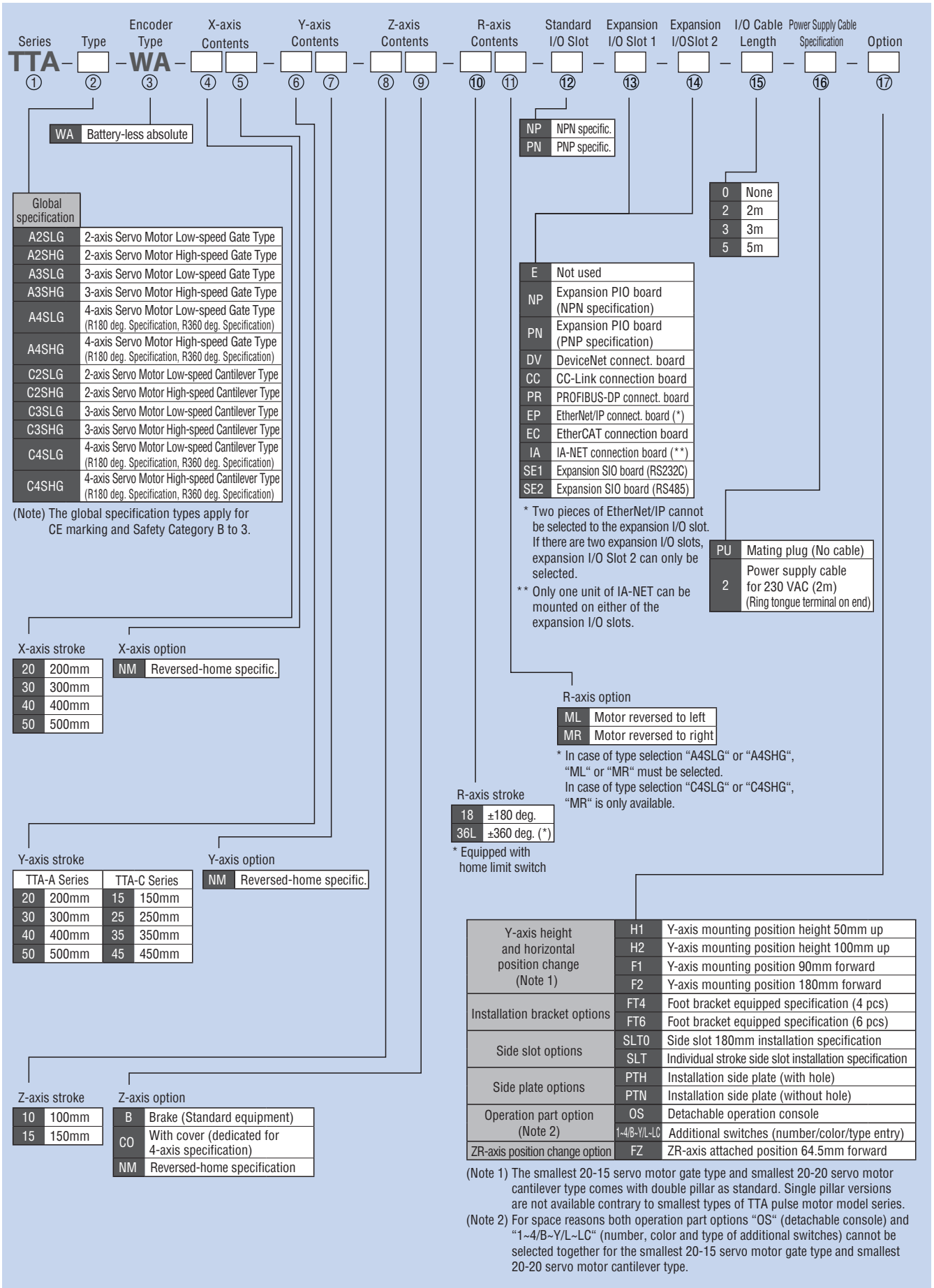
Tabletop Robot Product Series TTA-S

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

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

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

Explanation of Model Name



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

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

Selection References

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

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

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

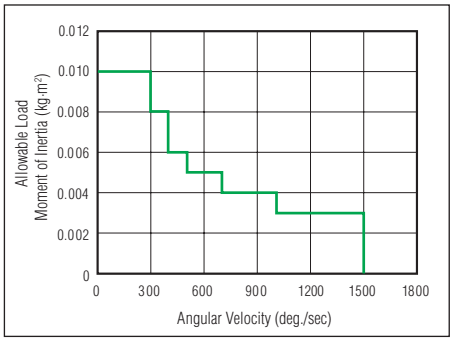
Type	Lead Type	Z-axis Load Capacity (kg) by Y-axis Accel.			
		0.1G	0.2G	0.3G	0.4G
TTA-A (Gate type)	Low-speed	15	13	6	2
	High-speed	7	7	4	1
TTA-C (Cantilever type)	Low-speed	15	11	6	—
	High-speed	7	7	6	—

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

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

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

R-axis



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

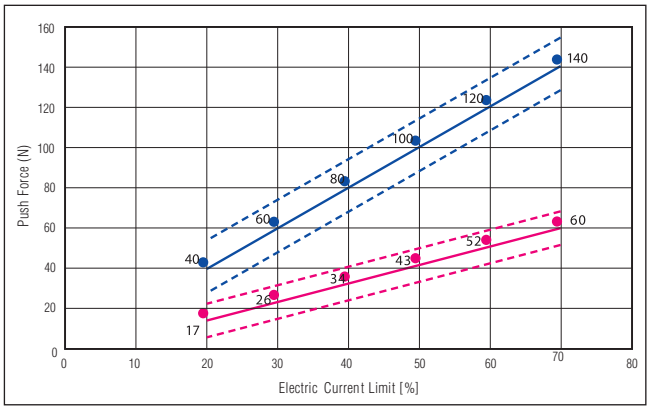
Allowable Load Moment of Inertia	Angular Velocity	Acceleration/deceleration
0.010kg·m²	300deg./sec	490deg./sec²
0.008kg·m²	400deg./sec	980deg./sec²
0.006kg·m²	500deg./sec	1960deg./sec²
0.005kg·m²	700deg./sec	4900deg./sec²
0.004kg·m²	1000deg./sec	9800deg./sec²
0.003kg·m²	1500deg./sec	14700deg./sec²

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

Correlation Graph of Push Force and Electric Current Limit

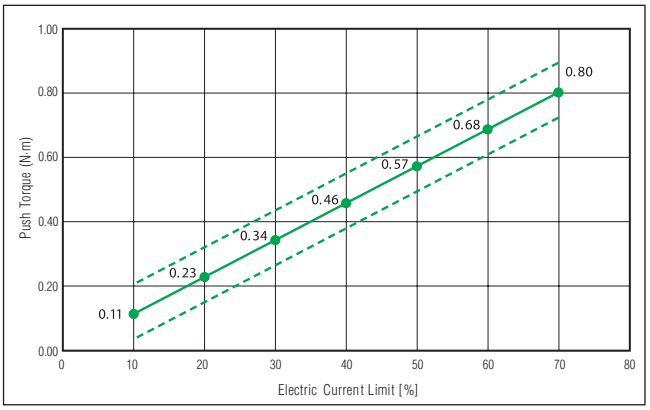
In the case of push-motion operation, the push force can be changed freely by changing the electric current limit of the controller (only for TTA-A Series). Take the push force graph below (Z-axis) as a reference. Contact IAI if it is required to have push control on the rotary axis. Take the push torque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

Z-axis



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

R-axis



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

System Configuration

Front Panel Wiring Layout

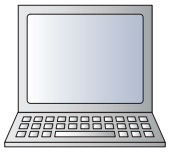
Teaching Pendant (Option)

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

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

5m

TP Connection Cable
Model: CB-TB1-X002



5m/3m

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

PC Software (Option)

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

Dummy Plug

Model: DP-2 (*3)

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

Back Panel Wiring Layout

PLC

Variety of Field Networks (Options)

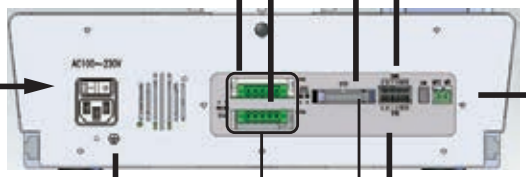
CC-Link
DeviceNet
PROFIBUS
EtherNet/IP
EtherCAT

I/O Flat Cable (Accessory)

Model: CB-PAC-PIO020

2m

Emergency Stop Switch



Electromagnetic Relay

100 to 230 VAC

Select from those below
for the power supply cable

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

Enable Switch

Protective Grounding

Expansion I/O Slots

Standard I/O Service Power Supply connector

Controller Specification

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

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