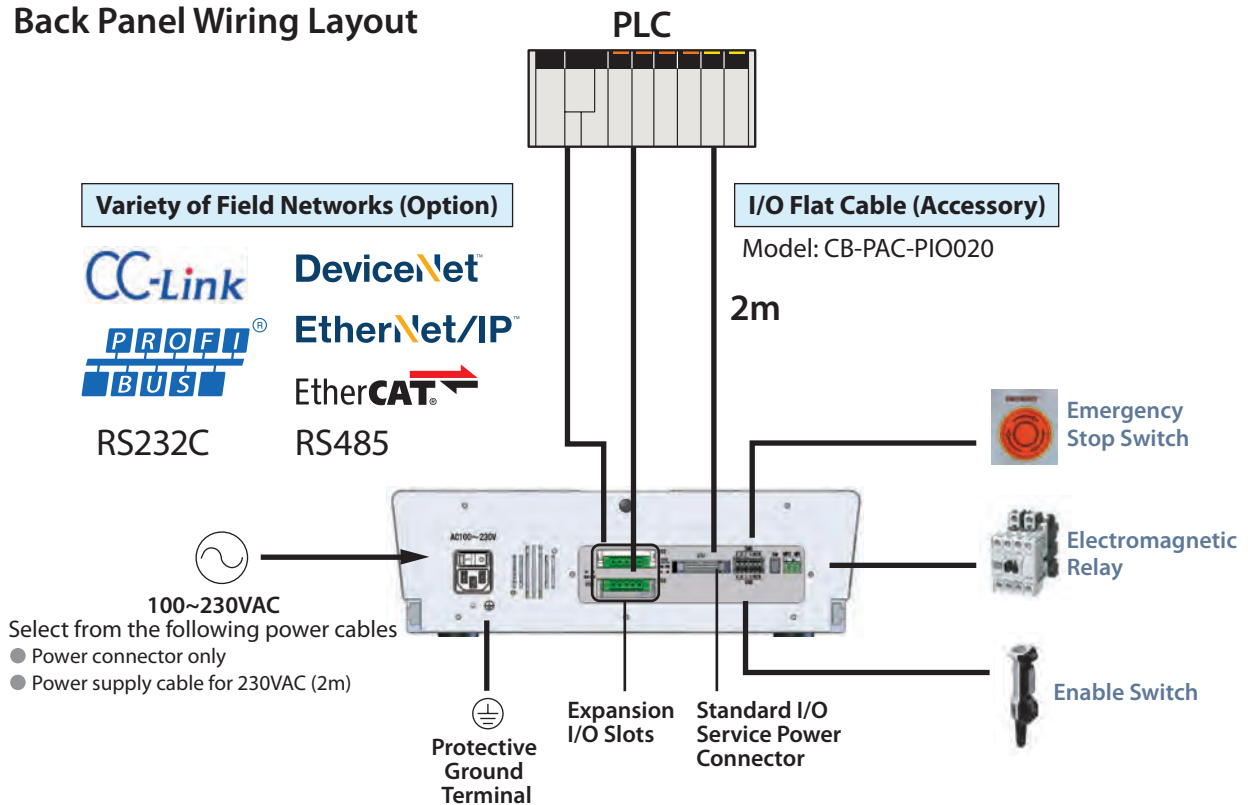
*1: For field network (CC-Link, DeviceNet, PROFIBUS-DP, EtherNet/IP, EtherCAT, RS232C and RS485) connection, the maximum number of input points is 240 and maximum number of output points is 240.
EtherNet/IP + EtherNet/IP is not supported
Connect the vision system to EtherNet/IP board.

Tabletop Robot Series System Configuration

Front Panel Wiring Layout



Back Panel Wiring Layout



*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-A2G-20-20 Tabletop Robot, Gate Type 2-axis, XY-axis 200mm, Pulse Motor

Model Specification Items

A2SLG: 2-axis low lead safety category spec.
 A2SHG: 2-axis high lead safety category spec.
 A2G: 2-axis safety category spec.

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

WA: Battery-less Absolute

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
 2: Power supply cable for 230VAC (2m)

Please refer to the options table below



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



- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A2SLG-WA-20 [1]-[20][2]-[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-A2SHG-WA-20 [1]-[20][2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis			16	200	1~1000	15
	Y-axis			16	200	1~1000	11
TTA-A2G-WA-20 [1]-[20][2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis	Pulse motor	24 or equiv.	200	1~800	20	
	Y-axis		24 or equiv.	200	1~800	10	

Legend: [1][2] XY-axis options [3] Standard I/O slot [4][5] Expansion I/O slots [6] I/O cable length [7] Power supply cable specification [8] Options

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.)	Ball screw (ø12mm, 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.

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.

Expansion I/O Slot

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

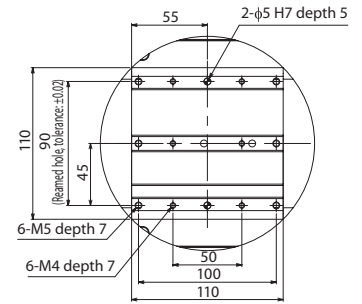
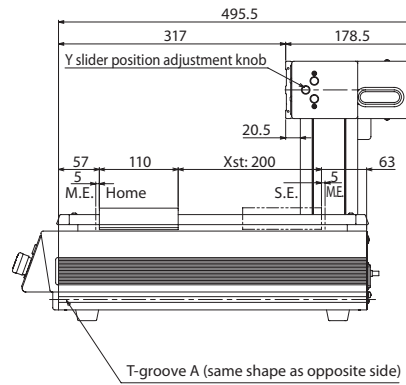
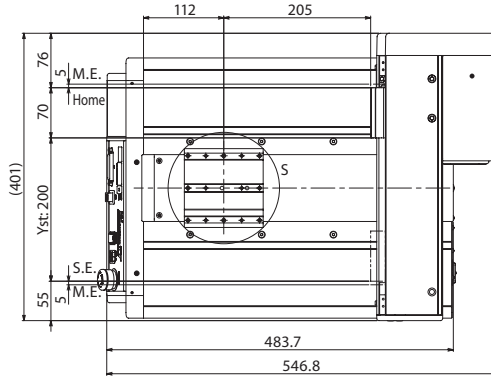
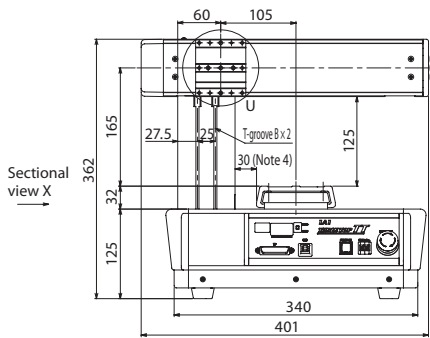
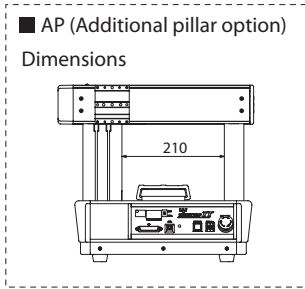
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

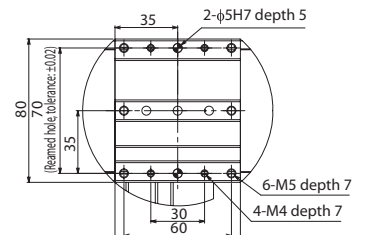


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

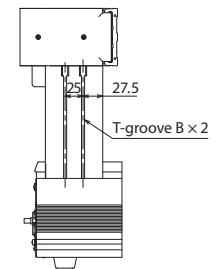
S.E: Stroke end
 M.E: Mechanical end



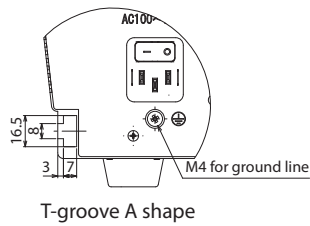
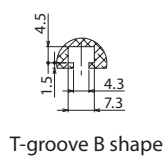
Detail view of S (X-axis slider details)



Detail view of U (Y-axis slider details)



Sectional view X



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

TTA-A2G-30-30 Tabletop Robot, Gate Type 2-axis, XY-axis 300mm, Pulse Motor

Model Specification Items

A2SLG: 2-axis low lead safety category spec.
 A2SHG: 2-axis high lead safety category spec.
 A2G: 2-axis safety category spec.

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

WA: Battery-less Absolute
 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
 2: Power supply cable for 230VAC (2m)
 Please refer to the options table below



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A2SLG-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-A2SHG-WA-30①-30②-③-④-⑤-⑥-⑦-⑧	X-axis			16	300	1~1200	15
	Y-axis			16	300	1~1200	11
TTA-A2G-WA-30①-30②-③-④-⑤-⑥-⑦-⑧	X-axis	Pulse 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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.)	Ball screw (ø12mm, 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.

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.

Expansion I/O Slot

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

TTA-A2S□G-40-40

Tabletop Robot, Gate Type 2-axis, XY-axis 400mm, AC Servo Motor

TTA-A2G-40-40

Tabletop Robot, Gate Type 2-axis, XY-axis 400mm, Pulse Motor

Model Specification Items

A2SLG: 2-axis low lead safety category spec.
A2SHG: 2-axis high lead safety category spec.
A2G: 2-axis safety category spec.

TTA — □ — WA — 40 — □ — 40 — □ — □ — □ — □ — □ — □ — □ — □

WA: Battery-less Absolute

X-axis Stroke: 40:400mm

X-axis Option: □ — 40 — □
Y-axis Stroke: 40:400mm
Y-axis Option: □ — □ — □
NM: Non-motor end specification

Standard I/O Slot: NP: NPN spec. PN: PNP spec.

Expansion I/O Slot 1: □ — □ — □
Expansion I/O Slot 2: □ — □ — □
Refer to the expansion I/O slot table below.
* Enter [E] if unused.

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

Power Supply Cable Spec.: PU: Power connector only 2: Power supply cable for 230VAC (2m)

Options: Please refer to the options table below



POINT

Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A2SLG-WA-40①-40②③-④-⑤-⑥-⑦-⑧	X-axis	Battery-less absolute	AC servo motor	8	400	1~600	30
	Y-axis			8	400	1~600	20
TTA-A2SHG-WA-40①-40②③-④-⑤-⑥-⑦-⑧	X-axis			16	400	1~1200	15
	Y-axis			16	400	1~1200	11
TTA-A2G-WA-40①-40②③-④-⑤-⑥-⑦-⑧	X-axis		Pulse 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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.)	Ball screw (ø12mm, 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.

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.

Expansion I/O Slot

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

15 TTA-A2S□G/TTA-A2G-40-40

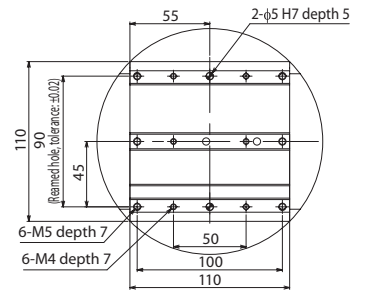
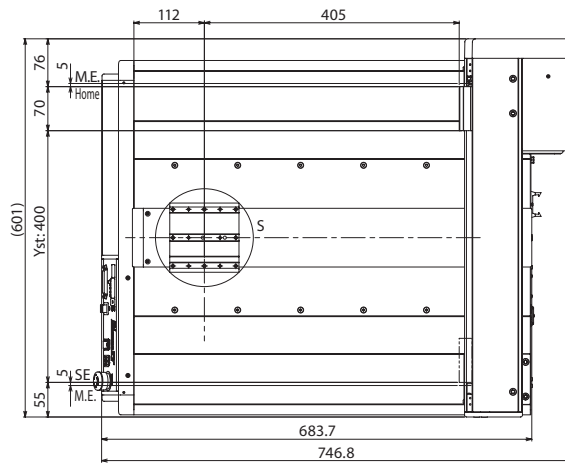
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

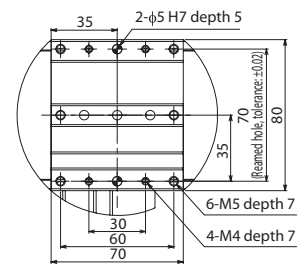


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

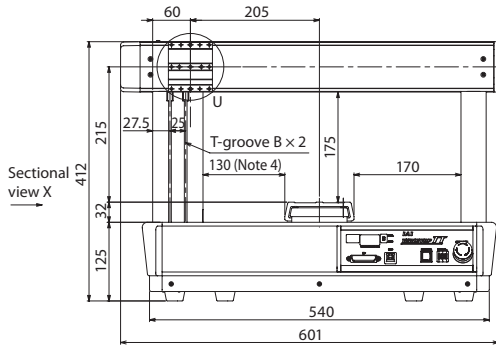
S.E: Stroke end
 M.E: Mechanical end



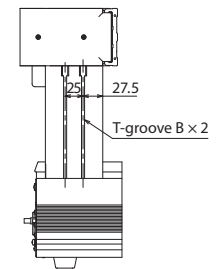
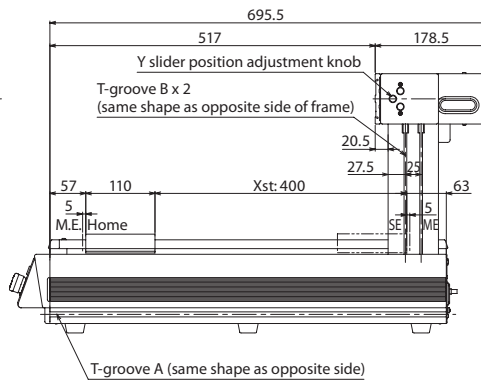
Detail view of S (X-axis slider details)



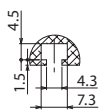
Detail view of U (Y-axis slider details)



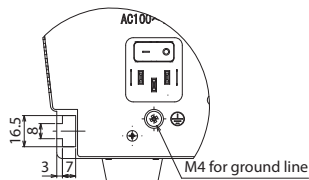
Sectional view X



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-A2G-50-50 Tabletop Robot, Gate Type 2-axis, XY-axis 500mm, Pulse Motor

Model Specification Items

A2SLG: 2-axis low lead safety category spec.
 A2SHG: 2-axis high lead safety category spec.
 A2G: 2-axis safety category spec.

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

WA: Battery-less Absolute
 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
 2: Power supply cable for 230VAC (2m)
 Please refer to the options table below



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A2SLG-WA-50 [1]-50 [2]-[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-A2SHG-WA-50 [1]-50 [2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis			16	500	1~1200	15
	Y-axis			16	500	1~1200	11
TTA-A2G-WA-50 [1]-50 [2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis		Pulse motor	24 or equiv.	500	1~800	20
	Y-axis			24 or equiv.	500	1~800	10

Legend: [1][2] XY-axis options [3] Standard I/O slot [4][5] Expansion I/O slots [6] I/O cable length [7] Power supply cable specification [8] Options

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.)	Ball screw (ø12mm, 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.

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.

Expansion I/O Slot

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

TTA-A3S □ G-30-30

Tabletop Robot, Gate Type 3-axis, XY-axis 300mm, Z-axis 100/150mm, AC Servo Motor

TTA-A3G-30-30

Tabletop Robot, Gate Type 3-axis, XY-axis 300mm, Z-axis 100/150mm, Pulse Motor

Model Specification Items

A3SLG: 3-axis low lead safety category spec.
A3SHG: 3-axis high lead safety category spec.
A3G: 3-axis safety category spec.

TTA - □ - WA - 30 □ - 30 □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □

Series Type Encoder Type
WA: Battery-less Absolute

X-axis Stroke 30:300mm
X-axis Option Y-axis Stroke 30:300mm
Y-axis Option
NM: Non-motor end specification

Z-axis Stroke 10:100mm 15:150mm
Z-axis Option
B: Brake (Standard)
NM: Non-motor end specification

Standard I/O Slot NP: NPN spec. PN: PNP spec.

Expansion I/O Slot 1 Expansion I/O Slot 2
Refer to the expansion I/O slot table below.
* Enter [E] if unused.

I/O Cable Length 0: None 2: 2m 3: 3m 5: 5m
Power Supply Cable Spec. PU: Power connector only 2: Power supply cable for 230VAC (2m)

Options
Please refer to the options table below



POINT
Selection
Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A3SLG-WA-30 [1]-30 [2]-[3] B [4]-[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-A3SHG-WA-30 [1]-30 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis			16	300	1~1200	15
	Y-axis			16	300	1~1000	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3G-WA-30 [1]-30 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis	Pulse motor	24 or equiv.	300	1~800	20	
	Y-axis		24 or equiv.	300	1~800	-	
	Z-axis		12	100/150	1~400	6	

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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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.

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.

Expansion I/O Slot

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

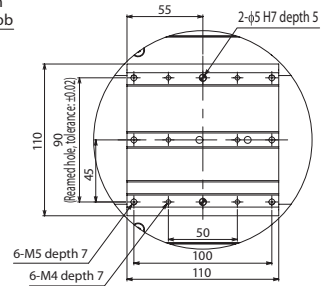
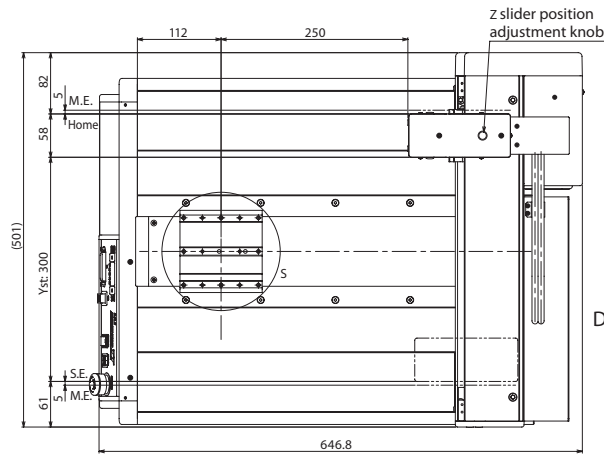
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

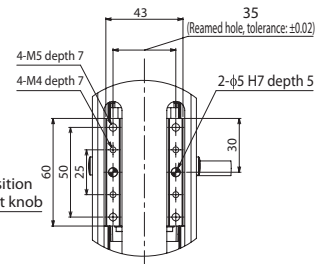


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

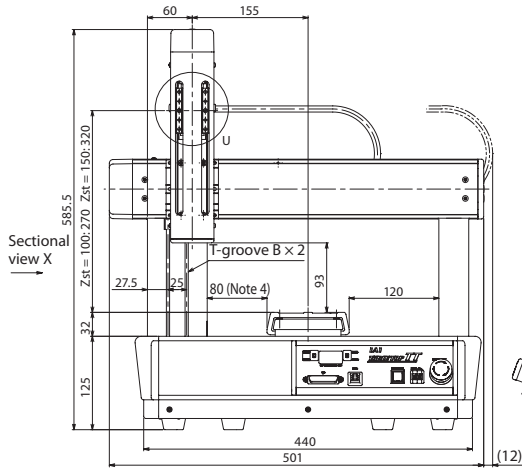
S.E: Stroke end
 M.E: Mechanical end



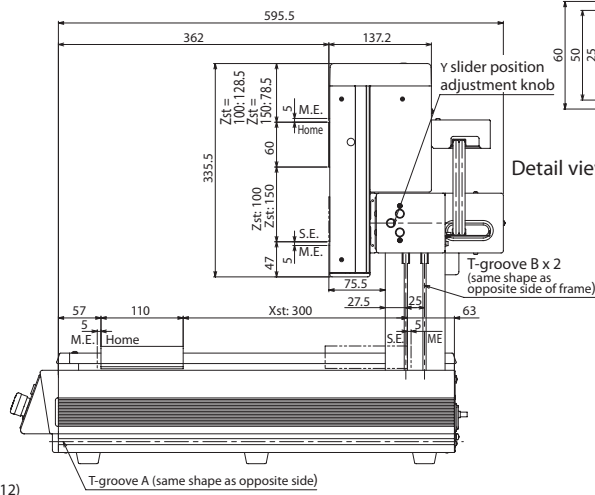
Detail view of S (X-axis slider details)



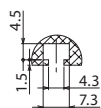
Detail view of U (Z-axis slider details)



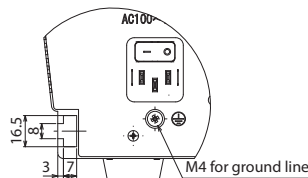
Sectional view X



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-A3G-40-40

Tabletop Robot, Gate Type 3-axis, XY-axis 400mm, Z-axis 100/150mm, Pulse Motor

Model Specification Items

A3SLG: 3-axis low lead safety category spec.
A3SHG: 3-axis high lead safety category spec.
A3G: 3-axis safety category spec.

Series Type Encoder Type

WA: Battery-less Absolute

X-axis Stroke 40:400mm

X-axis Option Y-axis Stroke 40:400mm
NM: Non-motor end specification

Z-axis Stroke 10:100mm 15:150mm

B: Brake (Standard)
NM: Non-motor end specification

Z-axis Option Standard I/O Slot

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

Refer to the expansion I/O slot table below.
* Enter [E] if unused.

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

Power Supply Cable Spec. PU: Power connector only 2: Power supply cable for 230VAC (2m)

Options Please refer to the options table below



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A3SLG-WA-40 [1]-40 [2]-[3] B [4]-[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-A3SHG-WA-40 [1]-40 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis			16	400	1~1200	15
	Y-axis			16	400	1~1200	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3G-WA-40 [1]-40 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis	Pulse motor	24 or equiv.	400	1~800	20	
	Y-axis		24 or equiv.	400	1~800	-	
	Z-axis		12	100/150	1~400	6	

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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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.

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.

Expansion I/O Slot

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

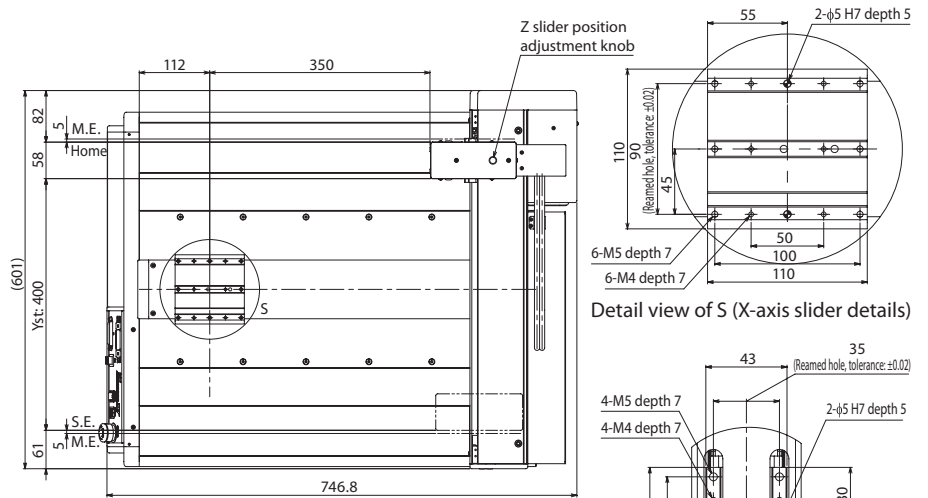
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

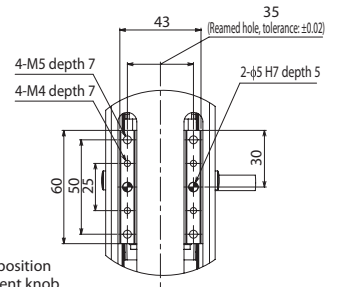


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

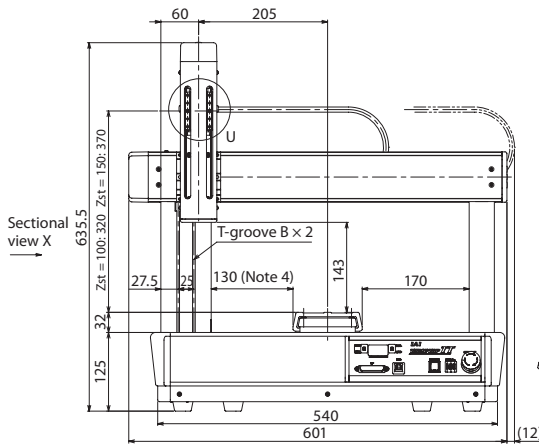
S.E: Stroke end
 M.E: Mechanical end



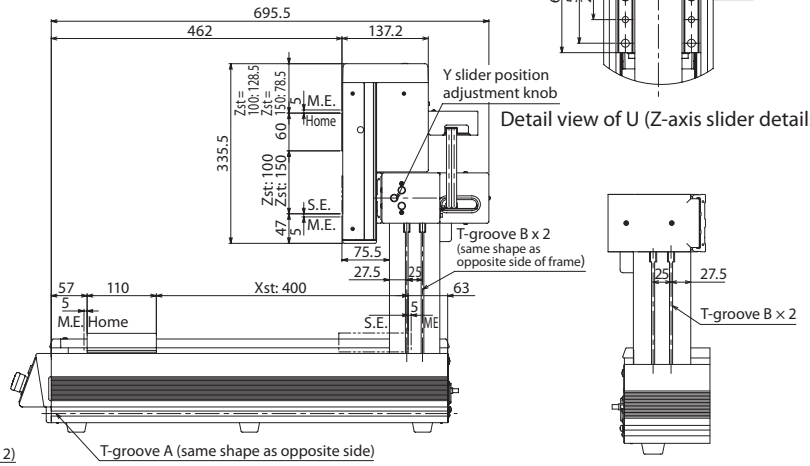
Detail view of S (X-axis slider details)



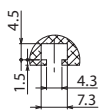
Detail view of U (Z-axis slider details)



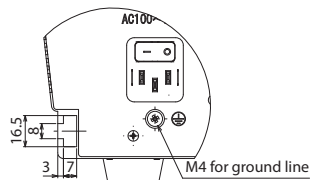
Sectional view X



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-A3G-50-50 Tabletop Robot, Gate Type 3-axis, XY-axis 500mm, Z-axis 100/150mm, Pulse Motor

Model Specification Items	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
A3SLG: 3-axis low lead safety category spec. A3SHG: 3-axis high lead safety category spec. A3G: 3-axis safety category spec.	TTA	□	WA	50	□	50	□	□	□	□	□	□	□	□	□
			Battery-less Absolute	50:500mm		50:500mm		10:100mm 15:150mm		NP: NPN spec. PN: PNP spec.			0: None 2: 2m 3: 3m 5: 5m	PU: Power connector only 2: Power supply cable for 230VAC (2m)	Please refer to the options table below



- POINT Selection Notes**
- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-A3SLG-WA-50 [1]-50 [2]-[3] B [4]-[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-A3SHG-WA-50 [1]-50 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis			16	500	1~1200	15
	Y-axis			16	500	1~1200	-
	Z-axis			5 or equiv.	100/150	1~400	7
TTA-A3G-WA-50 [1]-50 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis	Pulse motor	24 or equiv.	500	1~800	20	
	Y-axis		24 or equiv.	500	1~800	-	
	Z-axis		12	100/150	1~400	6	

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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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.

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.

Expansion I/O Slot

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

TTA-A4S □ G-□-□

Tabletop Robot, Gate Type 4-axis, AC Servo Motor

TTA-A4G-□-□

Tabletop Robot, Gate Type 4-axis, Pulse Motor

Model Spec. Items	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
A4SLG: 4-axis ZR type, low lead Safety category specification	WA	20: 200mm 30: 300mm 40: 400mm 50: 500mm	20: 200mm 30: 300mm 40: 400mm 50: 500mm	20: 200mm 30: 300mm 40: 400mm 50: 500mm	10: 100mm 15: 150mm	18: ±180° 36L: ±360° (with home limit switch)	NP: NPN spec. PN: PNP spec.	0: None 2: 2m 3: 3m 5: 5m	Please refer to the options table below		Refer to the expansion I/O slot table below. * Enter [E] if unused.		PU: Power connector only 2: Power supply cable for 230VAC (2m)				
A4SHG: 4-axis ZR type, high lead Safety category specification																	
A4G: 4-axis ZR type, safety category spec.																	



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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·m ²)
TTA-A4SLG-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	-	-
	R-axis	-	18: ±180°, 36L: ±360°	1500deg./s	15	0.01
TTA-A4SHG-WA-{20/30/40/50} □-{20/30/40/50} □	X-axis	16	200	1000	15	-
			300~500	1200		
			200	700		
			300	900		
			400	1050		
	Z-axis	5 or equiv.	100/150	1~400	7	-
R-axis	-	18: ±180°, 36L: ±360°	1500deg./s	-	0.01	
TTA-A4G-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	-	-
	R-axis	-	18: ±180°, 36L: ±360°	1000deg./s	6	0.01

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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

* 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.

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 (see P.28 below)

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

TTA-C2G-20-15 Tabletop Robot, Cantilever Type 2-axis,
X-axis 200mm, Y-axis 150mm, Pulse Motor

■ Model Specification Items

C2SLG: 2-axis low lead safety category spec.
C2SHG: 2-axis high lead safety category spec.
C2G: 2-axis safety category spec.

WA: Battery-less Absolute

X-axis Stroke 20:200mm

X-axis Option 15:150mm
NM: Non-motor end specification

Standard I/O Slot NP: NPN spec. PN: PNP spec.

Expansion I/O Slot 1 Expansion I/O Slot 2 Refer to the expansion I/O slot table below.
* Enter [E] if unused.

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

Power Supply Cable Spec. PU: Power connector only 2: Power supply cable for 230VAC (2m)

Options Please refer to the options table below



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-C2SLG-WA-20□-15□-□-□-□-□-□-□	X-axis	Battery-less absolute	AC servo motor	8	200	1~600	-
	Y-axis			8	150	1~600	20
TTA-C2SHG-WA-20□-15□-□-□-□-□-□-□	X-axis			13.3 or equiv.	200	1~700	-
	Y-axis			13.3 or equiv.	150	1~600	15
TTA-C2G-WA-20□-15□-□-□-□-□-□-□	X-axis		Pulse motor	24 or equiv.	200	1~600	-
	Y-axis			24 or equiv.	150	1~540	10

Legend: □□ XY-axis options □□ Standard I/O slot □□ Expansion I/O slots □□ I/O cable length □□ Power supply cable specification □□ Options

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ø12mm, 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 motor) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (pulse motor) 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	

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 pulse 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
Expansion PIO board (PNP spec.)	PN
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
RS232C connection board	SE1
RS485 connection board	SE2

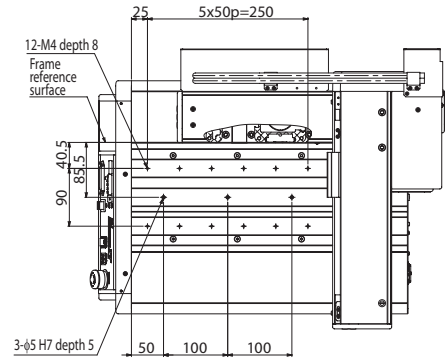
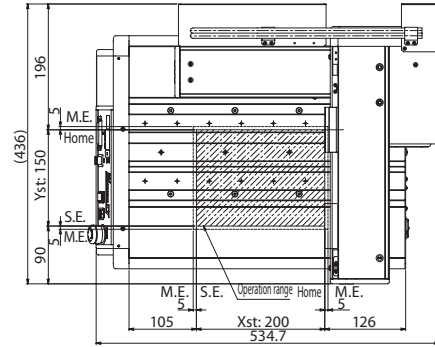
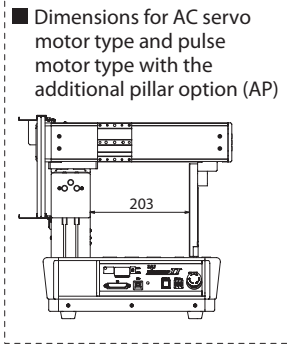
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

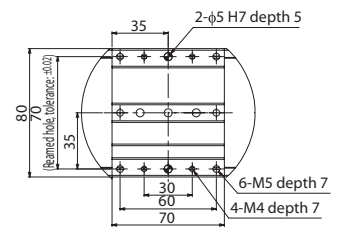
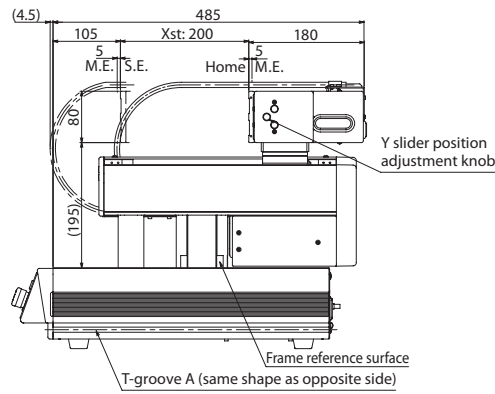
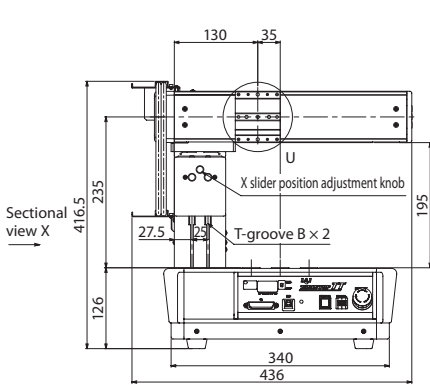


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

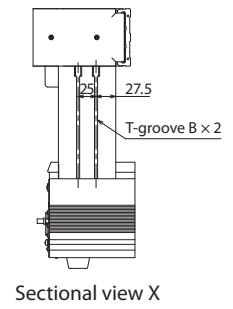
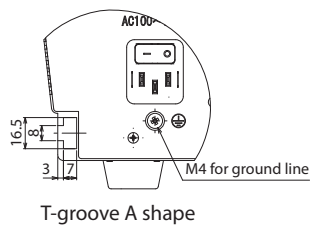
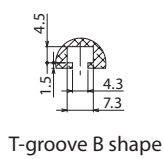
S.E: Stroke end
 M.E: Mechanical end



Top base hole layout



Detail view of U (Y-axis slider details)



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

TTA-C2G-30-25 Tabletop Robot, Cantilever Type 2-axis,
X-axis 300mm, Y-axis 250mm, Pulse Motor

Model Specification Items

C2SLG: 2-axis low lead safety category spec.
C2SHG: 2-axis high lead safety category spec.
C2G: 2-axis safety category spec.

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

WA: Battery-less Absolute

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
2: Power supply cable for 230VAC (2m)

Please refer to the options table below



- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-C2SLG-WA-30[1]-25[2]-[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-C2SHG-WA-30[1]-25[2]-[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-C2G-WA-30[1]-25[2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis	Pulse motor	24 or equiv.	300	1~700	-	
	Y-axis		24 or equiv.	250	1~640	10	

Legend: [1][2] XY-axis options [3] Standard I/O slot [4][5] Expansion I/O slots [6] I/O cable length [7] Power supply cable specification [8] Options

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ø12mm, 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 motor) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (pulse motor) 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	

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.

Expansion I/O Slot

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

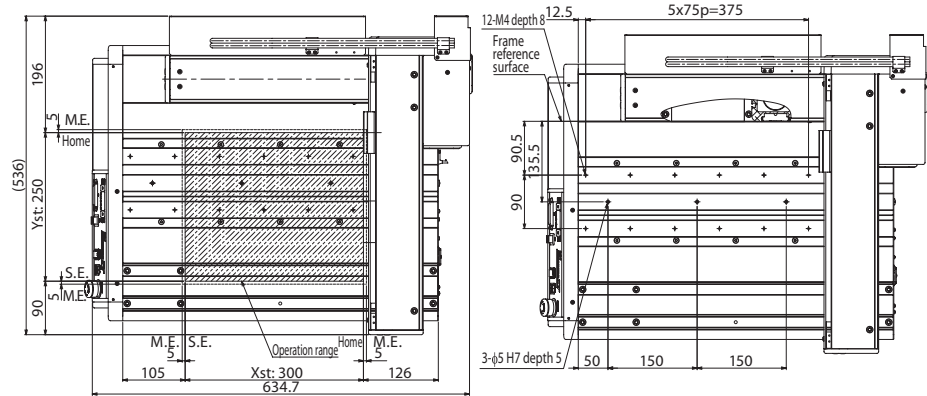
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

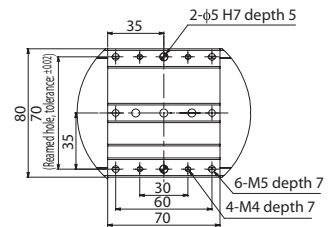
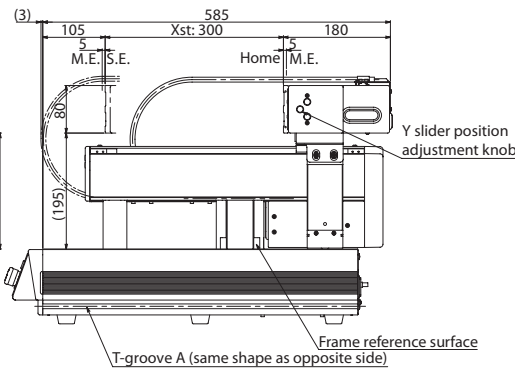
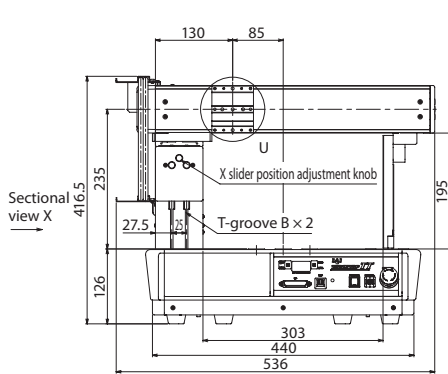


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

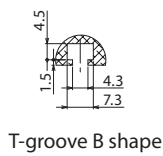
S.E: Stroke end
 M.E: Mechanical end



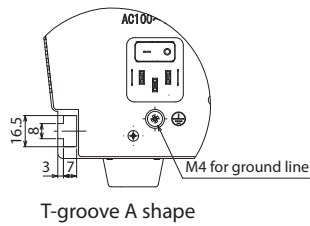
Top base hole layout



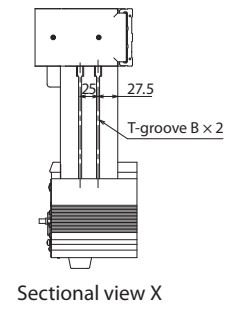
Detail view of U (Y-axis slider details)



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-C2G-40-35

Tabletop Robot, Cantilever Type 2-axis, X-axis 400mm, Y-axis 350mm, Pulse Motor

Model Specification Items

C2SLG: 2-axis low lead safety category spec.
C2SHG: 2-axis high lead safety category spec.
C2G: 2-axis safety category spec.

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

WA: Battery-less Absolute
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
2: Power supply cable for 230VAC (2m)
Please refer to the options table below



POINT Selection Notes

- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-C2SLG-WA-40□-35□-□-□-□-□-□-□	X-axis	Battery-less absolute	AC servo motor	8	400	1~600	-
	Y-axis			8	350	1~600	20
TTA-C2SHG-WA-40□-35□-□-□-□-□-□-□	X-axis			13.3 or equiv.	400	1~1000	-
	Y-axis			13.3 or equiv.	350	1~1000	15
TTA-C2G-WA-40□-35□-□-□-□-□-□-□	X-axis		Pulse motor	24 or equiv.	400	1~800	-
	Y-axis			24 or equiv.	350	1~800	10

Legend: □□ XY-axis options □□ Standard I/O slot □□ Expansion I/O slots □□ I/O cable length □□ Power supply cable specification □□ Options

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ø12mm, 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 motor) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (pulse motor) 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	

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.

Expansion I/O Slot

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

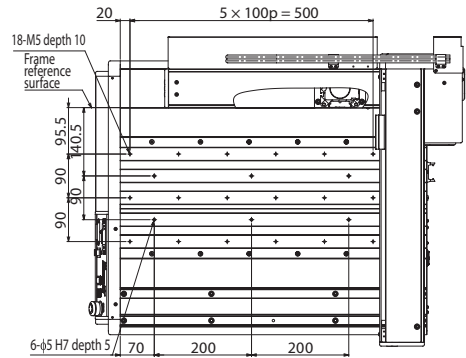
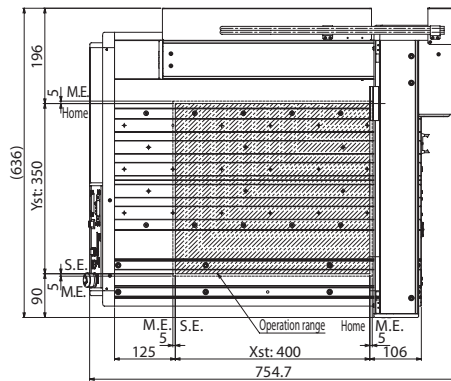
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

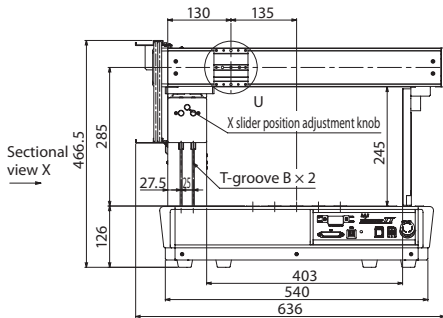


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

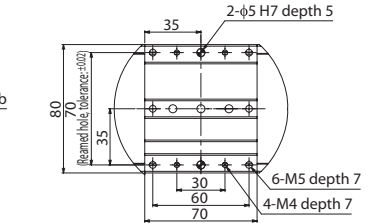
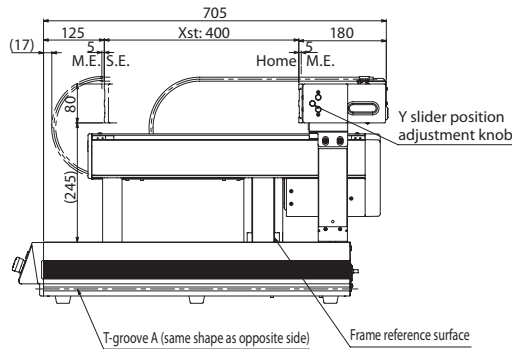
S.E: Stroke end
 M.E: Mechanical end



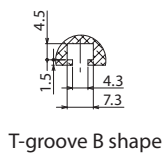
Top base hole layout



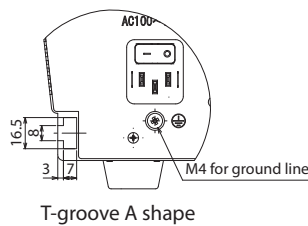
Sectional view X



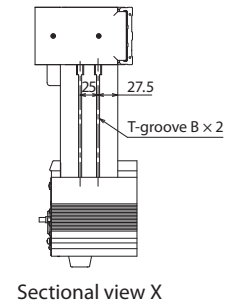
Detail view of U (Y-axis slider details)



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-C2G-50-45 Tabletop Robot, Cantilever Type 2-axis, X-axis 500mm, Y-axis 450mm, Pulse Motor

Model Specification Items

C2SLG: 2-axis low lead safety category spec.
 C2SHG: 2-axis high lead safety category spec.
 C2G: 2-axis safety category spec.

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

WA: Battery-less Absolute

50: 500mm

45: 450mm

NM: Non-motor end specification

NP: NPN spec.
 PN: PNP spec.

Refer to the expansion I/O slot table below.

0: None
 2: 2m
 3: 3m
 5: 5m

PU: Power connector only
 2: Power supply cable for 230VAC (2m)

Please refer to the options table below

* Enter [E] if unused.



- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-C2SLG-WA-50□-45□-□-□-□-□-□-□	X-axis	Battery-less absolute	AC servo motor	8	500	1~600	-
	Y-axis			8	450	1~600	20
TTA-C2SHG-WA-50□-45□-□-□-□-□-□-□	X-axis			13.3 or equiv.	500	1~1000	-
	Y-axis			13.3 or equiv.	450	1~1000	15
TTA-C2G-WA-50□-45□-□-□-□-□-□-□	X-axis	Pulse motor	24 or equiv.	500	1~800	-	
	Y-axis		24 or equiv.	450	1~800	10	

Legend: □□ XY-axis options □□ Standard I/O slot □□ Expansion I/O slots □□ I/O cable length □□ Power supply cable specification □□ Options

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (ø12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt	Ball screw (ø12mm, 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 motor) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (pulse motor) 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	

Options

Name	Option Code	Reference Page
Foot bracket included specification (6 pcs)	FT6	See P.50
X-axis stroke 40/50		
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	SLTO	See P.51
X-axis stroke 40/50		
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
Expansion PIO board (PNP spec.)	PN
DeviceNet connection board	DV
CC-Link connection board	CC
PROFIBUS-DP connection board	PR
EtherNet/IP connection board	EP
EtherCAT connection board	EC
RS232C connection board	SE1
RS485 connection board	SE2

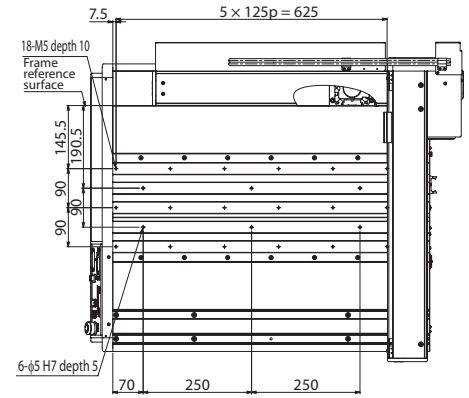
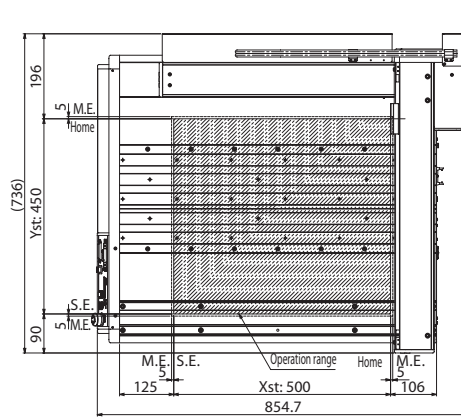
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

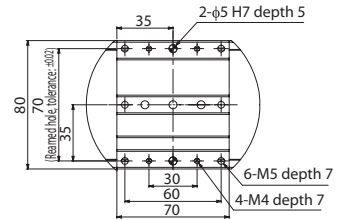
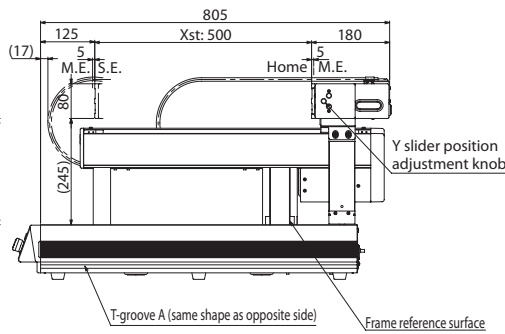
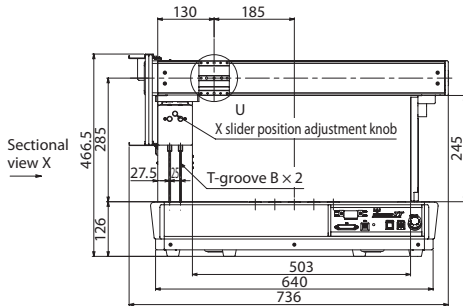


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

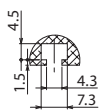
S.E: Stroke end
 M.E: Mechanical end



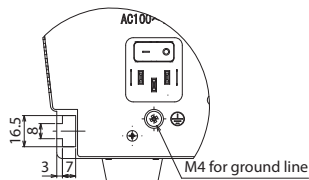
Top base hole layout



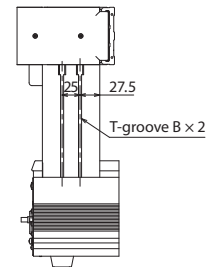
Detail view of U
 (Y-axis slider details)



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-C3G-20-15

Tabletop Robot, Cantilever Type 3-axis, X-axis 200mm, Y-axis 150mm, Z-axis 100mm/150mm, Pulse Motor

Model Specification Items

C3SLG: 3-axis low lead safety category spec.
C3SHG: 3-axis high lead safety category spec.
C3G: 3-axis safety category spec.

Series: TTA-□-WA-20
Type: □-15
Encoder Type: □-□-□-□-□-□-□-□-□-□
Battery-less Absolute

X-axis Stroke: 20:200mm
X-axis Option: □
Y-axis Stroke: 15:150mm
Y-axis Option: □
NM: Non-motor end specification

Z-axis Stroke: 10:100mm
Z-axis Option: □
B: Brake (Standard)
NM: Non-motor end specification

Standard I/O Slot: NP: NPN spec.
PN: PNP spec.

Expansion I/O Slot 1: □
Expansion I/O Slot 2: □
Refer to the expansion I/O slot table below.
* Enter [E] if unused.

I/O Cable Length: 0: None
2: 2m
3: 3m
5: 5m
PU: Power connector only
2: Power supply cable for 230VAC (2m)

Options: □
Please refer to the options table below



POINT Selection Notes

- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-C3SLG-WA-20 [1]-[15][2]-[3][B][4]-[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-C3SHG-WA-20 [1]-[15][2]-[3][B][4]-[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-C3G-WA-20 [1]-[15][2]-[3][B][4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis	Pulse motor	24 or equiv.	200	1~600	-	
	Y-axis		24 or equiv.	150	1~540	-	
	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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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 motor) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (pulse motor) 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	

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 pulse motor specification.
AC servo motor specification is equipped with a support pillar as standard.

Expansion I/O Slot

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

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-C3G-30-25

Tabletop Robot, Cantilever Type 3-axis, X-axis 300mm, Y-axis 250mm, Z-axis 100mm/150mm, Pulse Motor

Model Specification Items

C3SLG: 3-axis low lead safety category spec.
C3SHG: 3-axis high lead safety category spec.
C3G: 3-axis safety category spec.

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

WA: Battery-less Absolute

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
2: Power supply cable for 230VAC (2m)

Please refer to the options table below



POINT Selection Notes

- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-C3SLG-WA-30 [1]-25 [2]-[3] B [4]-[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-C3SHG-WA-30 [1]-25 [2]-[3] B [4]-[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-C3G-WA-30 [1]-25 [2]-[3] B [4]-[5]-[6]-[7]-[8]-[9]-[10]	X-axis	Pulse motor	24 or equiv.	300	1~700	-	
	Y-axis		24 or equiv.	250	1~640	-	
	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

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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 motor) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (pulse motor) 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	

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.

Expansion I/O Slot

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

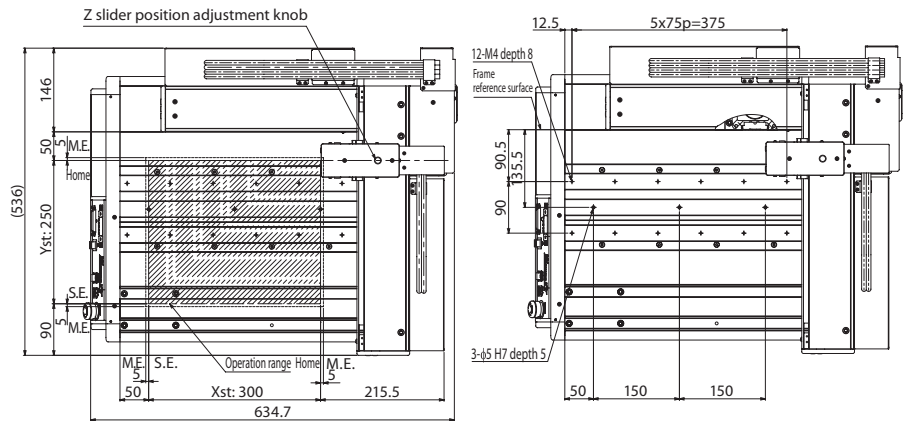
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

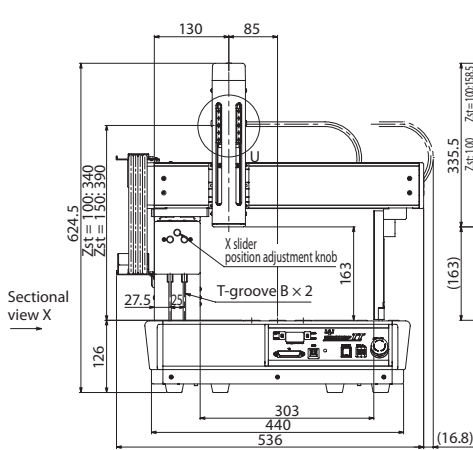


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

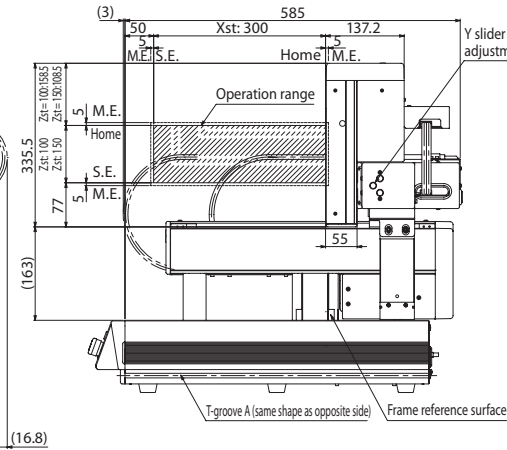
S.E: Stroke end
 M.E: Mechanical end



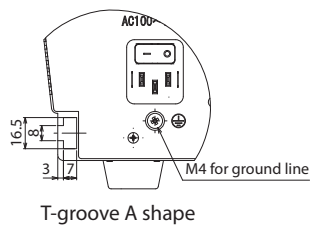
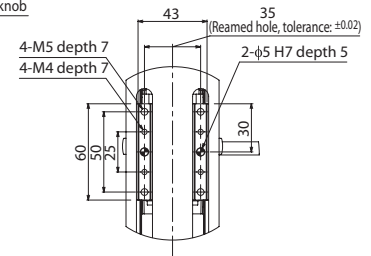
Top base hole layout



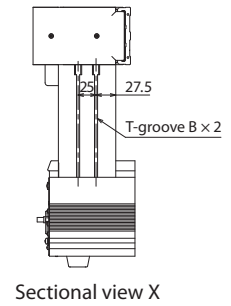
T-groove B shape



Detail view of U (Z-axis slider details)



T-groove A shape

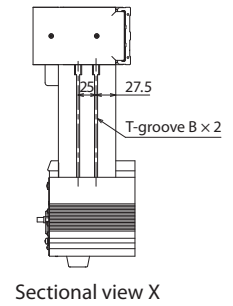
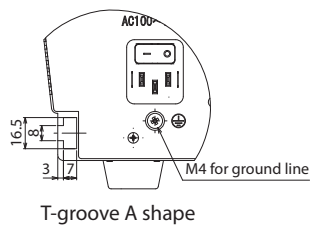
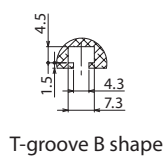
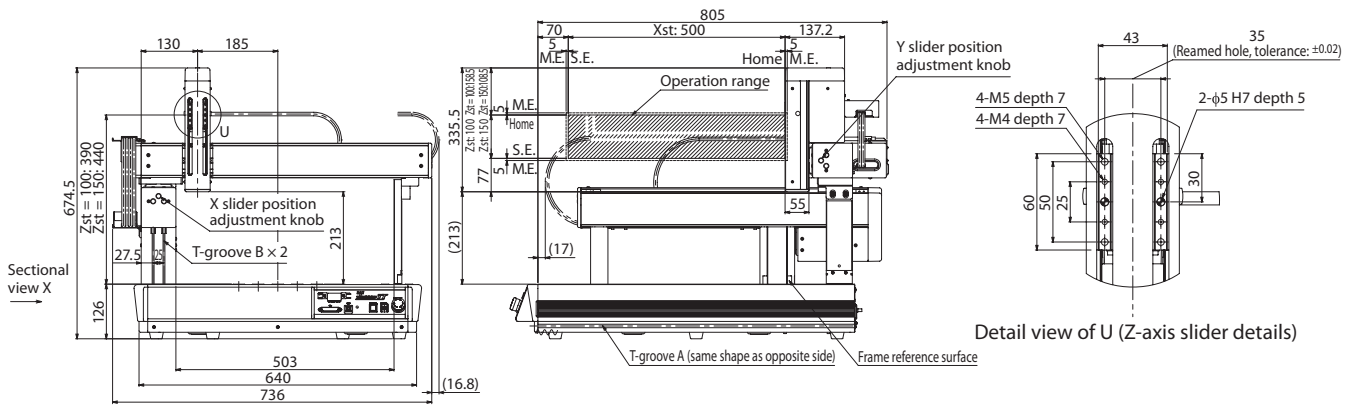
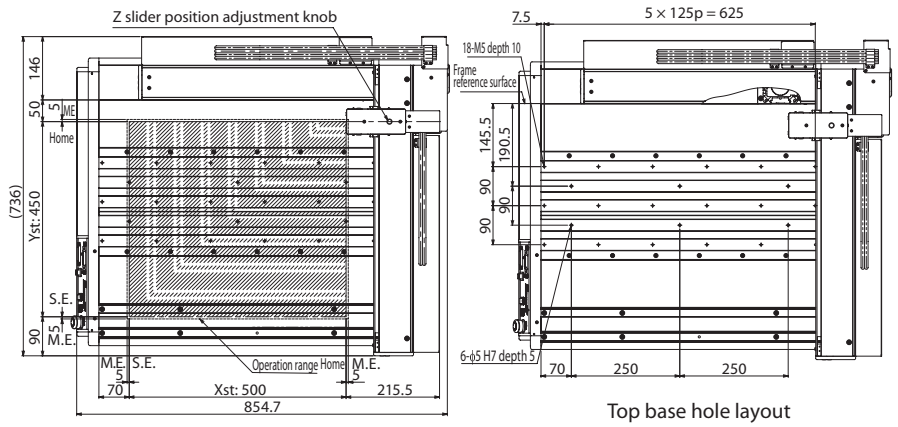


Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.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



TTA-C4S □ G-□-□

Tabletop Robot, Cantilever Type 4-axis, AC Servo Motor

TTA-C4G-□-□

Tabletop Robot, Cantilever Type 4-axis, Pulse Motor

Model Spec. Items	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
C4SLG: 4-axis ZR type, low lead Safety category specification	WA	20: 200mm 30: 300mm 40: 400mm 50: 500mm	less	15: 150mm 25: 250mm 35: 350mm 45: 450mm		10: 100mm 15: 150mm		18: ±180° 36L: ±360° (with home limit switch)		NP: NPN spec. PN: PNP spec.					0: None 2: 2m 3: 3m 5: 5m		Please refer to the options table below
C4SHG: 4-axis ZR type, high lead Safety category specification	WA	20: 200mm 30: 300mm 40: 400mm 50: 500mm	less	15: 150mm 25: 250mm 35: 350mm 45: 450mm		10: 100mm 15: 150mm		18: ±180° 36L: ±360° (with home limit switch)		NP: NPN spec. PN: PNP spec.					0: None 2: 2m 3: 3m 5: 5m		Please refer to the options table below
C4G: 4-axis ZR type, safety category spec.	WA	20: 200mm 30: 300mm 40: 400mm 50: 500mm	less	15: 150mm 25: 250mm 35: 350mm 45: 450mm		10: 100mm 15: 150mm		18: ±180° 36L: ±360° (with home limit switch)		NP: NPN spec. PN: PNP spec.					0: None 2: 2m 3: 3m 5: 5m		Please refer to the options table below

B: Brake (Standard) MR: Motor side-mounted to the right
 CO: With cover Refer to the expansion I/O slot table below.
 NM: Non-motor end spec. * Enter [E] if unused.

PU: Power connector only
 Z: Power supply cable for 230VAC (2m)



- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but pulse 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-m ²)
TTA-C4SLG-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°	1500deg./s	-	0.01
TTA-C4SHG-WA-{20/30/40/50} □-{15/25/35/45} □	X-axis	13.3 or equiv.	200	600	-	-
			300	750	-	-
			400	850	-	-
			500	1000	-	-
	Y-axis	13.3 or equiv.	150	600	-	-
			250	800	-	-
			350~450	1000	-	-
			Z-axis	5 or equiv.	100/150	1~400
R-axis	-	-	18: ±180°, 36L: ±360°	1500deg./s	-	0.01
TTA-C4G-WA-{20/30/40/50} □-{15/25/35/45} □	X-axis	24 or equiv.	200	600	-	-
			300	700	-	-
			400~500	800	-	-
			150	540	-	-
	Y-axis	24 or equiv.	250	640	-	-
			350~450	800	-	-
			100/150	1~400	-	-
			Z-axis	12	100/150	1~400
R-axis	-	-	18: ±180°, 36L: ±360°	1000deg./s	-	0.01

Actuator Specifications

Item	Description	
	AC Servo Motor	Pulse Motor
Drive system	Ball screw (X, Y-axis: ø12mm, Z-axis: ø10mm, 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: ø12mm, Z-axis: ø10mm, 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 motor) X-axis: Ma: 14.9N-m Mb: 14.9N-m Mc: 44.3N-m (pulse motor) 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 *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.

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 pulse motor specification.
 AC servo motor specification is equipped with a support pillar as standard.

Expansion I/O Slot (see P.46 below)

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]).

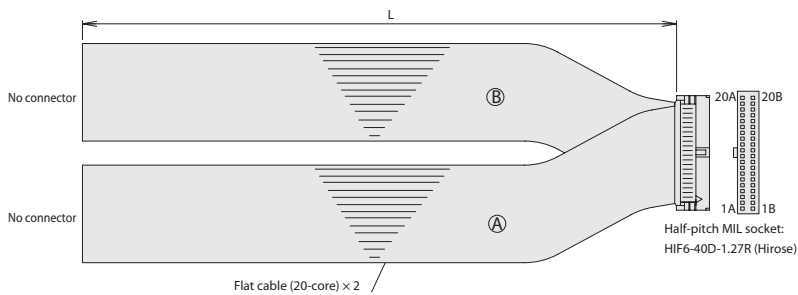
Expansion Pio Connector Pin Layout

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	

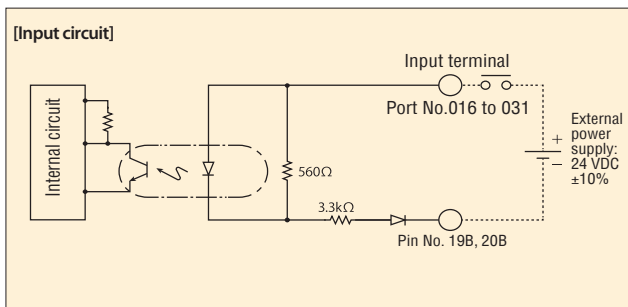
I/O Wiring Diagrams

Standard PIO

Input External input specification (PNP specification)

Item	Specification
Input voltage	24VDC +10%
Input current	7mA, 1 circuit
ON/OFF voltage	ON voltage: 8.0VDC max. OFF voltage: 19.0VDC min.
Insulation method	Photocoupler isolation

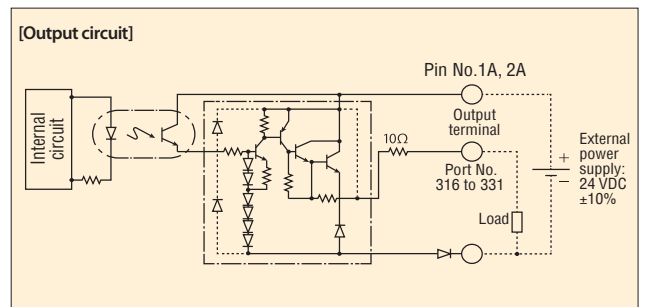
- * The circuit diagram below shows external power input (I/O power supply output is off).
- * The port numbers in the circuit diagram below are the default port numbers at time of shipping.
- * The allowable leak current when input is off is 1mA or less.



Output External output specification (PNP specification)

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

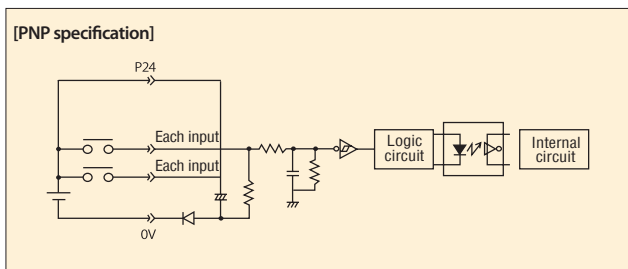
- * This circuit diagram shows external power input (I/O power supply output is off).
 - * The port numbers in the circuit diagram below are the default port numbers at time of shipping.
- Note: The total load current from standard I/O number 316 onwards is 400mA per 8 points. (100mA maximum per 1 point)



Expansion PIO

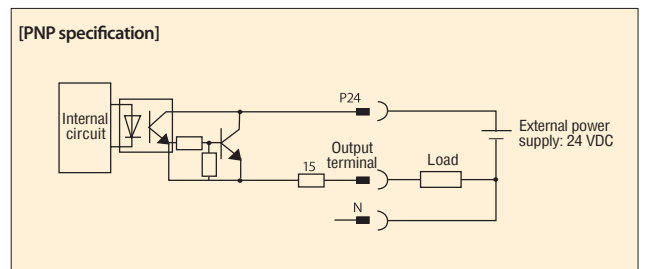
Input External input specification

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



Output External output specification

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



Tabletop Robot Series Controller Specification

Controller Specification

Item			
Motor type		AC full digital servo motor, pulse motor (servo control)	
Compatible encoder		Battery-less absolute encoder	
Data recording device		Flash ROM/FRAM	
Number of program steps		9999	
Number of positions		30000	
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 (PNP)	8VDC max.
		OFF voltage (PNP)	19VDC min.
		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 PNP specification (16IN/16OUT)	
		CC-Link (remote device)	
		DeviceNet	
		PROFIBUS-DP	
		EtherNet/IP	
		EtherCAT	
		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		230V: 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 position 55.5mm (Standard)

120mm 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 position

90mm (Standard)

180mm 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

Y-axis adjustable height mounting position

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

* 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-A4G. 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-C4G 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 SLTO

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

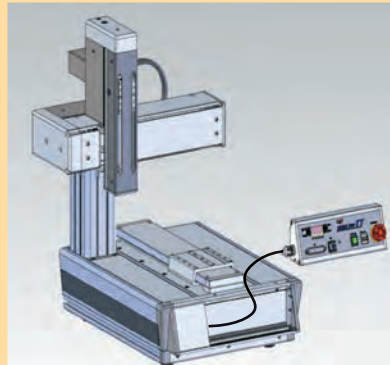
Option code SLT

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

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.

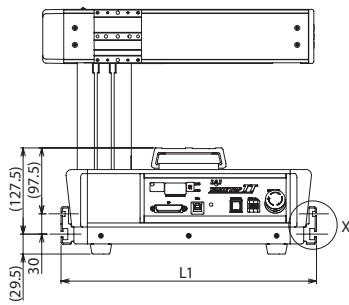
This option is not compatible with the FT4 or FT6 options.

Dimensions Chart

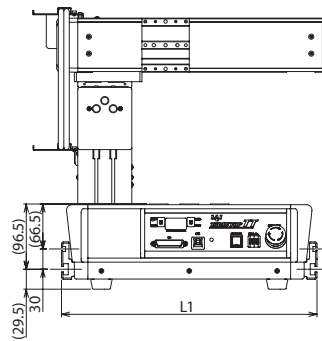
Model	L1	L2
20-20 / 20-15	378	430
30-30 / 30-25	478	530
40-40 / 40-35	578	630
50-50 / 50-45	678	730

■ Front View

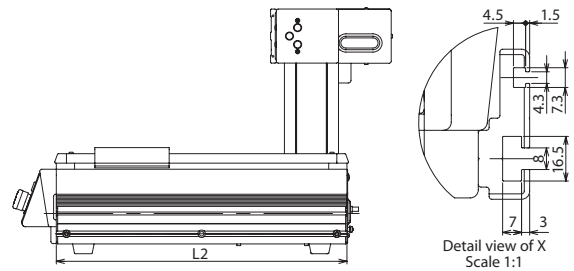
TTA-A type



TTA-C type



■ Side View (TTA-A, TTA-C)



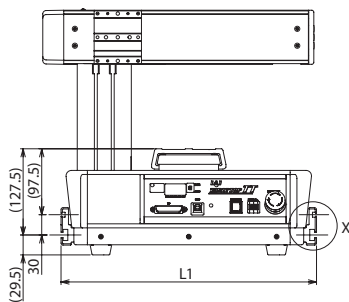
■ Side Slot 180mm Mounting Specification (Option Code: SLT0)

Select this option to add 180mm long side slots if the FT4 or FT6 option has been selected.

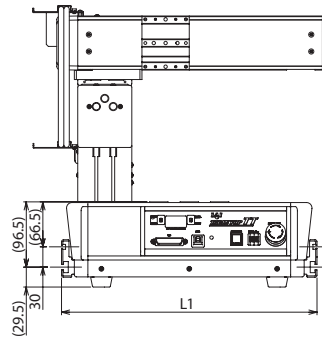
Types with a 20/30 X-axis stroke can have two 180mm side slots, while 40/50 types can have four.

■ Front View

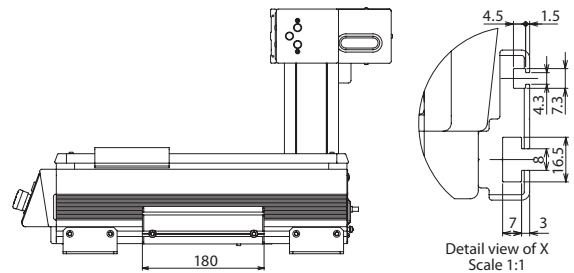
TTA-A type



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).

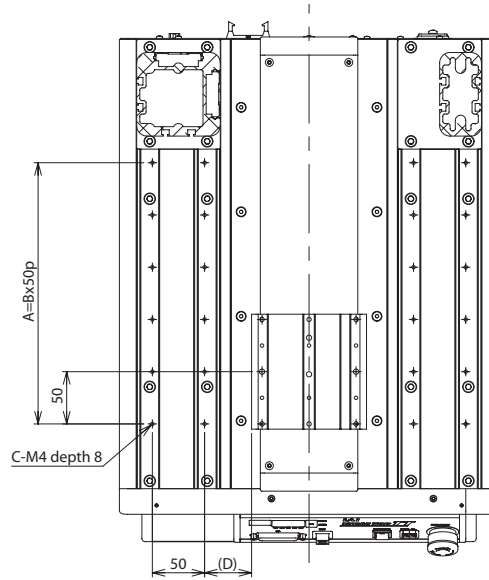
* These options are only available with the TTA-A types.

* 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

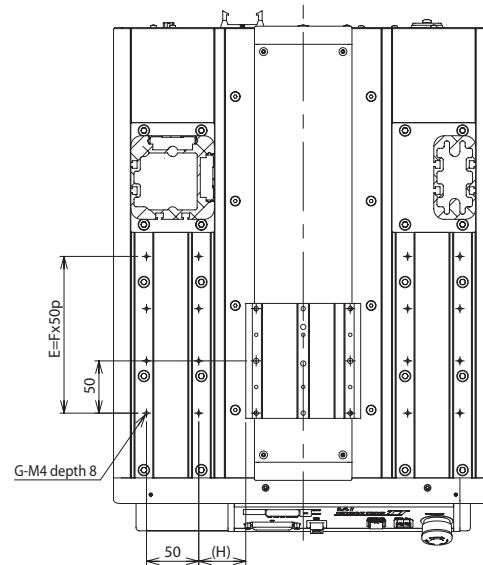


Frame Position F1 Specification Hole Positions

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

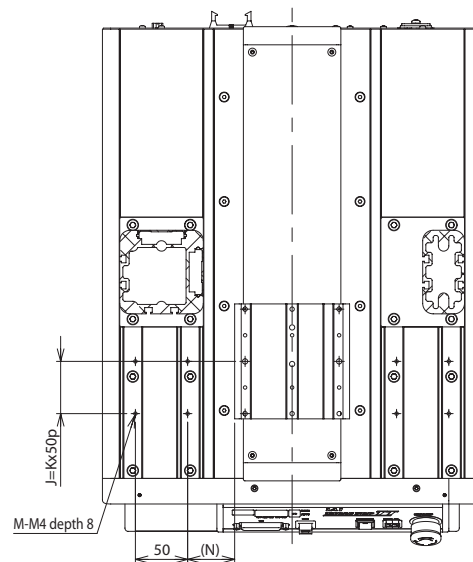


Frame Position F2 Specification Hole Positions

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



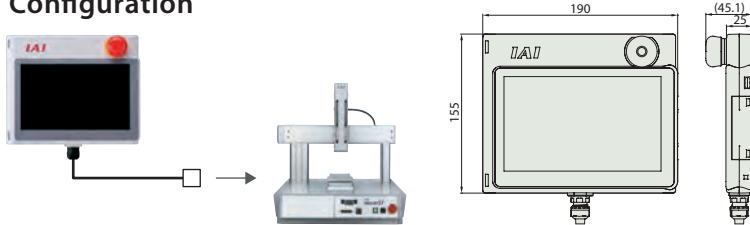
Tabletop Robot Series Options

Touch Panel Teaching

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

■ **Model TB-02-S**

■ **Configuration**



■ **Specification**

Item	TB-02-S
Rated voltage	24VDC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0~40°C
Ambient operating humidity	20~ 85% RH (Non-condensing)
Environmental resistance	IP20
Weight	470g (TB-02-S unit only)

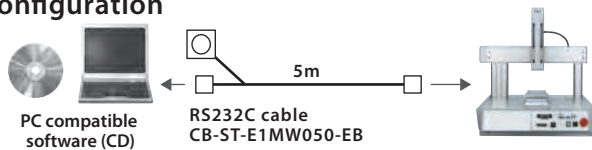
PC Compatible Software (for Windows)

■ **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, pulse motor specification is supported by Ver. 12.03.00.00 or later.

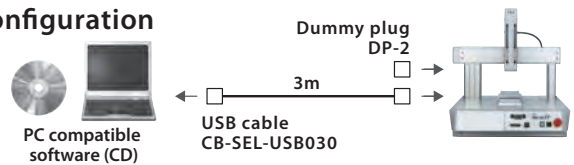
■ **Model IA-101-X-MW**
(Supplied with RS232C cable)

■ **Configuration**



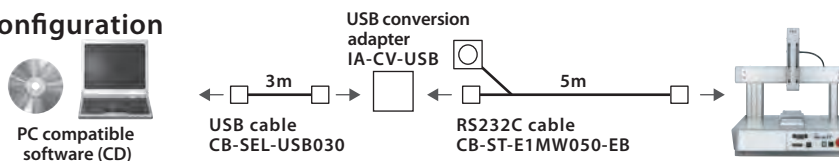
■ **Model IA-101-TTA-USB**
(Supplied with USB cable)

■ **Configuration**



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

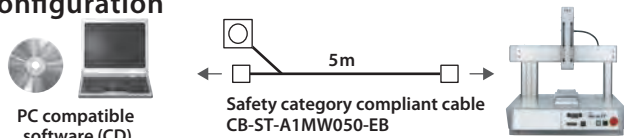
■ **Configuration**



<Note>
The RS232C standard cable CB-ST-E1MW050-EB cannot be used when "Building an enable system that uses a system I/O connector and external power supply" or "Building a redundant safety circuit." (The RS232C safety category cable CB-ST-A1MW050-EB or the software kit IA-101-XA-MW must be used instead.)

■ **Model IA-101-XA-MW** (Supplied with safety category 4 compliant cable)

■ **Configuration**



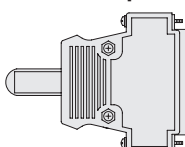
<For IA-101-TT-USB>

- 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).



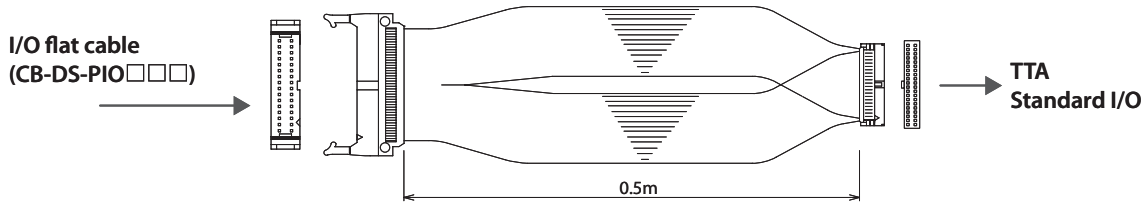
- Compatible with emergency stop and redundant enable circuit (up to Category 4).

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



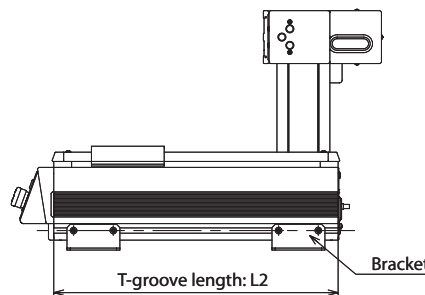
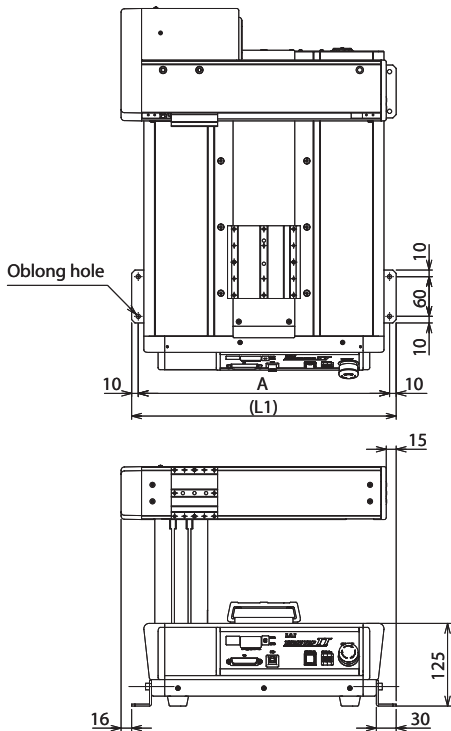
Foot Bracket (4 or 6 pcs to 1 set, bolts and nuts for mounting to body supplied)

■ **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.

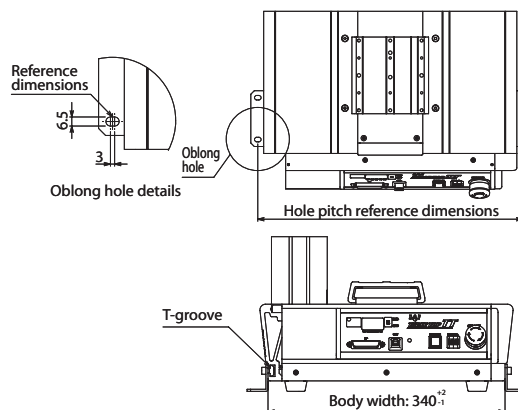
Dimensions

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.

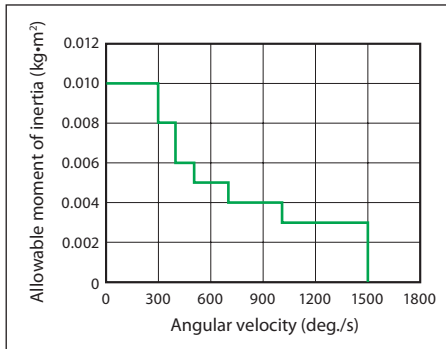
Type	Specification	Y-axis Acceleration/Deceleration and Z-axis Payload (kg)			
		0.1G	0.2G	0.3G	0.4G
TTA-A (Gate Type)	Low lead	15	13	6	2
	High lead	7	7	4	1
TTA-C (Cantilever Type)	Low lead	15	11	6	-
	High lead	7	7	6	-

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·m ²	300deg./s	490deg./s ²
0.008kg·m ²	400deg./s	980deg./s ²
0.006kg·m ²	500deg./s	1960deg./s ²
0.005kg·m ²	700deg./s	4900deg./s ²
0.004kg·m ²	1000deg./s	9800deg./s ²
0.003kg·m ²	1500deg./s	14700deg./s ²

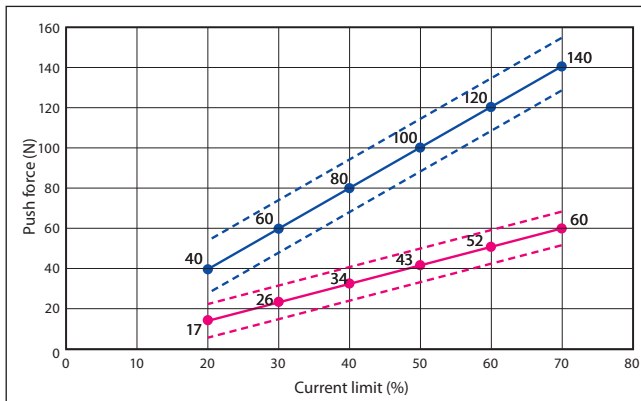
(Note) Use G to convert for configuration using PC compatible software and other teaching tools.
(1G=9800deg./s²).

■ 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

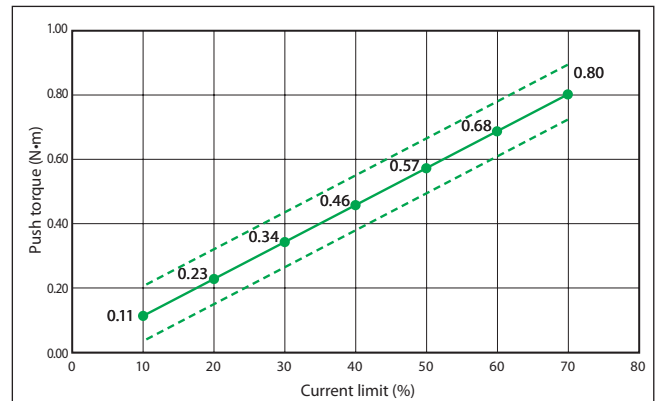


* Maximum push force has a variance of ±10% (dashed lines).

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).

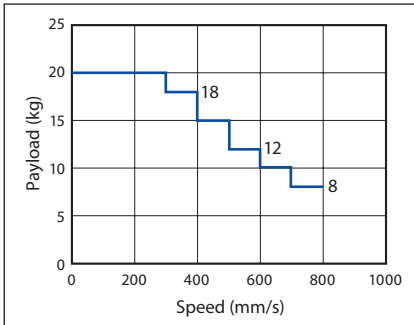
Pulse Motor Type Cautionary Notes

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

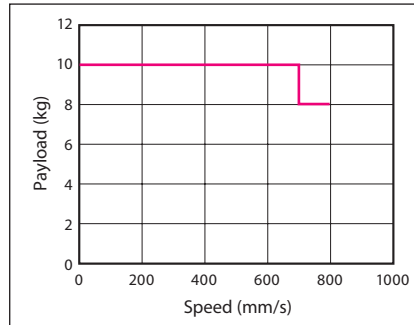
Due to the characteristics of the stepper motor, the maximum payload decreases as speed increases. Check the table below to verify that both speed and payload requirements are satisfied.

[TTA-A series]

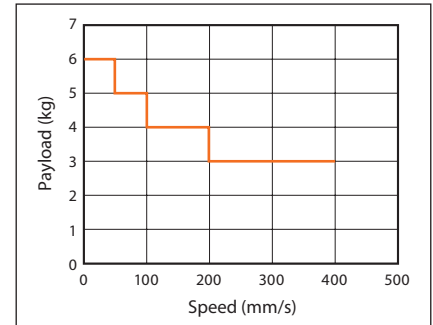
X-axis



Y-axis



Z-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

· Set the acceleration/deceleration to 0.4G or less

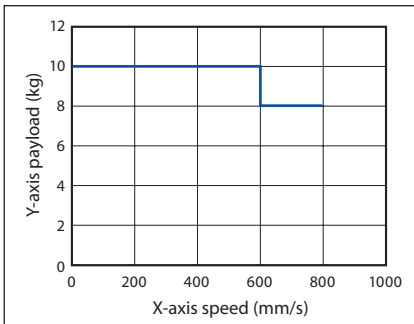
· Set the acceleration/deceleration to 0.2G or less

[TTA-C series]

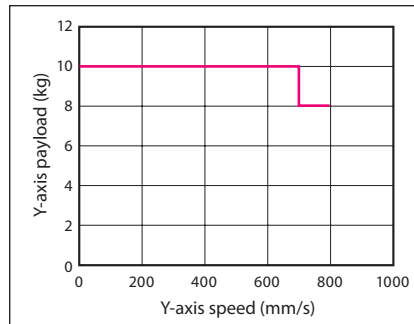
The maximum X-axis speed of the TTA-C2 varies depending on the Y-axis payload. For TTA-C3 and TTA-C4, the maximum X-axis and Y-axis speeds vary depending on the Z-axis payload.

TTA-C2

X-axis



Y-axis

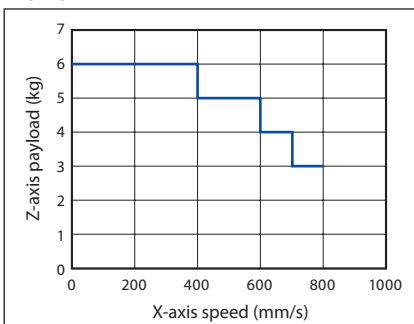


· Set the acceleration/deceleration to 0.2G or less

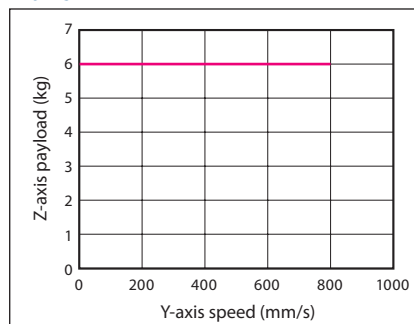
· Set the acceleration/deceleration to 0.2G or less

TTA-C3 / C4

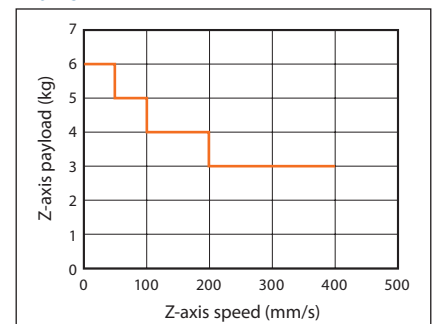
X-axis



Y-axis



Z-axis



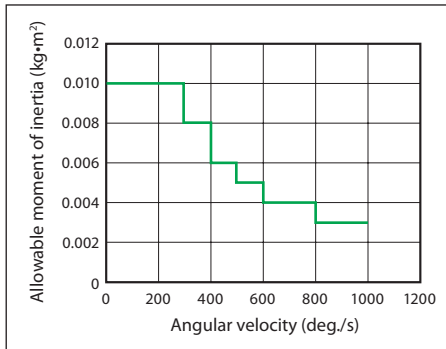
· Set the acceleration/deceleration to 0.2G or less

· Set the acceleration/deceleration to 0.2G or less

· 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·m ²	100deg./s	1000deg./s ²
0.010kg·m ²	200deg./s	1000deg./s ²
0.010kg·m ²	300deg./s	1000deg./s ²
0.008kg·m ²	400deg./s	1778deg./s ²
0.006kg·m ²	500deg./s	2778deg./s ²
0.005kg·m ²	600deg./s	4000deg./s ²
0.004kg·m ²	700deg./s	5444deg./s ²
0.004kg·m ²	800deg./s	7111deg./s ²
0.003kg·m ²	900deg./s	9000deg./s ²
0.003kg·m ²	1000deg./s	11111deg./s ²

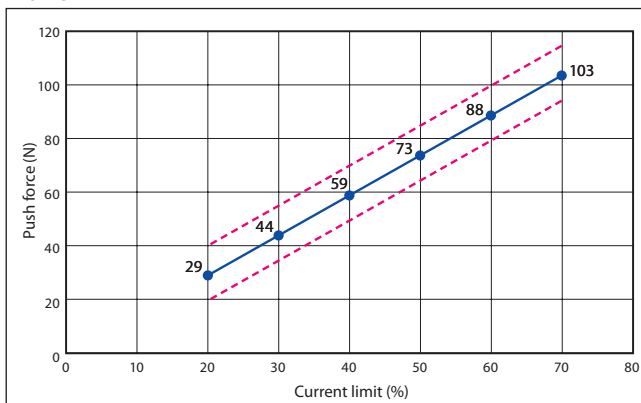
(Note) Use G to convert for configuration using PC compatible software and other teaching tools. (1G=9800deg./s²).

■ 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

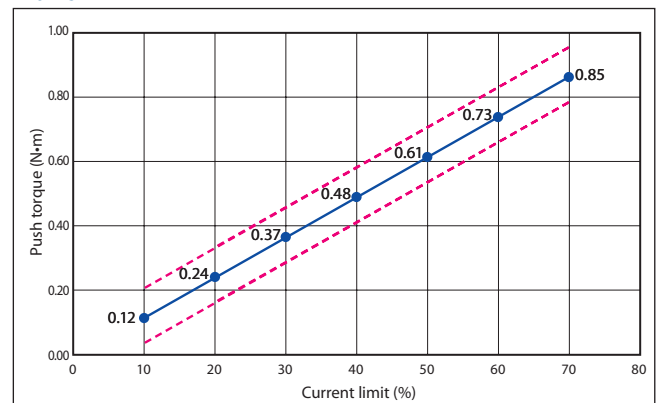


* Maximum push force has a variance of ±10% (dashed lines).

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" ($0.3G = 2940\text{mm/s}^2$. For the rotational axis, $0.3G = 2940\text{deg./s}^2$)

Duty Cycle

The tabletop robot with a pulse 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.

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

Positioning Repeatability

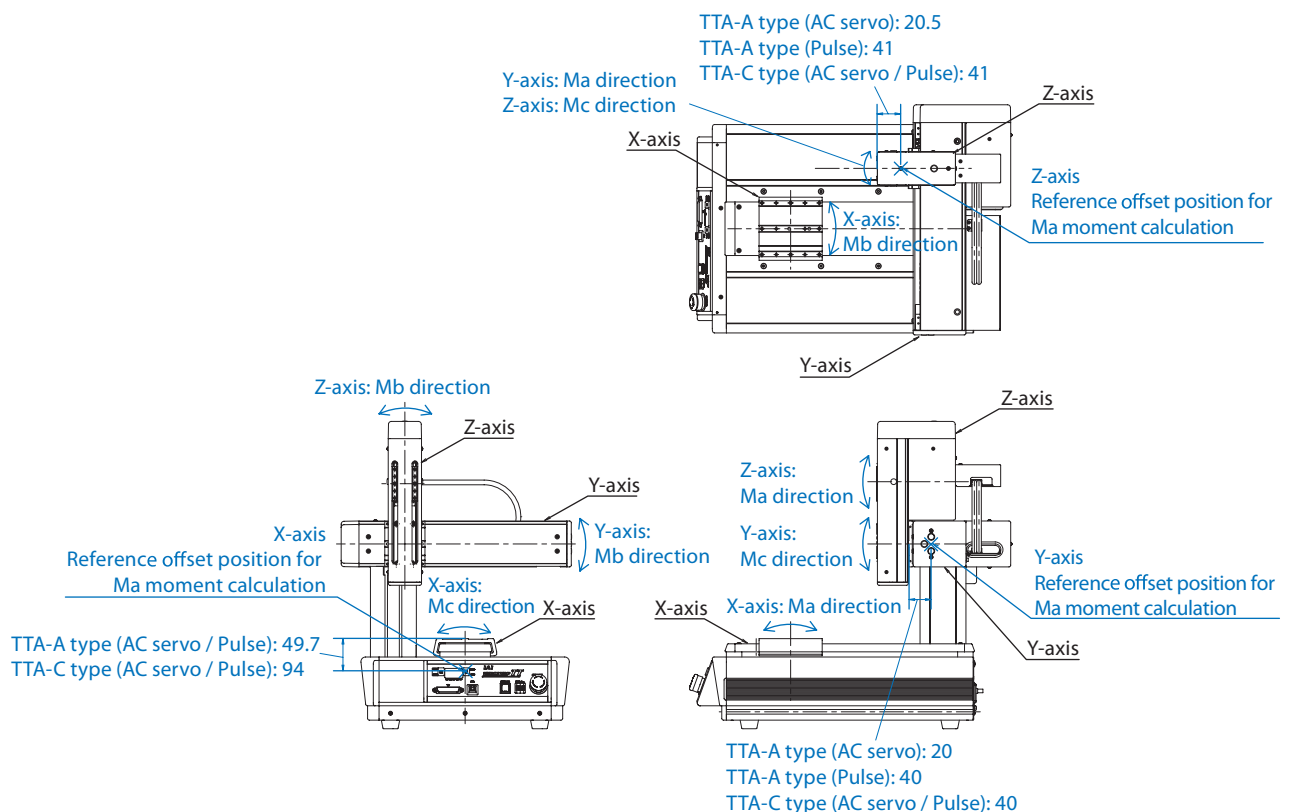
"Positioning repeatability" refers to the accuracy of repeated movements to a predetermined position. This is not the same as "absolute positioning accuracy."

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 5000km. 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.



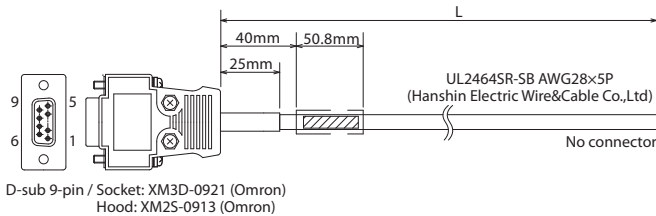
Tabletop Robot Series Options

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)

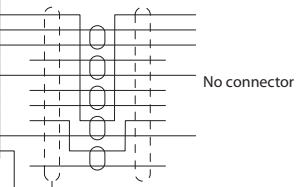
* Please indicate the cable length (L) in , maximum 10m, e.g.) 030 = 3m



Controller side
XM3D-0921

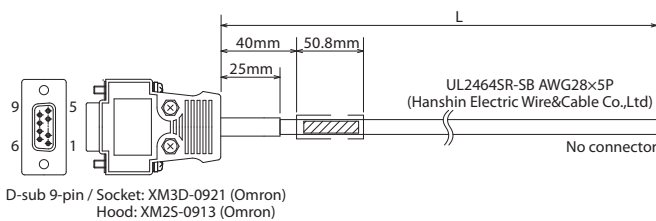
CH	Color	Dot marks / color	Signal	No.
2	Orange	• Red	RXD2	1
1	Orange	• Black	RXD	2
1	White	• Red	TXD	3
1	-	-	NC	4
1	AWG28	Pink	• Red	SG 5
1	-	-	-	NC 6
1	-	-	-	NC 7
1	-	-	-	NC 8
2	Yellow	• Black	TXD2	9

Shield is clamped to the hood (FG)



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

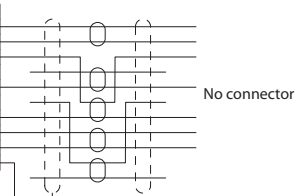
* Please indicate the cable length (L) in , maximum 10m, e.g.) 030 = 3m



Controller side
XM3D-0921

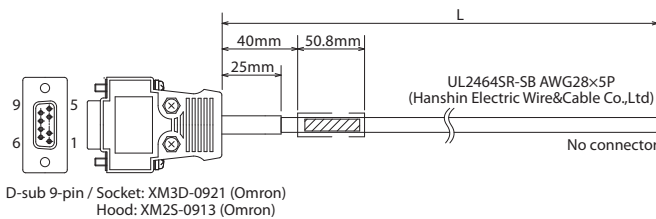
CH	Color	Dot marks / color	Signal	No.
1	Orange	• Red	SRD1+	1
1	Orange	• Black	SRD1-	2
1	White	• Red	SRD1+	3
-	-	-	(E)	4
1	AWG28	Pink	• Red	SG 5
-	-	-	(E2)	6
1	White	• Black	SRD1-	7
2	Yellow	• Red	SRD2+	8
2	Yellow	• Black	SRD2-	9

Shield is clamped to the hood (FG)



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

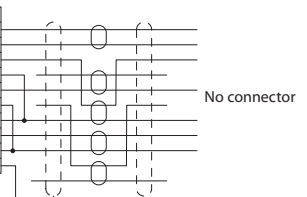
* Please indicate the cable length (L) in , maximum 10m, e.g.) 030 = 3m



Controller side
XM3D-0921

CH	Color	Dot marks / color	Signal	No.
1	Orange	• Red	SRD1+	1
1	Orange	• Black	SRD1-	2
1	White	• Red	SRD1+	3
1	Black	-	E	4
1	AWG28	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)



**TTA Tabletop Series V4
Catalogue No. 0617-E**



The information contained in this catalog is subject to change without notice for the purpose of product improvement



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