

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.

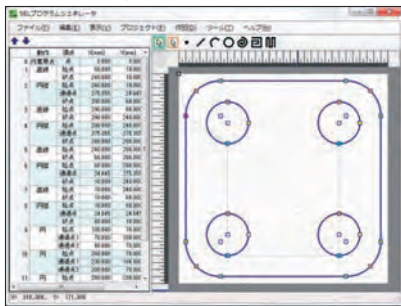
Using the SEL Program Generator...

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

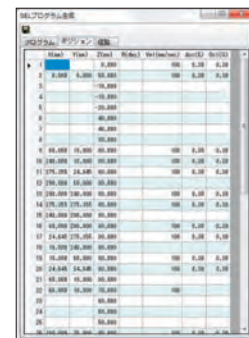


(E.g., for when using the mouse)

Automatic creation

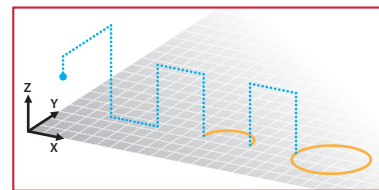


SEL Program
(Application operation program)



Position data

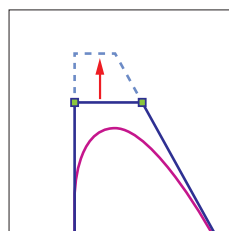
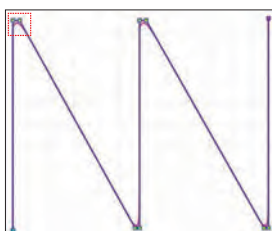
Drawing a pathway like the one at the right automatically generates a program for the robot.



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.

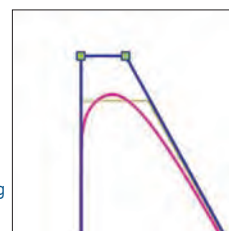
Patent pending



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

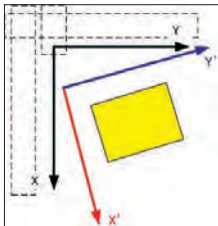


Two types of coordinate systems can be used:

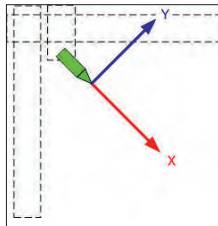
Work coordinate system: the coordinate system defined by offsetting each axis from the base coordinate system (max. 32 types)

Tool coordinate system: the coordinate system defined by the dimensions (offset) of the tool (gripper, 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				
Specification	Cantilever servo motor type (code "CS")												
	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				

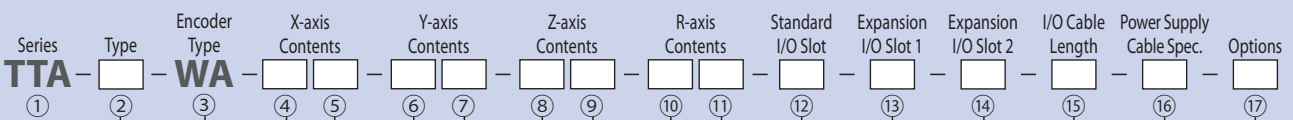
*Global version (code „G“) with safety category specification. **4-axis type with ZR rotary axis. ***Allowable load moment of inertia at velocity of 300 °/s or less.

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.

X-axis Stroke

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

X-axis Option

NM	Non-motor end spec.
-----------	---------------------

Y-axis Stroke

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

Y-axis Option

NM	Non-motor end spec.
-----------	---------------------

Z-axis Stroke

10	100mm
15	150mm

Z-axis Option

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

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)

R-axis stroke

18	±180 deg.
36L	±360 deg.

* Equipped with home limit switch

R-axis Option

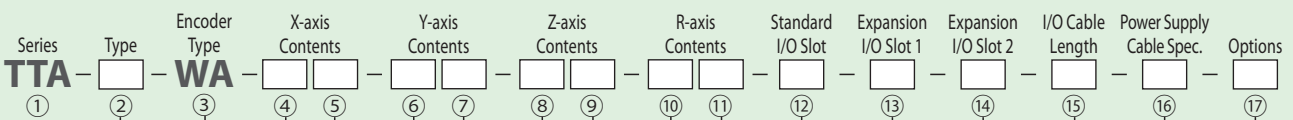
ML	Motor side-mounted to the left
MR	Motor side-mounted to the right

* 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)	
Z-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.

Pulse Motor Type Model Specification Items



WA Battery-less absolute

Global Specification

A2G	2-axis Gate type, standard
A3G	3-axis Gate type, standard
A4G	4-axis Gate type, standard (R180 deg. spec, R360 deg. spec.)
C2G	2-axis Cantilever type, standard
C3G	3-axis Cantilever type, standard
C4G	4-axis Cantilever type, standard (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

0	None
2	2m
3	3m
5	5m

PU	Power connector only
2	Power supply cable for 230VAC (2m) (Ring tongue terminal on end)

* 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.

X-axis Stroke

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

X-axis Option

NM	Non-motor end spec.
-----------	---------------------

Y-axis Stroke

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

Y-axis Option

NM	Non-motor end spec.
-----------	---------------------

Z-axis Stroke

10	100mm
15	150mm

Z-axis Option

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

R-axis stroke

18	±180 deg.
36L	±360 deg.

* Equipped with home limit switch

R-axis Option

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

* For A4G, either ML or MR must be selected. Only MR can be selected for C4G.

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.