

Tabletop Robot **TTA Series**

**ZR-Axis Type
Series Added**

Table Top TTA Series



TTA Series Lineup

Series		TTA											
Type (*1)		Gate type											
		A2G (2-axis global type with safety category specification)				A3G (3-axis global type with safety category specification)				A4G (4-axis global type with ZR rotary axis and safety category specification)			
													
Stroke X/Y-axis (mm)		200x200 (Single pillar travel) (*2)	300x300 (Double pillar travel)	400x400 (Double pillar travel)	500x500 (Double pillar travel)	200x200 (Single pillar travel) (*2)	300x300 (Double pillar travel)	400x400 (Double pillar travel)	500x500 (Double pillar travel)	200x200 (Single pillar travel) (*2)	300x300 (Double pillar travel)	400x400 (Double pillar travel)	500x500 (Double pillar travel)
Stroke Z-axis (mm)		—				100/150				100/150			
Max. speed (mm/s)	X-axis	800				800				800			
	Y-axis	800				800				800			
	Z-axis	—				400				400			
	R-axis	—				—				1000 deg./s			
Load capacity (kg)	X-axis	20				20				20			
	Y-axis	10				—				—			
	Z-axis	—				6				6			
	R-axis	—				—				6			
Reference page		P. 8	P. 9	P. 10	P. 11	P. 16	P. 17	P. 18	P. 19	P. 24			
Type (*1)		Cantilever type											
		C2G (2-axis global type with safety category specification)				C3G (3-axis global type with safety category specification)				C4G (4-axis global type with ZR rotary axis and safety category specification)			
													
Stroke X/Y-axis (mm)		200x150 (Single pillar travel) (*2)	300x250 (Double pillar travel)	400x350 (Double pillar travel)	500x450 (Double pillar travel)	200x150 (Single pillar travel) (*2)	300x250 (Double pillar travel)	400x350 (Double pillar travel)	500x450 (Double pillar travel)	200x150 (Single pillar travel) (*2)	300x250 (Double pillar travel)	400x350 (Double pillar travel)	500x450 (Double pillar travel)
Stroke Z-axis (mm)		—				100/150				100/150			
Max. speed (mm/s)	X-axis	600	700	800		600	700	800		600	700	800	
	Y-axis	540	640	800		540	640	800		540	640	800	
	Z-axis	—				400				400			
	R-axis	—				—				1000 deg./s			
Load capacity (kg)	X-axis	—				—				—			
	Y-axis	10				—				—			
	Z-axis	—				6				6			
	R-axis	—				—				6			
Reference page		P. 12	P. 13	P. 14	P. 15	P. 20	P. 21	P. 22	P. 23	P. 26			

(*1) All product types include power plug and power supply cable. (*2) Refer to Pg. 6 for additional pillar as option.

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

	Standard	Standard + 50mm up	Standard + 100mm up
Y-axis height is selectable	–	H1	H2

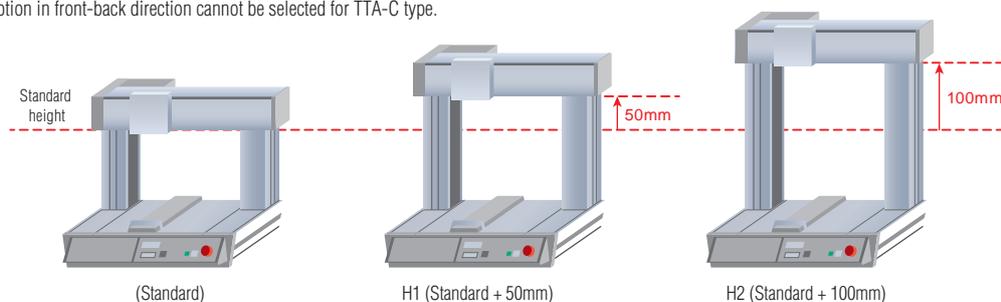
	Standard	Standard + 90mm forward	Standard + 180mm forward
Y-axis horizontal position is selectable	–	F1	F2

* To change both the Y-axis height and Y-axis horizontal position, specify the type codes in alphabetical order together with other option codes.

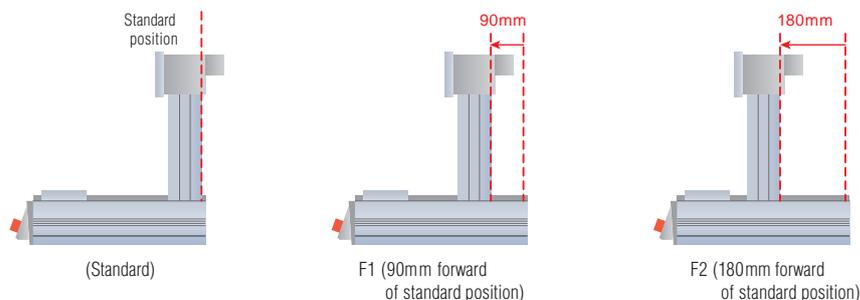
(Example: AP-F1-FT-H2-OS)

* Y-axis position change option in front-back direction cannot be selected for TTA-C type.

Y-axis height is selectable

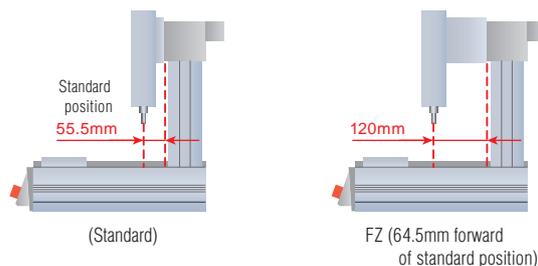


Y-axis horizontal position is selectable
(Only available for TTA-A type)

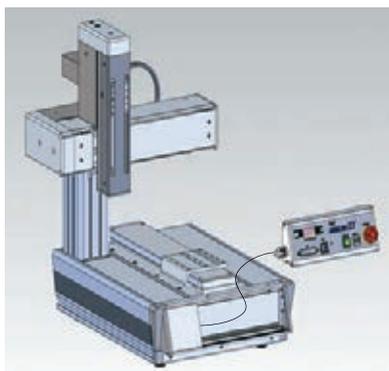


	Standard	Standard + 64.5mm forward
ZR-axis horizontal position is selectable	–	FZ

ZR-axis horizontal position is selectable



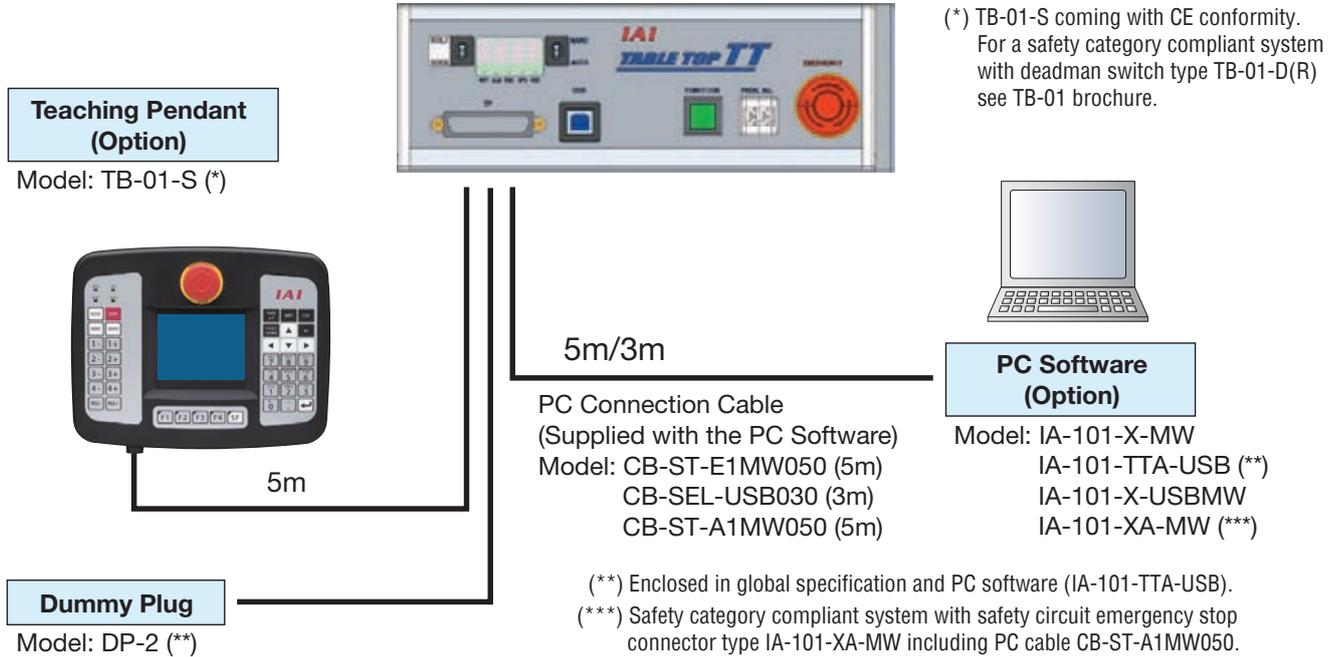
Optional Detachable Operation Console



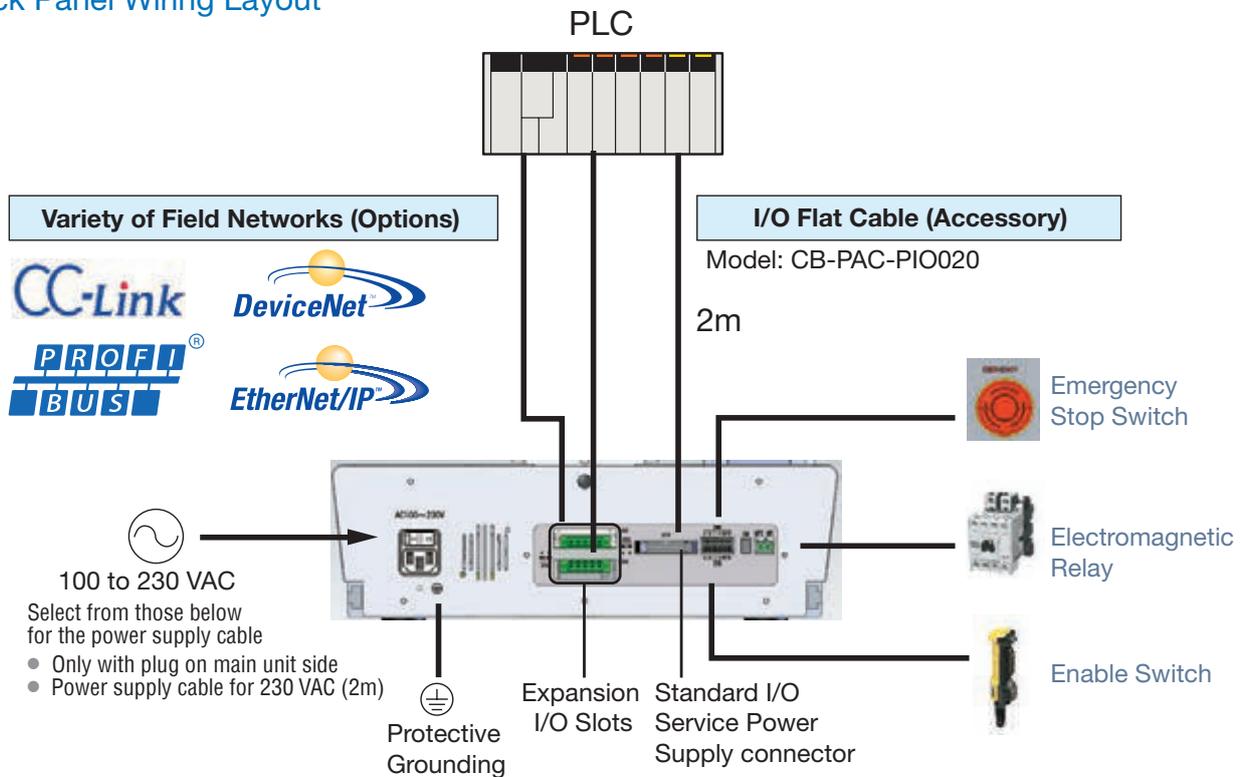
The operation console can be separated from the product for handy operation.
(Cable length: 900mm)

System Configuration

Front Panel Wiring Layout

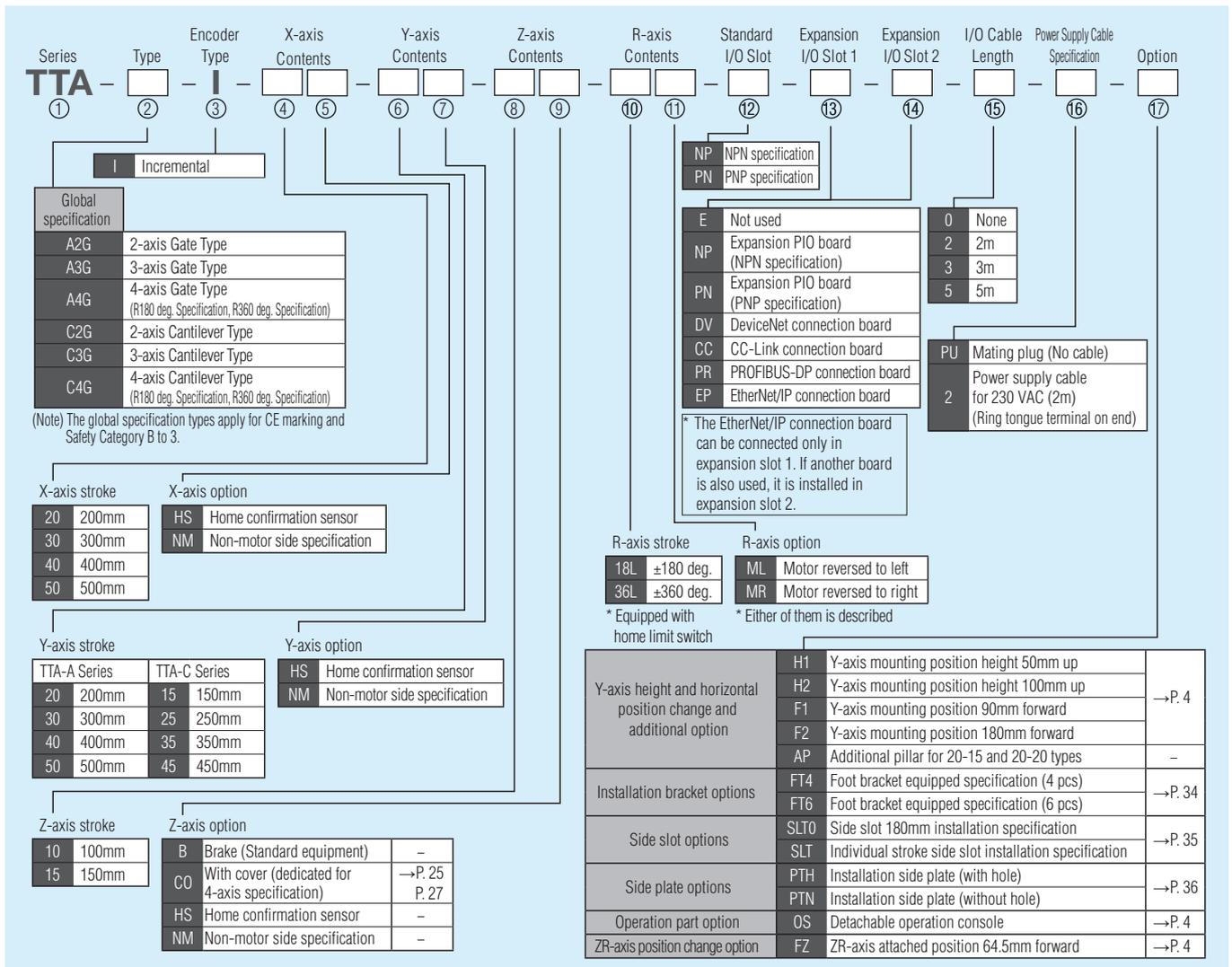


Back Panel Wiring Layout



* Emergency stop switch, enable switch, electromagnetic relay, and other external devices may be connected and wired if necessary. If no devices are connected or wired, the robot will still operate properly. Connectors with jumper wires are supplied.

Explanation of Model Name



[Supplemental Explanation for Options]

AP Additional pillar for 20-15 and 20-20 types

This option can make 20-15 and 20-20 type, which are cantilever types in standard, a gate type.

FT4 Foot bracket equipped specification (4 pcs)

for X-axis stroke 20/30

FT6 Foot bracket equipped specification (6 pcs)

for X-axis stroke 40/50

SLT0 Side slot 180mm installation specification

It is to be selected when changing to slot specification in selection of FT4 or FT6. 20/30 type of X-axis stroke is equipped with 2 places of 180mm side slot and 40/50 type with 4 places.

SLT Individual stroke side slot installation specification

It is to be selected when changing to the slot specification considering the size of the main unit.

* It is not available to select for FT4 and FT6.

PTH Installation side plate (with hole)

Y-axis installation position: Suitable size will be selected for each of standard, F1 and F2

* Only available for TTA-A type

PTN Installation side plate (without hole)

Y-axis installation position: Suitable size will be selected for each of standard, F1 and F2

* Only available for TTA-A type

<Notes>

- The global specification types are enclosed with dummy plug [DP-2].
- F1 and F2 options cannot be selected for TTA-C type.

Option List

Name	Option code	
Home confirmation sensor	HS	
Non-motor side specification	NM	
Y-axis mounting position height 50mm up	H1	
Y-axis mounting position height 100mm up	H2	
Y-axis mounting position 90mm forward	F1	
Y-axis mounting position 180mm forward	F2	
Additional pillar for 20-15 and 20-20 types	AP	
Foot bracket equipped specification (4 pcs)	FT4	
Foot bracket equipped specification (6 pcs)	FT6	
Side slot 180mm installation specification	SLT0	
Individual stroke side slot installation specification	SLT	
Installation side plate (with hole)	PTH	
Installation side plate (without hole)	PTN	
Detachable operation console	OS	
With Z-axis cover	CO	

Notes

Notes on Catalog Specifications

Speed

"Speed" refers to the set speed when the actuator is in motion.
The slider accelerates from a stationary state. Once the set speed is reached, the slider will move at that speed until immediately before the target position (specified position), where the slider will decelerate to a stop.

Acceleration/Deceleration

"Acceleration" refers to the rate of change of speed from a stationary state until the set speed is reached.
"Deceleration" refers to the rate of change of speed from the set speed until the slider stops.
Acceleration and deceleration are set in "G" ($0.3G = 2940\text{mm/sec}^2$, Rotary axis is $0.3G = 2940\text{deg/sec}^2$).

Duty cycle

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

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

Positioning repeatability

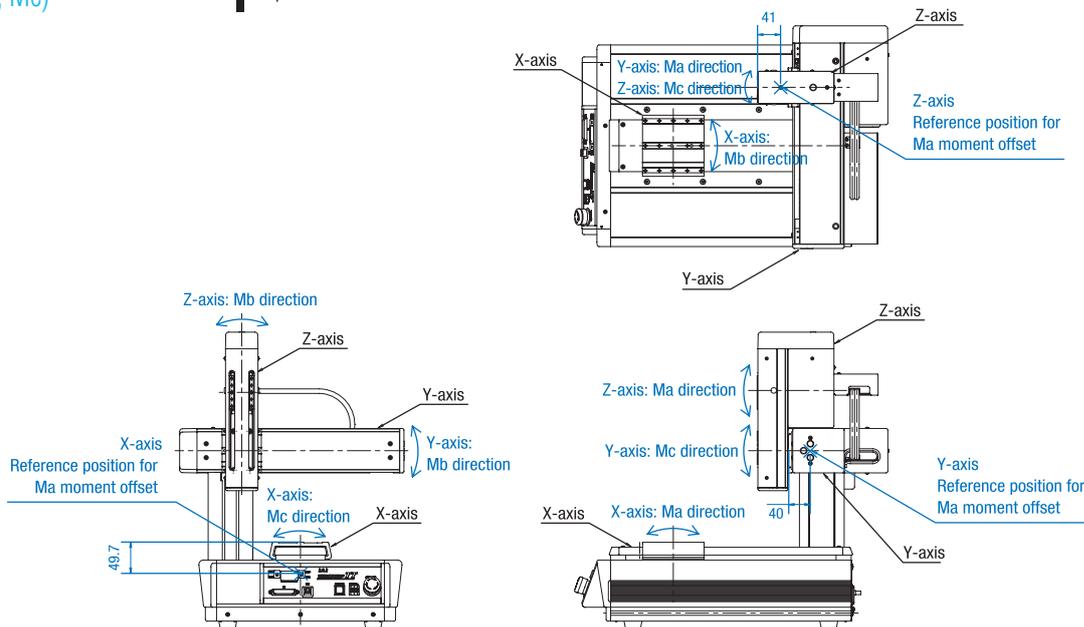
"Positioning repeatability" refers to the positioning accuracy when the actuator is repeatedly moved to a prestored position. It is different from "absolute positioning accuracy".

Home

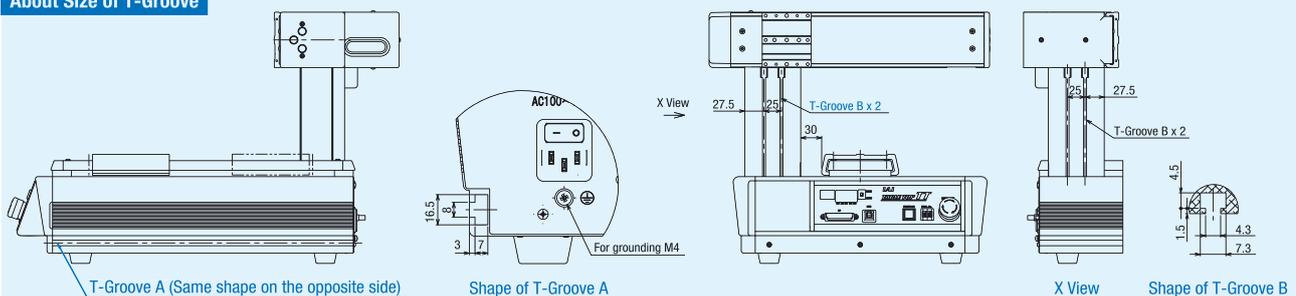
The home is located on the motor side on the actuator for standard specification, or on the front side of the actuator in the non-motor side specification.
During home return the slider moves until it contacts the mechanical end, and then it reversed its direction.
Be careful to prevent contact with surrounding parts.

Dynamic allowable moment (Ma, Mb, Mc)

The load moment is calculated by assuming a travel life of 5000km. Note that if the specified moment value is exceeded, the service life of the guide will be reduced. The direction of each moment and applicable reference point are shown below:



About Size of T-Groove



TTA-A2G-20-20 Tabletop Robot Gate Type 2-axis Specification

XY-axis: 200mm



Model Specification Items	TTA	Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
A2G: 2-axis global specification (Gate type)				I: Incremental specification	20: 200mm		20: 200mm		NP: NPN specification PN: PNP specification			0: None 1: 2m 2: 3m 3: 5m 4: 5m	PU: Mating plug (No cable) 2: Power supply cable for 230 VAC (2m)	Refer to P. 6

HS: Home confirmation sensor
NM: Non-motor side specification

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

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

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2G-I-20 [1]-20 [2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis Y-axis	Incremental	Pulse motor	24 or equiv. 24 or equiv.	200 200	1 ~800 1 ~800	20 10

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

Expansion I/O Slot

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

Common Specifications

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

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

Dimensions

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

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

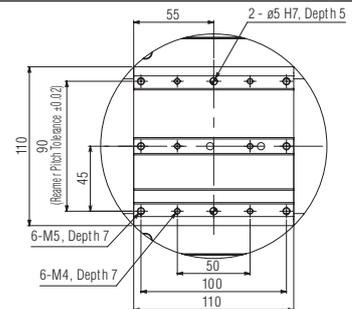
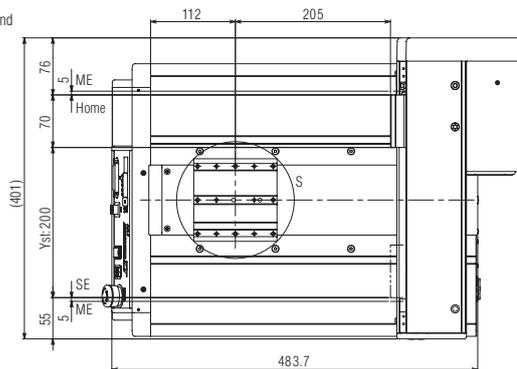
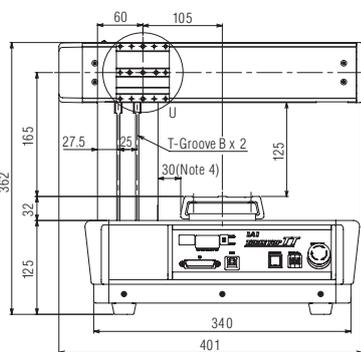
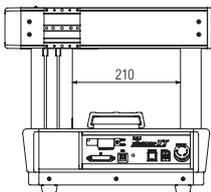
SE: Stroke end
ME: Mechanical end

You can download CAD drawings from our website.

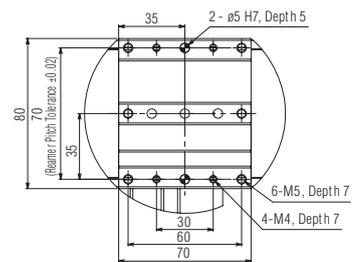
2D CAD

RoHS

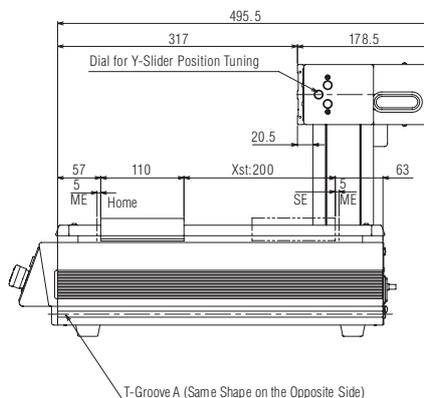
AP (Additional Pillar Option) Dimensions



Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Y-axis Slider)



T-Groove A (Same Shape on the Opposite Side)

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	230 VAC	→ P. 28



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

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

(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5000km. (Refer to P. 7 for the dynamic allowable moment.)

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

TTA-A2G-40-40 Tabletop Robot Gate Type 2-axis Specification

XY-axis: 400mm



Model Specification Items	Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
A2G: 2-axis global specification (Gate type)	TTA	—	I	40: 400mm	40: 400mm	40: 400mm	—	—	—	—	0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 2: Power supply cable for 230 VAC (2m)	Refer to P. 6

HS: Home confirmation sensor
NM: Non-motor side specification
NP: NPN specification
PN: PNP specification
* If the expansion I/O slot is not used, enter "E."

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

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2G-I-40 [1]-40 [2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis Y-axis	Incremental	Pulse motor	24 or equiv. 24 or equiv.	400 400	1 ~800 1 ~800	20 10

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

Expansion I/O Slot

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

Common Specifications

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

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

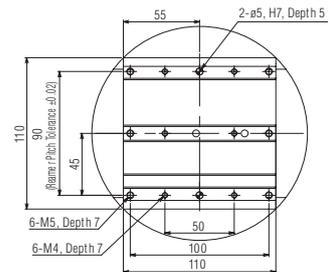
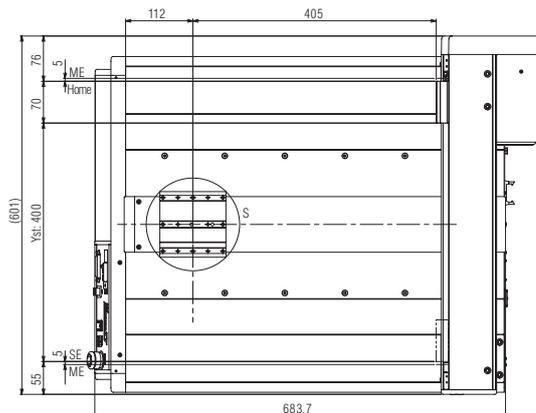
Dimensions

You can download CAD drawings from our website.

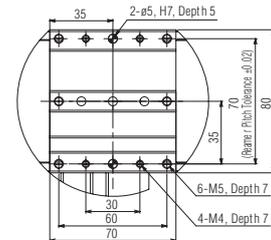
2D CAD

RoHS

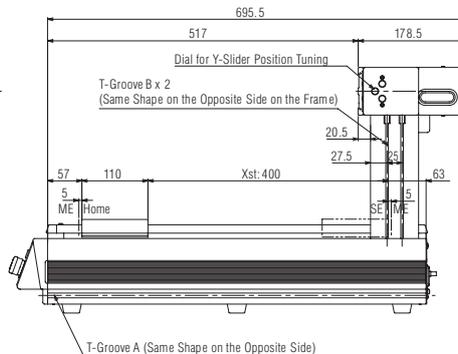
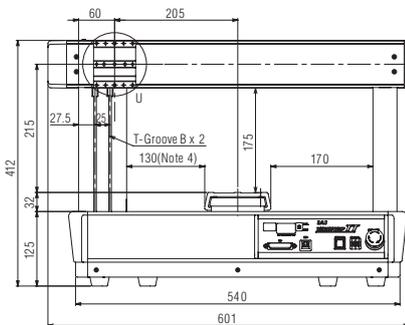
- * Refer to P. 7 for dimensions of T-groove.
- * During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.
- SE: Stroke end
- ME: Mechanical end



Detailed Diagram S (Detail of X-axis Slider)



Detailed Diagram U (Detail of Y-axis Slider)



Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	230 VAC	→ P. 28



- (Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)
- (Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.
- (Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5000km. (Refer to P. 7 for the dynamic allowable moment.)
- (Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A2G-50-50 Tabletop Robot Gate Type 2-axis Specification

XY-axis: 500mm

Model Specification Items	TTA	Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option
		A2G: 2-axis global specification (Gate type)		I: Incremental specification	50: 500mm	HS: Home confirmation sensor NM: Non-motor side specification	50: 500mm		NP: NPN specification PN: PNP specification	Refer to the expansion I/O slot table below.		0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 2: Power supply cable for 230 VAC (2m)	Refer to P. 6

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



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

Model/Specifications

Model number	Axis configuration	Encoder type	Motor type	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)
TTA-A2G-I-50 [1]-50 [2]-[3]-[4]-[5]-[6]-[7]-[8]	X-axis Y-axis	Incremental	Pulse motor	24 or equiv. 24 or equiv.	500 500	1 ~800 1 ~800	20 10

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

Expansion I/O Slot

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

Common Specifications

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

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

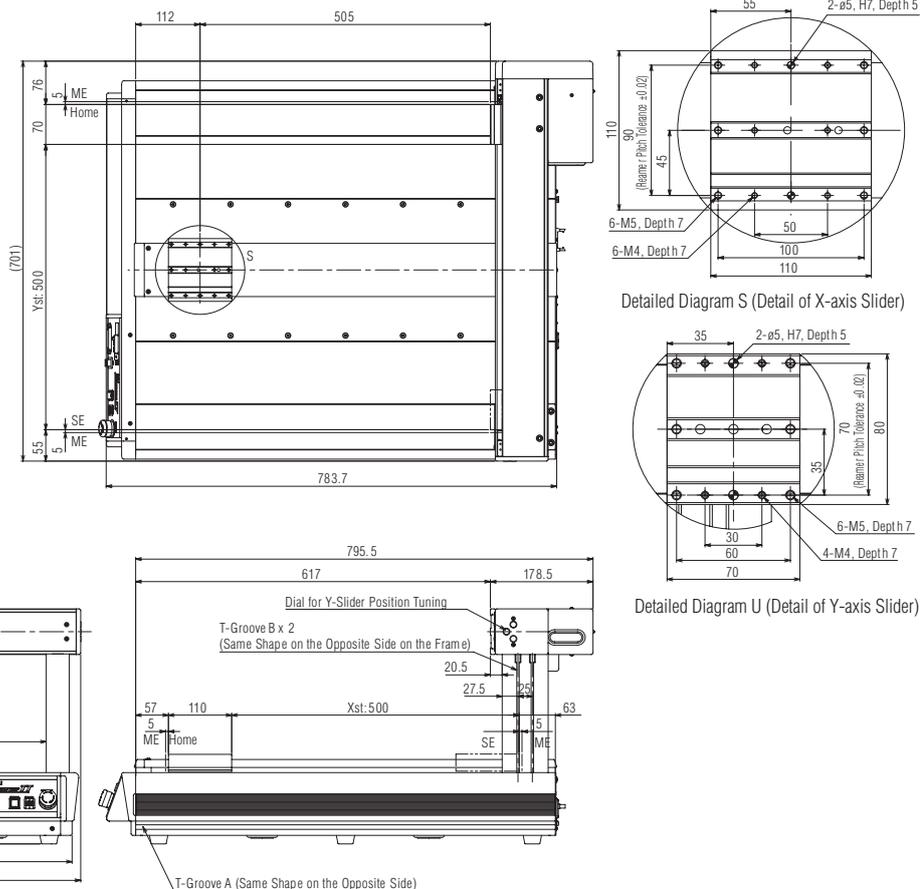
Dimensions

You can download CAD drawings from our website.

2D CAD

RoHS

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



Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	2 axes	Incremental	Program	230 VAC	→ P. 28



(Note 1) The maximum speed cannot be achieved based on the maximum payload setting. The payload decreases when the speed is increased. Also note that the maximum acceleration/deceleration varies depending on the payload. (Refer to P. 37.)
(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5000km. (Refer to P. 7 for the dynamic allowable moment.)
(Note 4) Secure 2mm or more to the main body frames when mounting a work piece on X slider.

TTA-A4G - □ - □

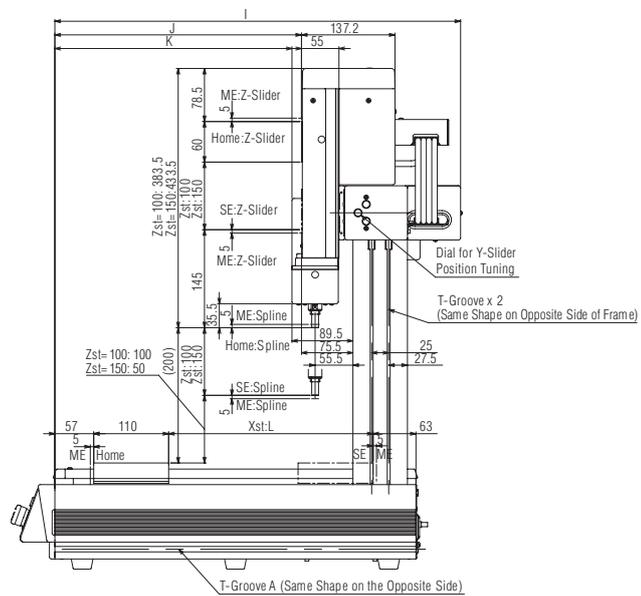
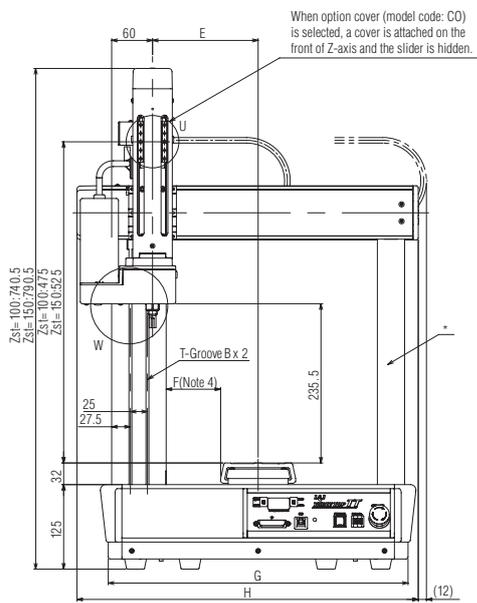
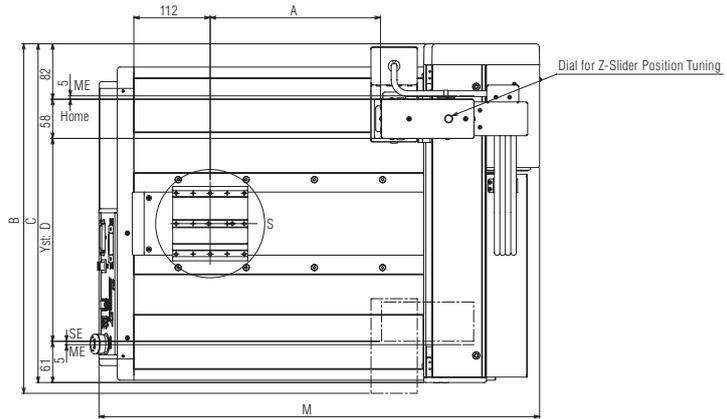
Dimensions

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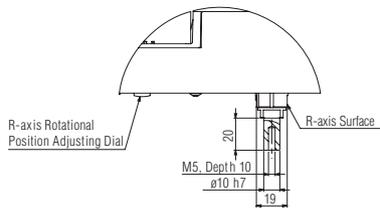
2D CAD



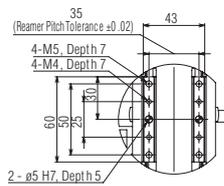
* Refer to P. 7 for dimensions of T-groove.
 * During home return, the slider moves to the ME, so be careful to prevent contact with surrounding parts.
 SE: Stroke end
 ME: Mechanical end



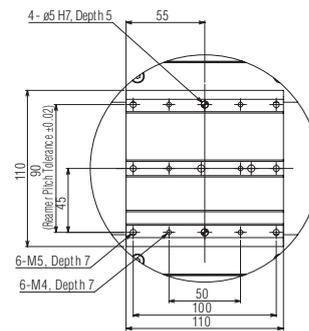
* Does not apply to 2020 type



Detailed Diagram W
(Detail of R Spline End)



Detailed Diagram U
(Detail of Z-axis Slider)



Detailed Diagram S
(Detail of X-axis Slider)

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

Vertical Axis + Rotation

ZR Specification

TTA-C4G

ZR Type with 4 axes is now added to the lineup of TTA Series (Cantilever Type).

It is equipped with rotary axis (R-axis) on the end of the vertical axis (Z-axis).



Model Specification Items

TTA -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Series	Type	Encoder type	X-axis stroke	X-axis option	Y-axis stroke	Y-axis option	Z-axis stroke	Z-axis option	R-axis stroke	R-axis option	Standard I/O slot	Expansion I/O slot 1	Expansion I/O slot 2	I/O cable length	Power supply cable specification	Option				
C4G: 4-axis ZR type global specification		I: Incremental specification	20: 200mm 30: 300mm 40: 400mm 50: 500mm		15: 150mm 25: 250mm 35: 350mm 45: 450mm		10: 100mm 15: 150mm		18L: ±180deg. 36L: ±360deg. (Equipped with home limit switch)		NP: NPN specification PN: PNP specification			0: None 2: 2m 3: 3m 5: 5m	PU: Mating plug (No cable) 2: Power supply cable for 230 VAC (2m)	Refer to P. 6				
				HS: Home confirmation sensor NM: Non-motor side specification					B: Brake (Standard) CO: With cover HS: Home confirmation sensor NM: Non-motor side specification	MR: Motor Reversed to Right (Standard)		Refer to the expansion I/O slot table below. * If the expansion I/O slot is not used, enter "E".								

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

Model/Specifications

Model number	Axis configuration	Lead (mm)	Stroke (mm)	Speed (mm/sec)	Payload (kg) (Note 1)	Max. Load Moment of Inertia (kg·m ²)
TTA-C4G-I-20 □-15 □	X-axis	24 or equiv.	200	1-600	-	-
	Y-axis	24 or equiv.	150	1-540	-	-
	Z-axis	12	100/150	1-400	6	-
	R-axis	-	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01
TTA-C4G-I-30 □-25 □	X-axis	24 or equiv.	300	1-700	-	-
	Y-axis	24 or equiv.	250	1-640	-	-
	Z-axis	12	100/150	1-400	6	-
	R-axis	-	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01
TTA-C4G-I-40 □-35 □	X-axis	24 or equiv.	400	1-800	-	-
	Y-axis	24 or equiv.	350	1-800	-	-
	Z-axis	12	100/150	1-400	6	-
	R-axis	-	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01
TTA-C4G-I-50 □-45 □	X-axis	24 or equiv.	500	1-800	-	-
	Y-axis	24 or equiv.	450	1-800	-	-
	Z-axis	12	100/150	1-400	6	-
	R-axis	-	18L: ±180deg. 36L: ±360deg.	1000deg./s		0.01

Expansion I/O Slot

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

Common Specifications

Drive system	X/Y/Z-axis ballscrew (X/Y-axis: ø12mm, Z-axis: ø10mm, rolled C10) X-axis and Y-axis speeds increased at 1.5:1 using a timing belt
Positioning repeatability	X/Y/Z-axis: ±0.02mm R-axis: ±0.015deg. (Note 2)
Lost motion	X/Y/Z-axis: 0.1mm or less R-axis: 0.06deg. or less
Guide	Ball-circulation type linear guide
Dynamic allowable moment (Note 3)	X-axis: Ma: 12.6Nm Mb: 12.6Nm Mc: 37.4Nm Z-axis: Ma: 9.7Nm Mb: 9.7Nm Mc: 20.5Nm
Overhang load length	Z-axis: Ma: 75mm or less Mb: 180mm or less Mc: 180mm or less R-axis: Radius 100mm or less
Ambient temperature/humidity	0 to 40°C, 85% RH max. (non-condensing)
Loadable weight on table	20-15: 40kg 30-25: 60kg 40-35: 80kg 50-45: 100kg
Actuator weight	20-15: 36kg 30-25: 41kg 40-35: 48kg 50-45: 56kg

Applicable Controller Specifications

Applicable controller	Maximum number of controlled axes	Encoder type	Method of operation	Power-supply voltage	Page
Built-in	4 axes	Incremental	Program	230 VAC	→ P.28



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

(Note 2) It is limited to when the actuator temperature is constant. It does not guarantee the absolute accuracy.
(Note 3) The dynamic allowable moment is a value of each axis assuming a traveling life of 5000km. (Refer to P. 7 for the dynamic allowable moment.)

Tabletop Robot Series Controller Specifications

Controller Specifications

Item			
Motor type		Pulse motor (Servo control)	
Applicable encoder		Incremental encoder	
Data-storage device		Flash ROM/FRAM	
Number of program steps		9999	
Number of positions		30000	
Number of programs		255	
Number of multi-tasking programs		16	
Operation mode	Serial communication	○	
	Program	○	
	Positioner	—	
	Pulse train	—	
SIO interface	Communication method	RS232	
	Baud rate	9.6, 19.2, 38.4, 57.6, 76.8, 115.2kbps	
	Live wire insertion/removal	TP port	—
		USB	○
Standard I/O Interface	Input specification	Number of input	16 points
		Input voltage	DC24V ±10%
		Input current	7mA per circuit
		ON voltage	Min. DC16V
		OFF voltage	Max. DC5V
		Leak current	Allowable leak current: 1mA max.
		Isolation method	Photocoupler isolation
	Output specification	Number of output	16 points
		Load voltage	DC24V ±10%
		Maximum current	100mA per point, 400mA per 8 points (Note 1)
		Saturated voltage	Max.3V
		Leak current	Max 0.1mA
		Isolation method	Photocoupler isolation
		Conforming expansion I/O interface	Expansion PIO NPN specification (16IN/16OUT)
Expansion PIO PNP specification (16IN/16OUT)			
CC-Link (remote device)			
DeviceNet			
PROFIBUS-DP			
EtherNet/IP			
Brake output voltage		DC24V ±10%	
Connectable brake power		Max.5W	
Calendar/clock function	Retention time	Approx. 10 days	
	Charge time	Approx. 100 hours	
Protective functions		Monitoring of overcurrent, fan speed drop, etc.	
Power supply capacity		230V: 1.2A	

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

Tabletop Robot Series PIO Signal Tables

PIO Signal Table

Standard PIO Connector Pin Layout

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

* [24V]/[0V] indicates the 24V power input when the service power output is OFF, or 24V power output when the service power output is ON.

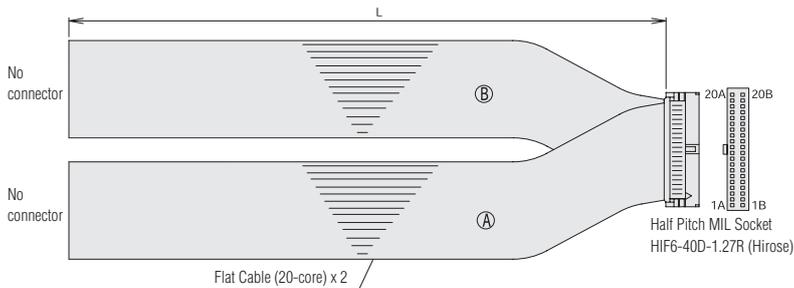
* [24V]/[0V] must not be connected to an external power supply when the service power output is ON.

Expansion PIO Connector Pin Layout

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

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

I/O cable (CB-PAC-PIO) * Enter the cable length (L) in . Lengths up to 10 m are supported.
Example) 080 = 8 m



HIF6-40D-1.27R

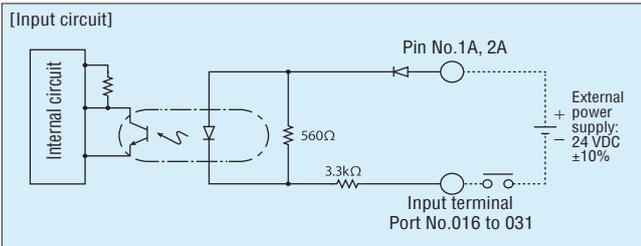
No	Signal Name	Cable Color	Wiring	No	Signal Name	Cable Color	Wiring
1A	24V	Brown-1	Flat Cable (A) (Crimped)	1B	OUT0	Brown-3	Flat Cable (B) (Crimped) AWG28
2A	24V	Red-1		2B	OUT1	Red-3	
3A	-	Orange-1		3B	OUT2	Orange-3	
4A	-	Yellow-1		4B	OUT3	Yellow-3	
5A	IN0	Green-1		5B	OUT4	Green-3	
6A	IN1	Blue-1		6B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

I/O Wiring Diagrams (Standard PIO)

Input Part: External input specification (NPN specification)

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

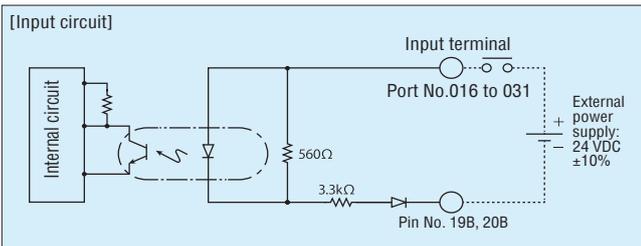
* The circuit diagram below assumes that the power is input externally (the service power output is OFF).
 * In the circuit diagram below, the port numbers conform to the standard factory settings.
 * The allowable leak current is 1 mA when the input is OFF.



Input Part: External input specification (PNP specification)

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

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

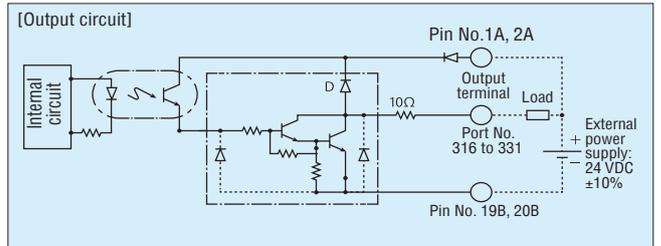


Output Part: External output specification (NPN specification)

Item	Specification
Load voltage	24 VDC
Maximum load current	100 mA/point, 400 mA/8 ports (Note)
Leak current	0.1 mA/point max.
Isolation method	Photocoupler isolation

TD62084
(or equivalent)

* The circuit diagram assumes that the power is input externally (the service power output is OFF).
 * In the circuit diagram below, the port numbers conform to the standard factory settings.
 Note: The total load current for every 8 points from Standard I/O No. 316 is 400 mA. (Max. per point: 100 mA)

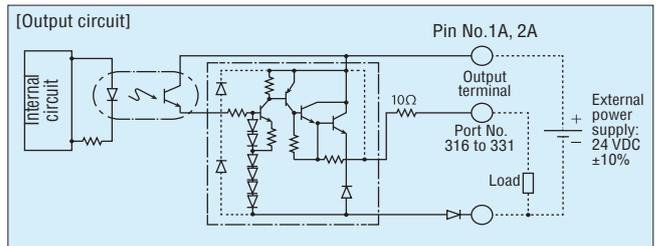


Output Part: External output specification (PNP specification)

Item	Specification
Load voltage	24 VDC
Maximum load current	100 mA/point, 400 mA/8 ports (Note)
Leak current	0.1 mA/point max.
Isolation method	Photocoupler isolation

TD62783
(or equivalent)

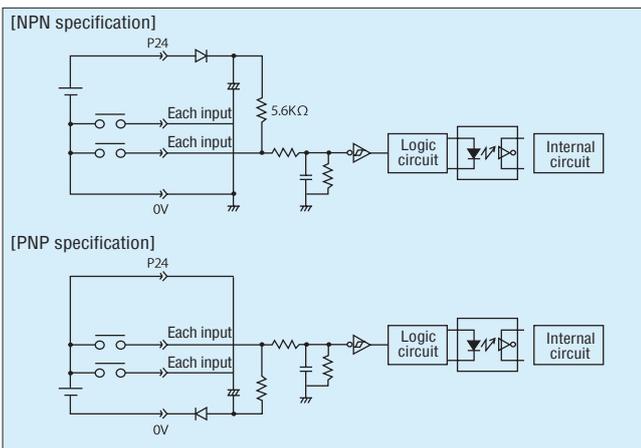
* The circuit diagram assumes that the power is input externally (the service power output is OFF).
 * In the circuit diagram below, the port numbers conform to the standard factory settings.
 Note: The total load current for every 8 points from Standard I/O No. 316 is 400 mA. (Max. per point: 100 mA)



I/O Wiring Diagrams (Expansion PIO)

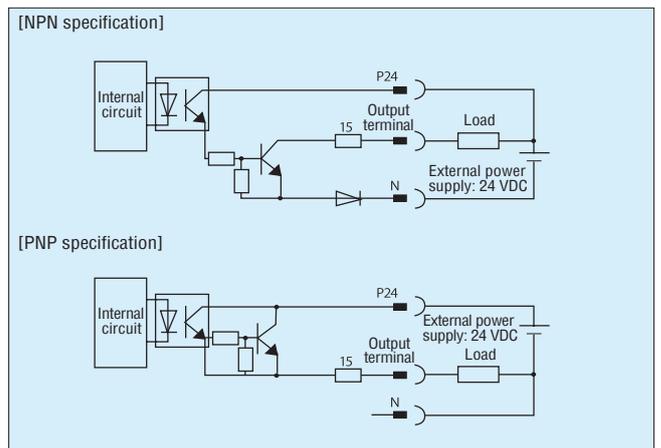
Input Part: External input specification

Item	Specification
Number of input	16 points
Input voltage	24 VDC + 10%
Input current	4 mA/circuit
ON/OFF voltages	ON voltage---18.0 VDC min. (3.5 mA), OFF voltage---6.0 VDC max. (1 mA)
Isolation method	Photocoupler isolation



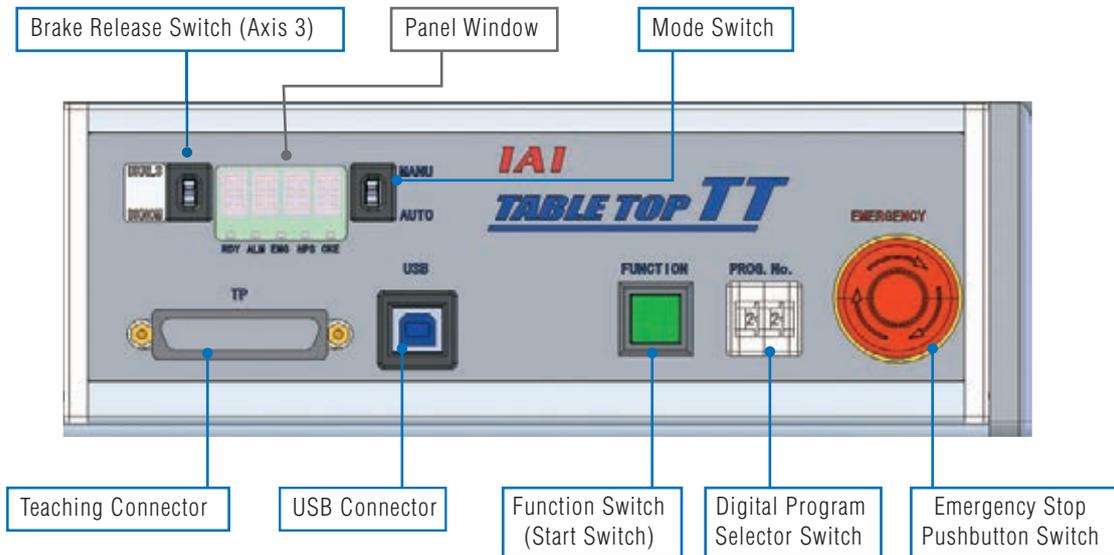
Output Part: External output specification

Item	Specification
Number of output	16 points
Rated load voltage	24 VDC
Maximum current	50 mA/circuit
Isolation method	Photocoupler isolation

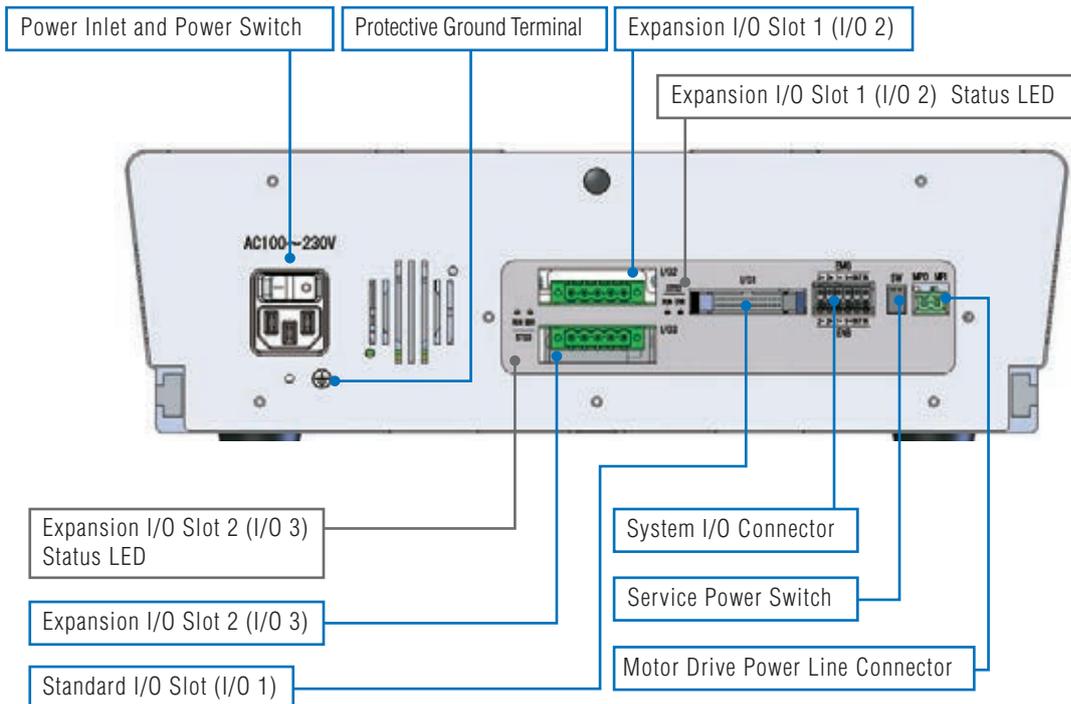


Tabletop Robot Series Name of Each Part

Front



Rear



I/O Interface

Standard I/O slot	Standard PIO (Input 16 points/output 16 points)
Expansion I/O slot 1 [Option]	Expansion PIO (Input 16 points/output 16 points), or Field Network (*1)
Expansion I/O slot 2 [Option]	Expansion PIO (Input 16 points/output 16 points), or Field Network (*1)
System I/O slot	Emergency stop input 2 contacts, enable input 2 contacts
Motor power I/O connector	For cutting off external drive power

*1: For field network (CC-Link, DeviceNet, PROFIBUS-DP or EtherNet/IP) connection, the maximum number of input points is 240 and maximum number of output points is 240.
 EtherNet/IP (slot 1) + EtherNet/IP (slot 2) is not supported.
 If you use a vision system, connect it to EtherNet/IP.

**TTA Tabletop Series
Catalogue No. 0415-E**

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



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