



Tabletop Robot
With Battery-less Absolute Encoder as Standard

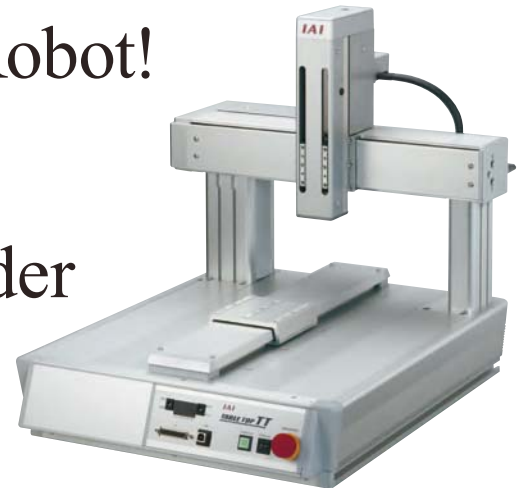
TTA Series

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



Battery-less Absolute Encoder

No Battery, No Maintenance, No Homing, and No Price Increase. No Going Back to Incremental.

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



Built-in position memory system

The advantages of using an absolute encoder.

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

The advantages of battery-less.

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



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

2. New High-precision AC Servo Motor Series Added

AC Servo Motor Specification

The equipped AC servo motor dramatically increases performance.

We have a wide range of specifications, from payload-focused low lead specifications to speed-focused high lead specifications.

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

Max.
2.5
times

Payload focused → Low lead specification

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

Max.
1.5
times

Speed focused → High lead specification

* Max. speed differs depending on conditions.

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

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

* Max. speed differs depending on conditions.

3. Improved Positioning Repeatability and Lost Motion for Stepper Motor

Stepper Motor Specification

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

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

4. Manual Programming Is No Longer Required

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

About the SEL Program Generator...

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

* The first version only supports the application operations.

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

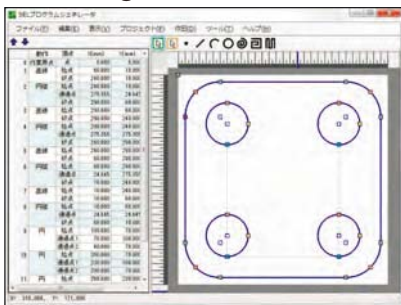
Using the SEL Program Generator...

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

- Reduced processes
- Shortened time
- Improved productivity

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

1. Reading DXF data
2. Drawing with the mouse



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

Automatic creation

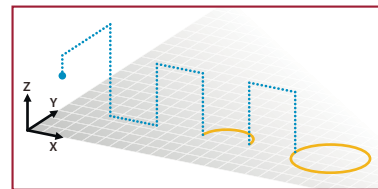


SEL Program
(Application operation program)



Position data

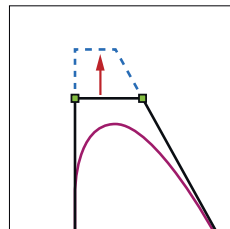
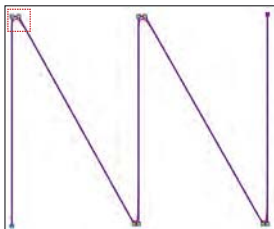
Drawing a pathway like the one at the right automatically generates a program for the robot.



Simple simulation screen

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

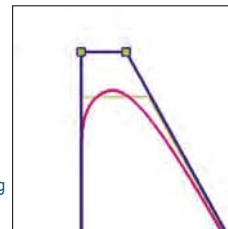
Patent pending



Enlarged view of the red box on the left



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



Correcting the operating path

- Created path
- Operating path
- Ideal path

5. Work / Tool Coordinate Systems

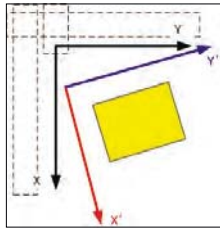


Two types of coordinate systems can be used:

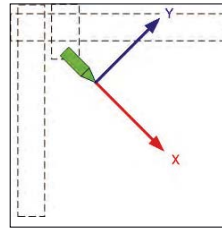
Work coordinate system: the coordinate system defined by offsetting each axis from the base coordinate system (max. 32 types)

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

Work coordinate system



Tool coordinate system



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



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

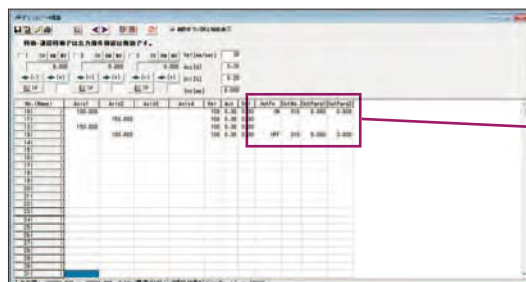
The IAI protocol support makes communication with external equipment possible even when connected to a teaching pendant or PC software.

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.









| I | OutFn | OutNo. | OutPara1 | OutPara2 |
|----|-------|--------|----------|----------|
| 30 | ON | 318 | 0.000 | 0.000 |
| 30 | | | | |
| 30 | | | | |
| 30 | OFF | 318 | 0.000 | 0.000 |

Output operation data





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

Positioning data editing screen

AC Servo Motor Type Lineup

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

Stepper Motor Type Lineup

| Model | TTA | | | | | | | | | | | |
|---------------------------|---|---------|---------|---------|---|---------|---------|---------|---|---------|---------|---------|
| | Gate Type | | | | | | | | | | | |
| Specification | A2 (2-axis standard spec.) A2G (2-axis safety category spec.) | | | | A3 (3-axis standard spec.) A3G (3-axis safety category spec.) | | | | A4 (ZR-axis standard spec.) A4G (ZR-axis safety category spec.) | | | |
| |  | | | |  | | | |  | | | |
| X-axis/Y-axis Stroke (mm) | 200x200 (Cantilever) | 300x300 | 400x400 | 500x500 | 200x200 (Cantilever) | 300x300 | 400x400 | 500x500 | 200x200 (Cantilever) | 300x300 | 400x400 | 500x500 |
| Z-axis Stroke (mm) | - | | | | 100/150 | | | | 100/150 | | | |
| Standard Price | - | | | | - | | | | - | | | |
| | | | | | | | | | R-axis operation range: ±180° | | | |
| | - | | | | - | | | | - | | | |
| | | | | | | | | | R-axis operation range: ±360° | | | |
| | - | | | | - | | | | - | | | |
| Reference Page | P.11 | P.13 | P.15 | P.17 | P.19 | P.21 | P.23 | P.25 | P.27 | | | |
| | Cantilever Type | | | | | | | | | | | |
| Specification | C2 (2-axis standard spec.) C2G (2-axis safety category spec.) | | | | C3 (3-axis standard spec.) C3G (3-axis safety category spec.) | | | | C4 (ZR-axis standard spec.) C4G (ZR-axis safety category spec.) | | | |
| |  | | | |  | | | |  | | | |
| X-axis/Y-axis Stroke (mm) | 200x150 | 300x250 | 400x350 | 500x450 | 200x150 | 300x250 | 400x350 | 500x450 | 200x150 | 300x250 | 400x350 | 500x450 |
| Z-axis Stroke (mm) | - | | | | 100/150 | | | | 100/150 | | | |
| Standard Price | - | | | | - | | | | - | | | |
| | | | | | | | | | R-axis operation range: ±180° | | | |
| | - | | | | - | | | | - | | | |
| | | | | | | | | | R-axis operation range: ±360° | | | |
| | - | | | | - | | | | - | | | |
| Reference Page | P.29 | P.31 | P.33 | P.35 | P.37 | P.39 | P.41 | P.43 | P.45 | | | |

AC Servo Motor Type Model Specification Items

Series **TTA** - Type **WA** - Encoder Type **WA** - X-axis Contents - Y-axis Contents - Z-axis Contents - R-axis Contents - Standard I/O Slot - Expansion I/O Slot 1 - Expansion I/O Slot 2 - I/O Cable Length - Power Supply Cable Spec. - Options

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰

WA Battery-less absolute

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

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

X-axis Stroke

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

X-axis Option

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

Y-axis Stroke

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

Y-axis Option

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

Z-axis Stroke

| | |
|----|-------|
| 10 | 100mm |
| 15 | 150mm |

Z-axis Option

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

R-axis stroke

| | |
|-----|-----------|
| 18 | ±180 deg. |
| 36L | ±360 deg. |

* Equipped with home limit switch

R-axis Option

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

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

Standard I/O Slot

| | |
|------------|---------------------------------|
| 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 |
| IA | IA Net connection board |
| SE1 | RS232C connection board |
| SE2 | RS485 connection board |

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

Expansion I/O Slot 1

| | |
|----------|------|
| 0 | None |
| 2 | 2m |
| 3 | 3m |
| 5 | 5m |

Expansion I/O Slot 2

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

I/O Cable Length

| | |
|----------|------|
| 0 | None |
| 2 | 2m |
| 3 | 3m |
| 5 | 5m |

Power Supply Cable Spec.

| | |
|----------|--|
| 1 | Power supply cable for 100VAC (2m) (Plug on end) |
| 2 | Power supply cable for 200VAC (2m) (Ring tongue terminal on end) |

Options

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

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

Stepper Motor Type Model Specification Items

Series **TTA** - Type **WA** - Encoder Type **WA** - X-axis Contents - Y-axis Contents - Z-axis Contents - R-axis Contents - Standard I/O Slot - Expansion I/O Slot 1 - Expansion I/O Slot 2 - I/O Cable Length - Power Supply Cable Spec. - Options

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰

WA Battery-less absolute

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

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

| X-axis Stroke | | X-axis Option | |
|---------------|-------|---------------|---------------------|
| 20 | 200mm | NM | Non-motor end spec. |
| 30 | 300mm | | |
| 40 | 400mm | | |
| 50 | 500mm | | |

| Y-axis Stroke | | Y-axis Option | |
|---------------|--------------|---------------|---------------------|
| TTA-A Series | TTA-C Series | NM | Non-motor end spec. |
| 20 | 15 | 150mm | |
| 30 | 25 | 250mm | |
| 40 | 35 | 350mm | |
| 50 | 45 | 450mm | |

| Z-axis Stroke | | Z-axis Option | |
|---------------|-------|---------------|--|
| 10 | 100mm | B | Brake (Standard equipment) See P.50 |
| 15 | 150mm | CO | With cover (Dedicated for 4-axis spec.) See P.50 |
| | | NM | Non-motor end spec. See P.51 |

| R-axis stroke | | R-axis Option | |
|---------------|-----------|---------------|---------------------------------|
| 18 | ±180 deg. | ML | Motor side-mounted to the left |
| 36L | ±360 deg. | MR | Motor side-mounted to the right |

* Equipped with home limit switch

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

| Expansion I/O Slot 1 | | Expansion I/O Slot 2 | |
|----------------------|---------------------------------|----------------------|--|
| E | Not used | 0 | None |
| NP | Expansion PIO board (NPN spec.) | 2 | 2m |
| PN | Expansion PIO board (PNP spec.) | 3 | 3m |
| DV | DeviceNet connection board | 5 | 5m |
| CC | CC-Link connection board | | |
| PR | PROFIBUS-DP connection board | PU | Power connector only |
| EP | EtherNet/IP connection board | 1 | Power supply cable for 100VAC (2m) (Plug on end) |
| EC | EtherCAT connection board | 2 | Power supply cable for 200VAC (2m) (Ring tongue terminal on end) |
| IA | IA Net connection board | | |
| SE1 | RS232C connection board | | |
| SE2 | RS485 connection board | | |

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

| Y-axis height and horizontal position change and additional pillar option | | Options | |
|---|---|---------|----------|
| H1 | Y-axis mounting position height 50mm up | | See P.51 |
| H2 | Y-axis mounting position height 100mm up | | See P.51 |
| F1 | Y-axis mounting position 90mm forward | | See P.50 |
| F2 | Y-axis mounting position 180mm forward | | See P.50 |
| AP | Additional pillar for 20-15 and 20-20 types | | |

| Installation bracket options | | Options | |
|------------------------------|-------------------------------|---------|----------|
| FT4 | Foot bracket included (4 pcs) | | See P.50 |
| FT6 | Foot bracket included (6 pcs) | | See P.50 |

| Side slot options | | Options | |
|-------------------|--|---------|----------|
| SLT0 | Side slot 180mm installation | | See P.51 |
| SLT | Individual stroke side slot installation | | See P.51 |

| Side plate options | | Options | |
|--------------------|--|---------|----------|
| PTH | Installation side plate (with hole) | | See P.51 |
| PTN | Installation side plate (without hole) | | See P.51 |

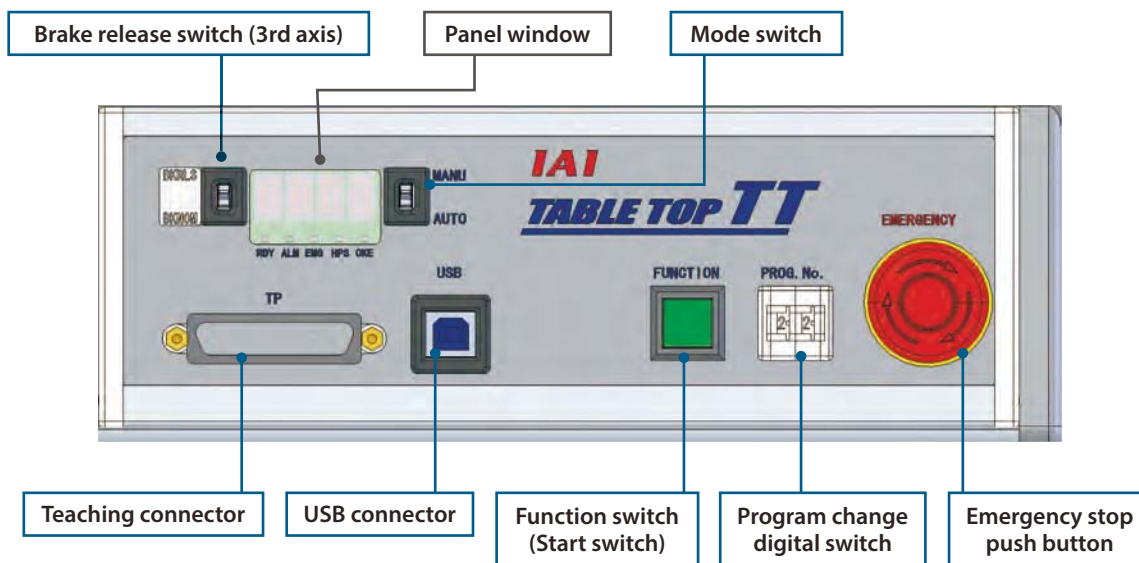
| Operation part options | | Options | |
|------------------------|------------------------------|---------|----------|
| OS | Detachable operation console | | See P.52 |
| * | Additional switch | | See P.52 |

| ZR-axis position change option | | Options | |
|--------------------------------|--|---------|----------|
| FZ | ZR-axis mounting position 64.5mm forward | | See P.50 |

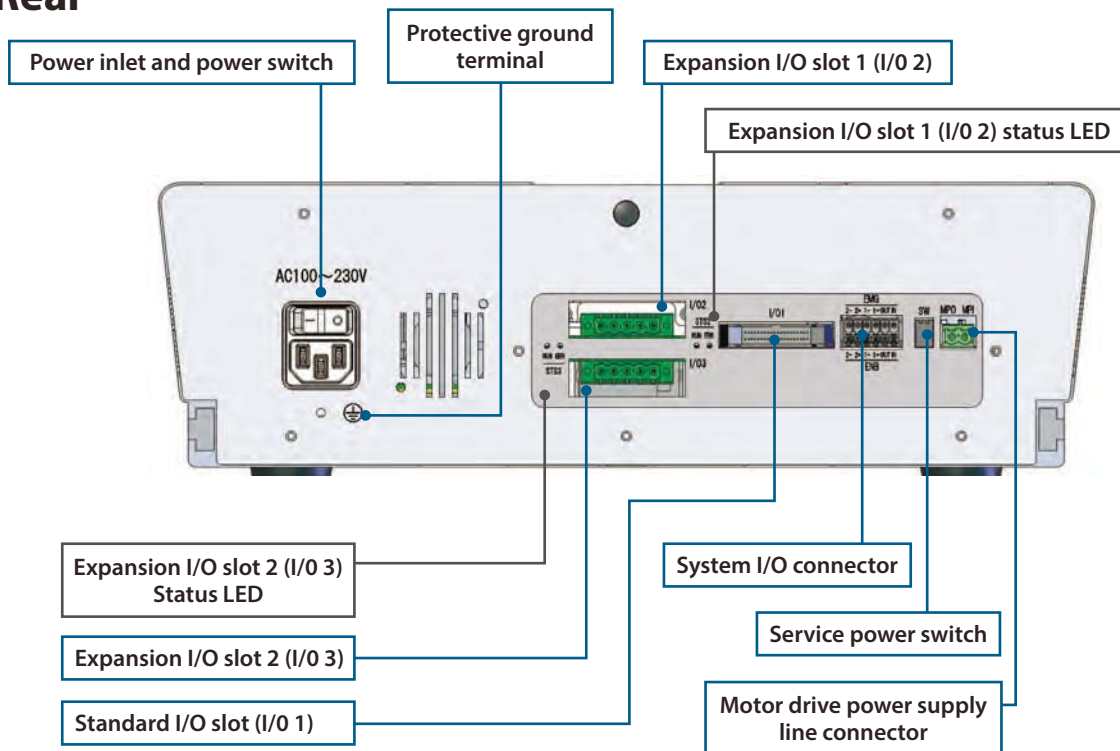
* Additional switch models depend on the items selected. Please refer to P.52 for more information.

Tabletop Robot Series Names of Each Part

Front



Rear



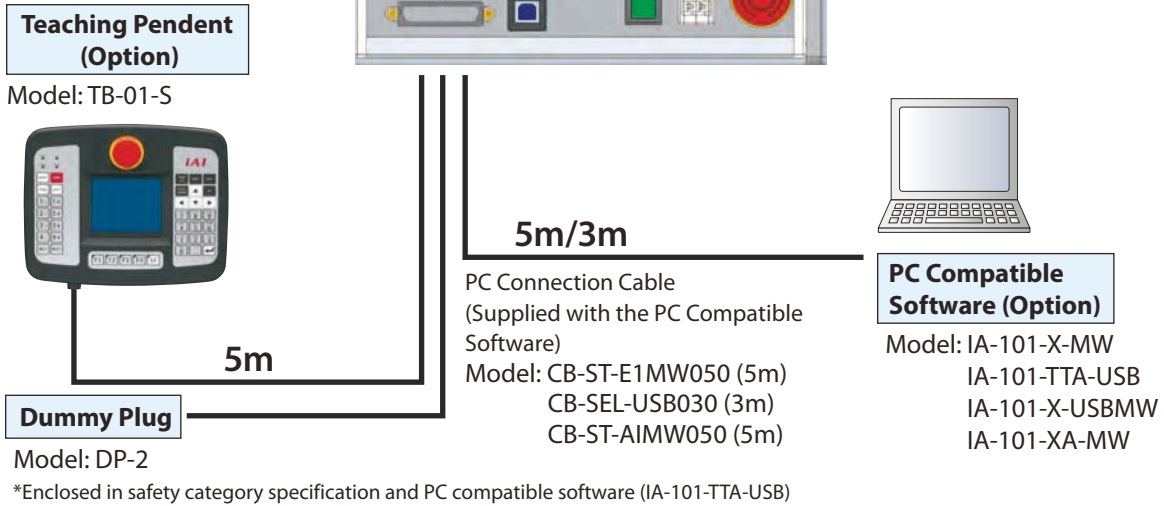
I/O Interface

| | |
|-------------------------------|--|
| 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 |

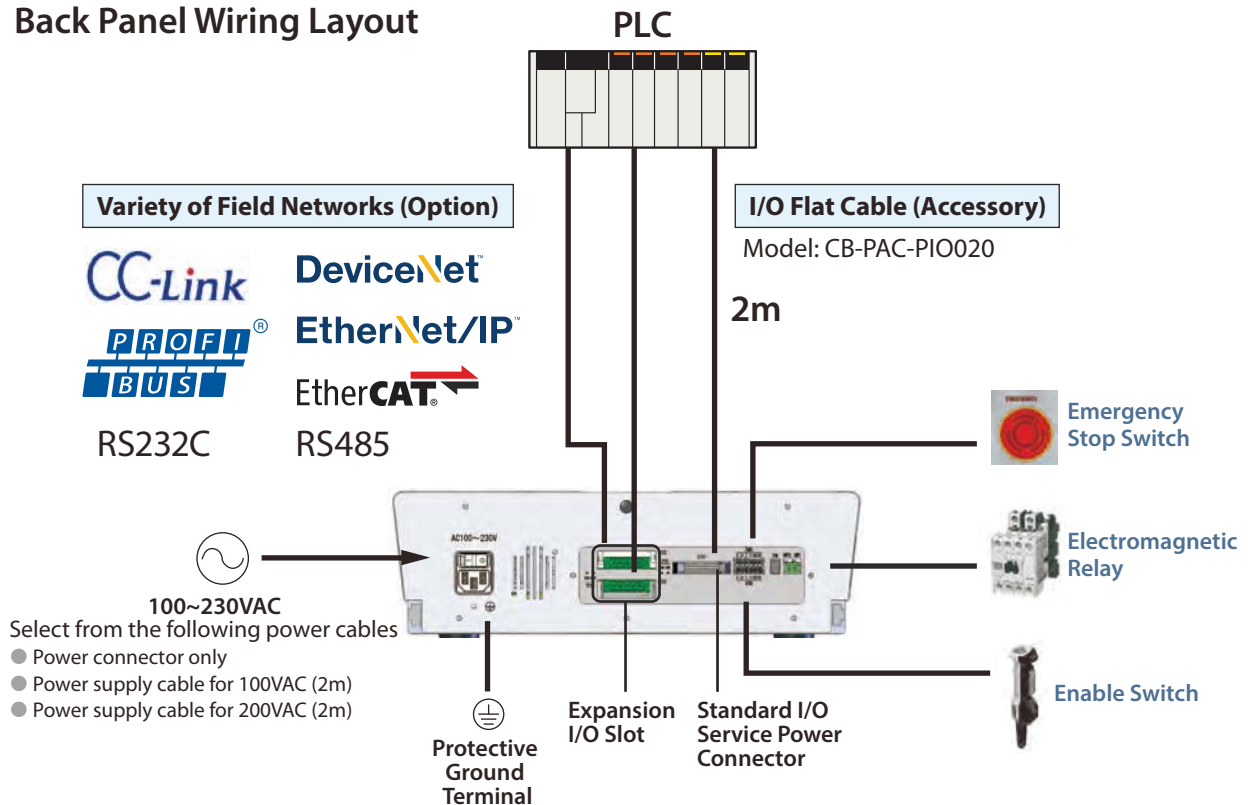
*1: For field network (CC-Link, DeviceNet, PROFIBUS-DP, EtherNet/IP, EtherCAT, IA Net, RS232C and RS485) connection, the maximum number of input points is 240 and maximum number of output points is 240.
EtherNet/IP + EtherNet/IP is not supported
Connect the vision system to EtherNet/IP board.

Tabletop Robot Series System Configuration

Front Panel Wiring Layout



Back Panel Wiring Layout



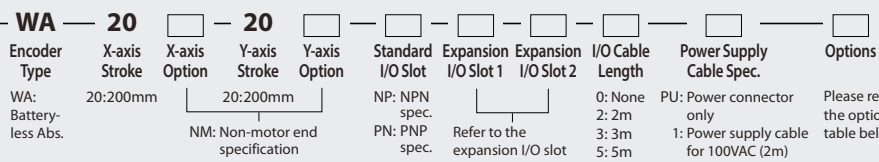
*Emergency stop switch, enable switch, electromagnetic relay, and other devices may be connected and wired if necessary. The factory setting with no external devices connected still operate properly.

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

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

Model Specification Items

A2SL: 2-axis low lead spec.
A2SLG: 2-axis low lead safety category spec.
A2SH: 2-axis high lead spec.
A2SHG: 2-axis high lead safety category spec.
A2: 2-axis standard spec.
A2G: 2-axis safety category spec.



WA: Battery-less Abs.
20:200mm
20:200mm
NM: Non-motor end specification

Standard I/O Slot: NP: NPN spec., PN: PNP spec.
Expansion I/O Slot 1: Refer to the expansion I/O slot table below.
Expansion I/O Slot 2: Refer to the expansion I/O slot table below.
I/O Cable Length: 0: None, 2: 2m, 3: 3m, 5: 5m.
Power Supply Cable Spec.: PU: Power connector only, 1: Power supply cable for 100VAC (2m), 2: Power supply cable for 200VAC (2m).

Please refer to the options table below



*CE marking only supports safety category specifications.



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

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

④⑤ Expansion I/O Slot

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

①②⑧ Options

| Name | Option Code | Reference Page |
|---|-------------|----------------|
| Additional pillar for 20-15 and 20-20 types | 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.

Actuator Specifications

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

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

Dimensions

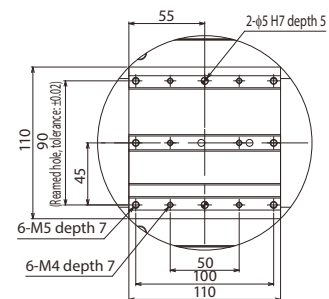
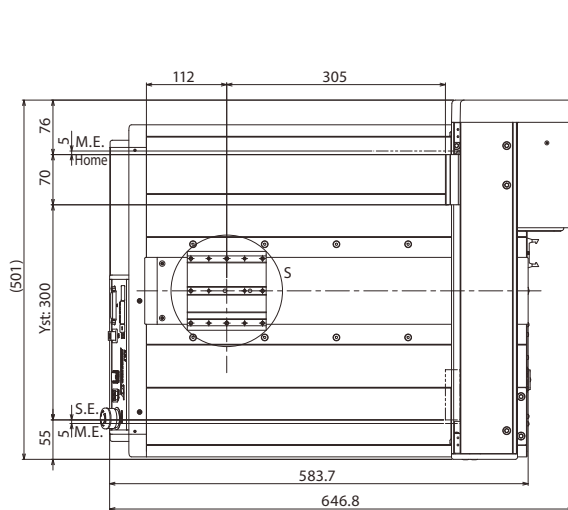
CAD drawings can be downloaded from our website.

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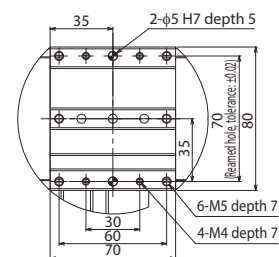


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

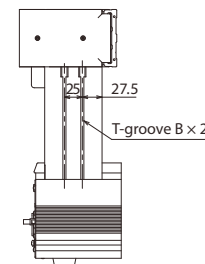
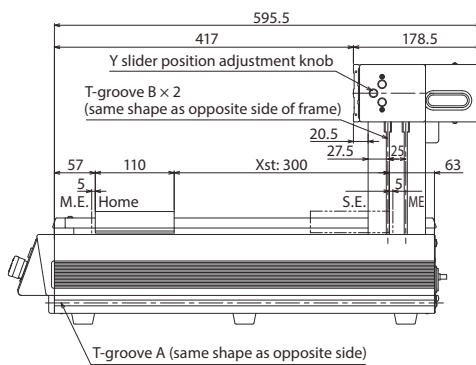
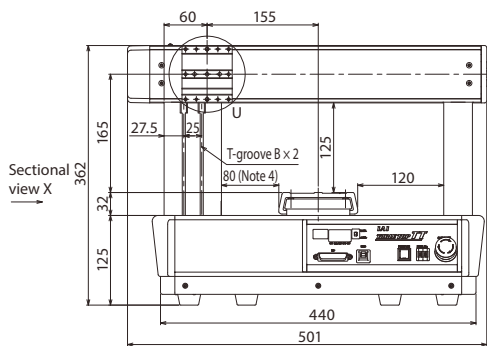
S.E: Stroke end
M.E: Mechanical end



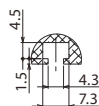
Detail view of S (X-axis slider details)



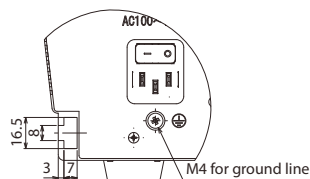
Detail view of U (Y-axis slider details)



Sectional view X



T-groove B shape



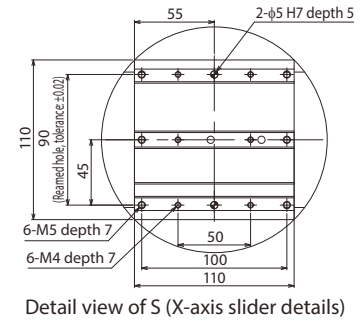
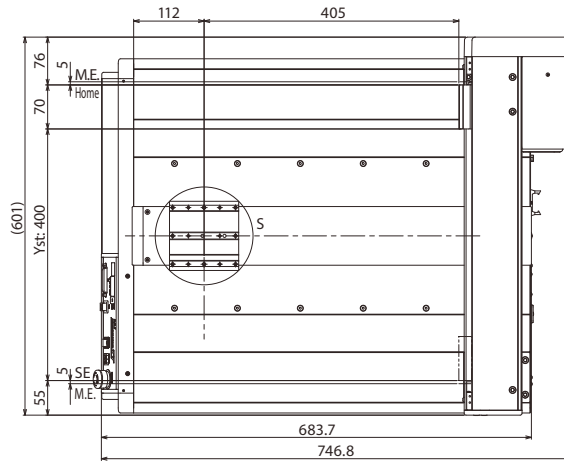
T-groove A shape

Dimensions

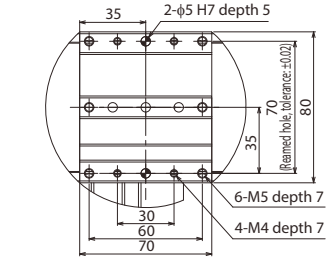
CAD drawings can be downloaded from our website.
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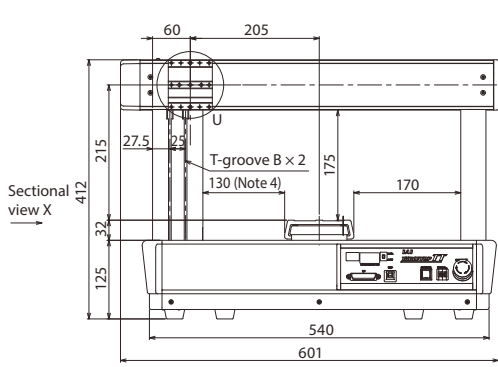
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
S.E: Stroke end
M.E: Mechanical end



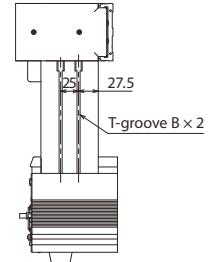
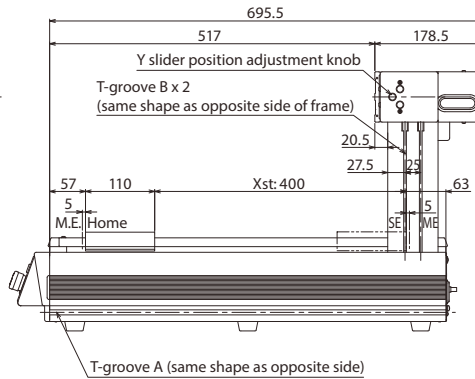
Detail view of S (X-axis slider details)



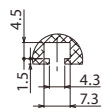
Detail view of U (Y-axis slider details)



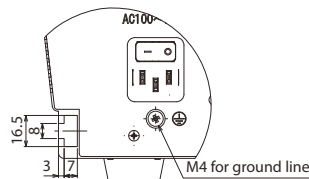
Sectional view X



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

Model Specification Items

A2SL: 2-axis low lead spec.
A2SLG: 2-axis low lead safety category spec.
A2SH: 2-axis high lead spec.
A2SHG: 2-axis high lead safety category spec.
A2: 2-axis standard spec.
A2G: 2-axis safety category spec.

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 Abs.

50:500mm

50:500mm

NM: Non-motor end specification

NP: NPN spec.
PN: PNP spec.

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

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

PU: Power connector only
1: Power supply cable for 100VAC (2m)
2: Power supply cable for 200VAC (2m)

Please refer to the options table below



*CE marking only supports safety category specifications.



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

Model / Specifications

Lead and Payload

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

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

④⑤ Expansion I/O Slot

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

①②⑧ Options

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

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

Actuator Specifications

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

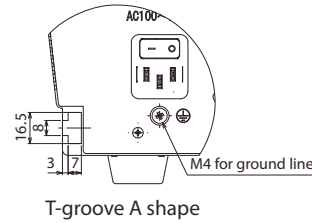
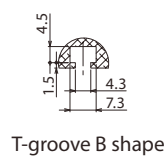
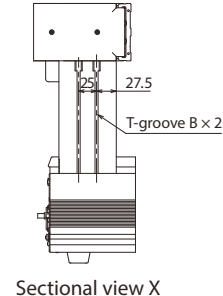
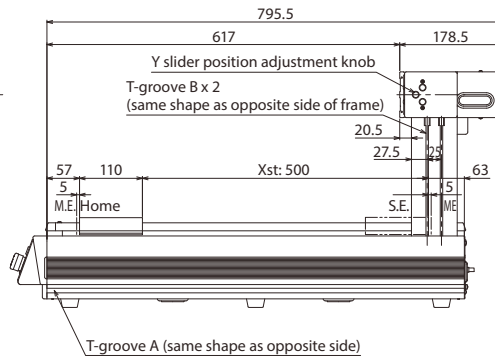
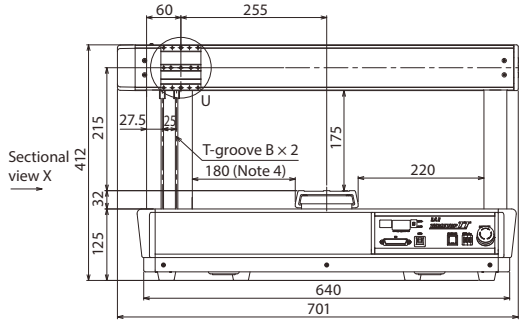
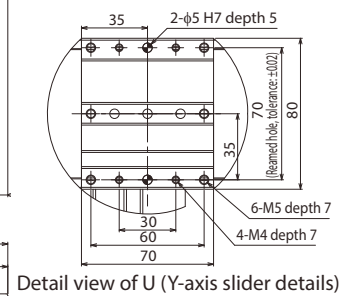
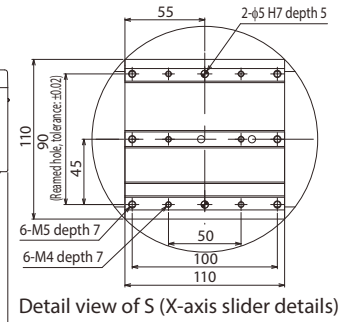
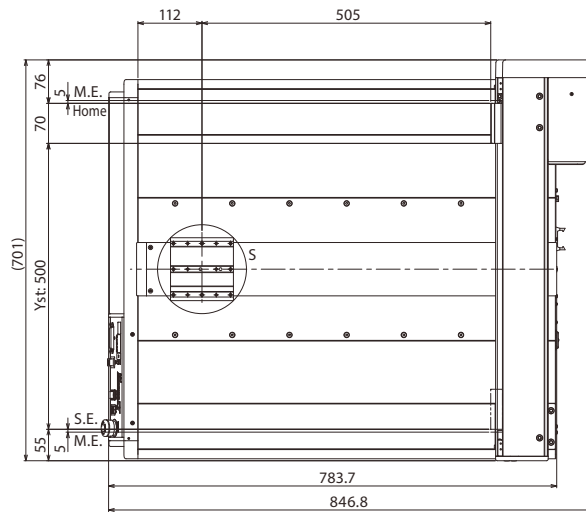
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

Dimensions

CAD drawings can be downloaded from our website.
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*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-A3S□(G)-20-20 Tabletop Robot, Gate Type 3-axis, XY-axis 200mm, Z-axis 100/150mm, AC Servo Motor

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

Model Specification Items

A3SL: 3-axis low lead spec.
A3SLG: 3-axis low lead safety category spec.
A3SH: 3-axis high lead spec.
A3SHG: 3-axis high lead safety category spec.
A3: 3-axis standard spec.
A3G: 3-axis safety category spec.

TTA — □ — WA — 20 □ — 20 □ — □ □ — □ — □ — □ — □ — □ — □ — □

Series Type Encoder Type X-axis Stroke X-axis Option Y-axis Stroke Y-axis Option Z-axis Stroke Z-axis Option Standard I/O Slot Expansion I/O Slot 1 Expansion I/O Slot 2 I/O Cable Length Power Supply Cable Spec. Options

20:200mm

20:200mm

10:100mm
15:150mm

NP: NPN spec.
PN: PNP spec.

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

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

PU: Power connector only
1: Power supply cable for 100VAC (2m)
2: Power supply cable for 200VAC (2m)



*CE marking only supports safety category specifications.



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

POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

⑥⑦ Expansion I/O Slot

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

①②④⑩ Options

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

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

Actuator Specifications

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

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

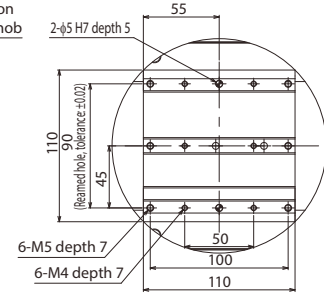
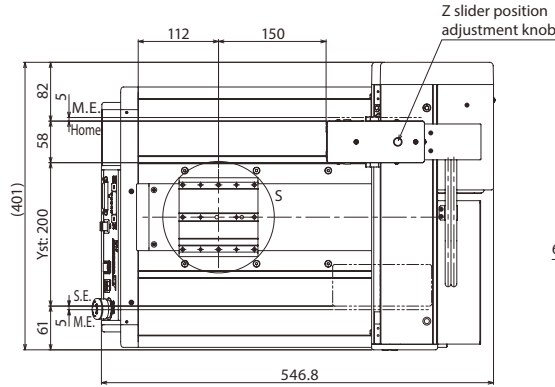
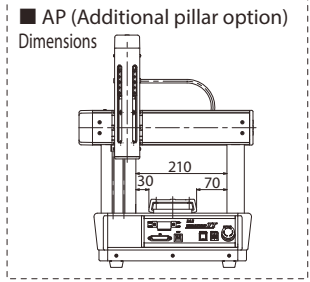
Dimensions

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

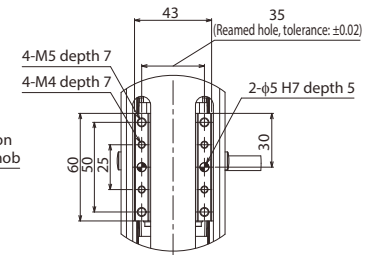


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

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

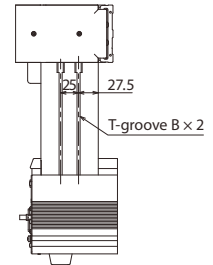
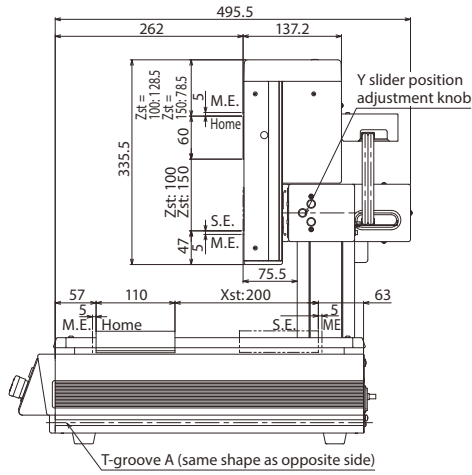
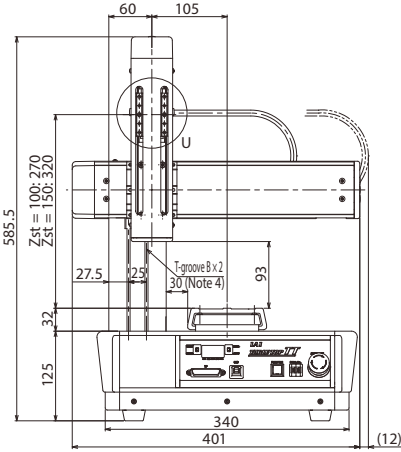


Detail view of S (X-axis slider details)

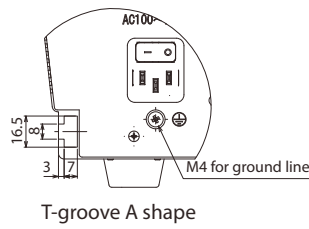
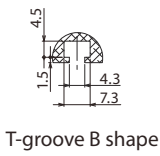


Detail view of U (Z-axis slider details)

Sectional view X



Sectional view X



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

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

| Model Specification Items | Series | Type | Encoder Type | X-axis Stroke | X-axis Option | Y-axis Stroke | Y-axis Option | Z-axis Stroke | Z-axis Option | Standard I/O Slot | Expansion I/O Slot 1 | Expansion I/O Slot 2 | I/O Cable Length | Power Supply Cable Spec. | Options |
|--|--------|------|--------------|---------------|---------------|---------------|---------------|----------------------|---------------|--------------------------------|----------------------|----------------------|------------------------------------|--|---|
| A3SL: 3-axis low lead spec. A3SLG: 3-axis low lead safety category spec. A3SH: 3-axis high lead spec. A3SHG: 3-axis high lead safety category spec. A3: 3-axis standard spec. A3G: 3-axis safety category spec. | TTA | □ | WA | 30:300mm | □ | 30:300mm | □ | 10:100mm 15:150mm | □ | NP: NPN spec. PN: PNP spec. | □ | □ | 0: None 2: 2m 3: 3m 5: 5m | PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m) | Please refer to the options table below |



*CE marking only supports safety category specifications.



POINT
Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

⑥⑦ Expansion I/O Slot

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

①②④⑩ Options

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

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

Actuator Specifications

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

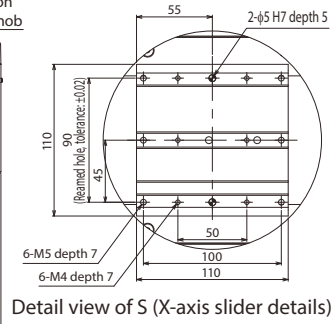
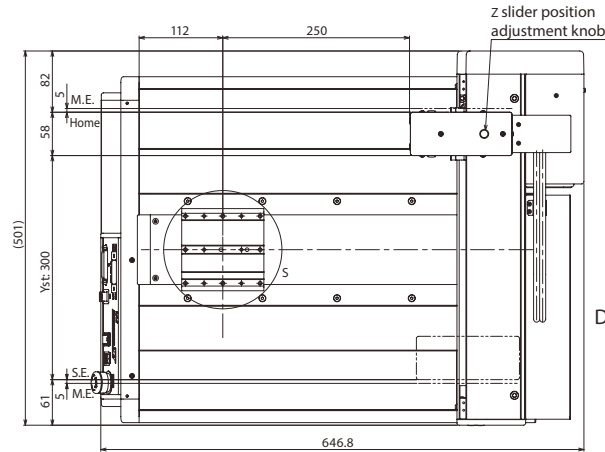
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

Dimensions

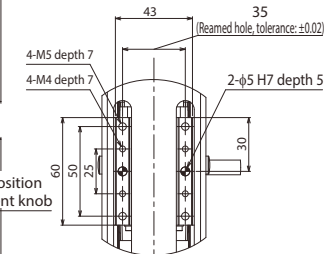
CAD drawings can be downloaded from our website.
www.intelligentactuator.com



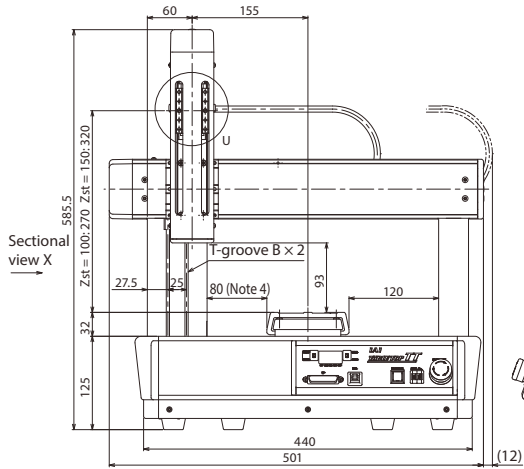
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
S.E: Stroke end
M.E: Mechanical end



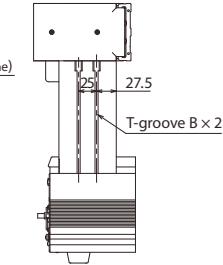
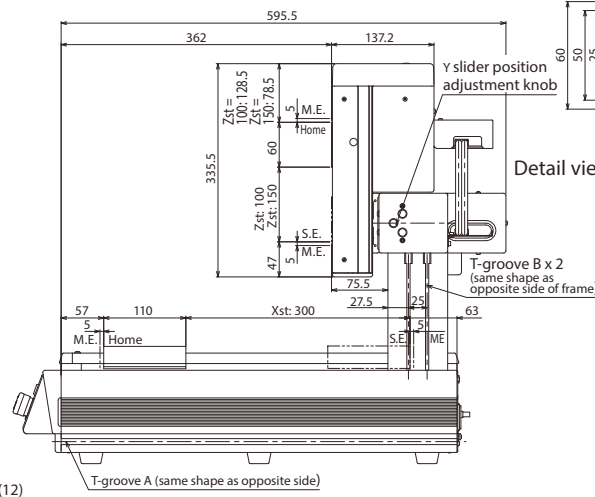
Detail view of S (X-axis slider details)



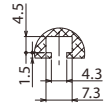
Detail view of U (Z-axis slider details)



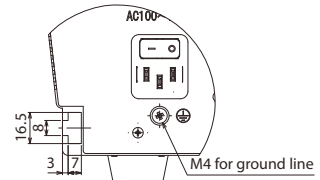
Sectional view X



Sectional view X



T-groove B shape



T-groove A shape

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

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

Model Specification Items

A3SL: 3-axis low lead spec.
A3SLG: 3-axis low lead safety category spec.
A3SH: 3-axis high lead spec.
A3SHG: 3-axis high lead safety category spec.
A3: 3-axis standard spec.
A3G: 3-axis safety category spec.

| | | | | | | | | | | | | | | |
|--------|------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|----------------------|----------------------|------------------|--------------------------|---------|
| 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 Abs.

40:400mm
40:400mm
NM: Non-motor end specification

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

NP: NPN spec.
PN: PNP spec.

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

0: None
2: 2m
3: 3m
5: 5m
1: Power supply cable for 100VAC (2m)
2: Power supply cable for 200VAC (2m)

PU: Power connector only
Please refer to the options table below



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

| Model Number | Axis Configuration | Encoder Type | Motor Type | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg) (Note 1) | |
|---|--------------------|-----------------------|----------------|----------------|--------------|--------------|-----------------------|----|
| TTA-A3SL(G)-WA-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-A3SH(G)-WA-40[1]-40[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | | | 16 | 400 | 1~1,200 | 15 | |
| | Y-axis | | | 16 | 400 | 1~1,200 | - | |
| | Z-axis | | | 5 or equiv. | 100/150 | 1~400 | 7 | |
| TTA-A3(G)-WA-40[1]-40[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | | Stepper motor | Stepper motor | 24 or equiv. | 400 | 1~800 | 20 |
| | Y-axis | | | | 24 or equiv. | 400 | 1~800 | - |
| | Z-axis | | | | 12 | 100/150 | 1~400 | 6 |

Legend: [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

Expansion I/O Slot

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

Options

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

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

Actuator Specifications

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

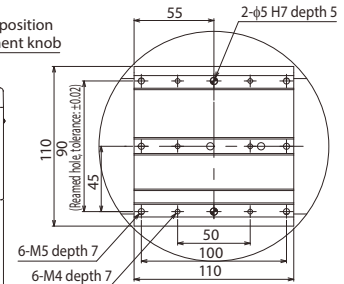
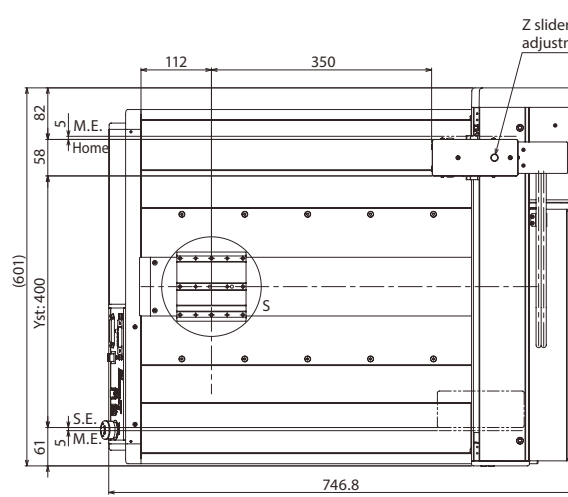
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

Dimensions

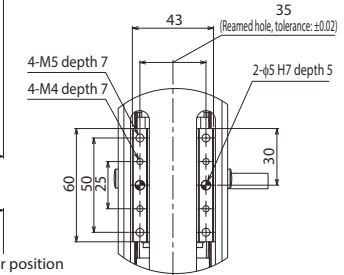
CAD drawings can be downloaded from our website.
www.intelligentactuator.com



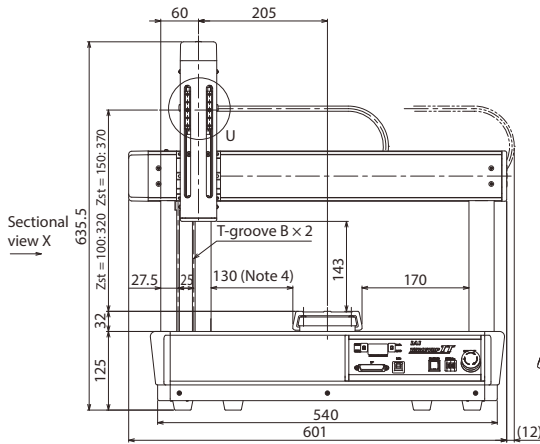
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
S.E: Stroke end
M.E: Mechanical end



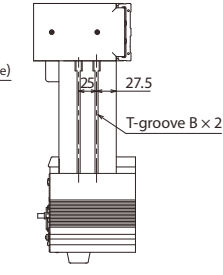
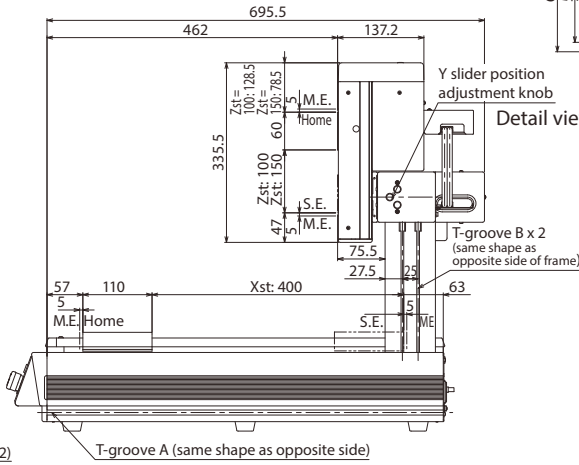
Detail view of S (X-axis slider details)



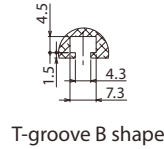
Detail view of U (Z-axis slider details)



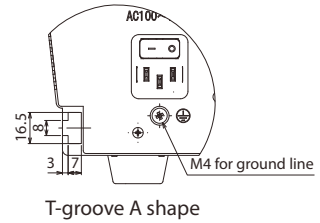
Sectional view X



Sectional view X



T-groove B shape



T-groove A shape

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

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

| Model Specification Items | Series | Type | Encoder Type | X-axis Stroke | X-axis Option | Y-axis Stroke | Y-axis Option | Z-axis Stroke | Z-axis Option | Standard I/O Slot | Expansion I/O Slot 1 | Expansion I/O Slot 2 | I/O Cable Length | Power Supply Cable Spec. | Options |
|--|--------|------|--------------|---------------|---------------|---------------|---------------|----------------------|--|--------------------------------|----------------------|----------------------|------------------------------------|--|---|
| A3SL: 3-axis low lead spec. A3SLG: 3-axis low lead safety category spec. A3SH: 3-axis high lead spec. A3SHG: 3-axis high lead safety category spec. A3: 3-axis standard spec. A3G: 3-axis safety category spec. | TTA | □ | WA | 50 | 50 | 50 | 50 | 10:100mm 15:150mm | B: Brake (Standard) NM: Non-motor end specification | NP: NPN spec. PN: PNP spec. | | | 0: None 2: 2m 3: 3m 5: 5m | PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m) | Please refer to the options table below |



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

⑥⑦ Expansion I/O Slot

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

①②④⑩ Options

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

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

Actuator Specifications

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

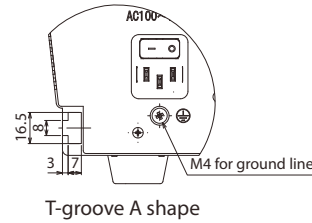
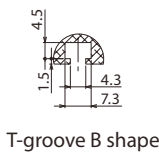
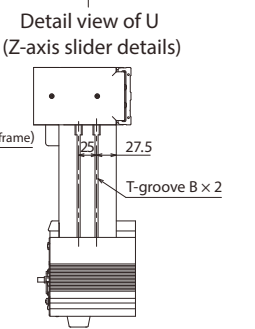
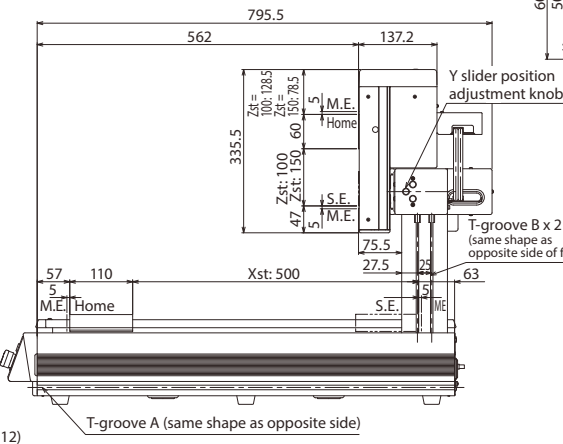
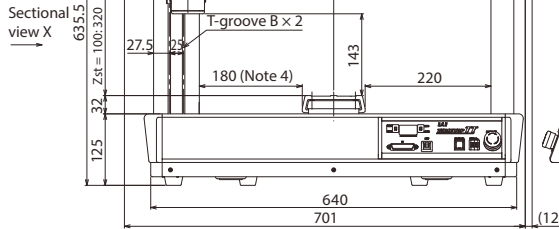
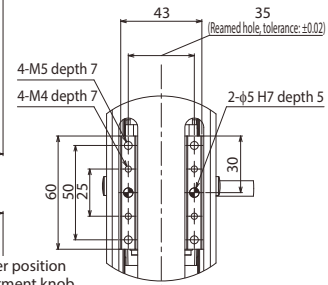
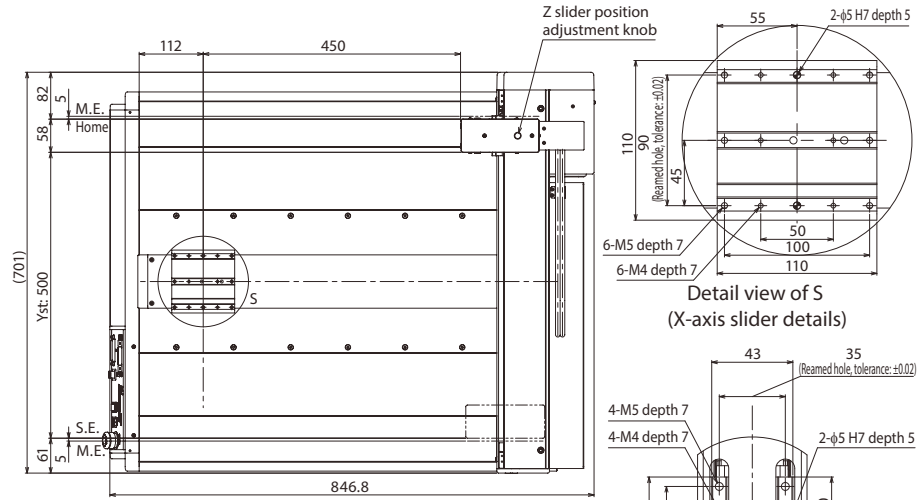
* The "table" section refers to the top surface of the unit excludes the X-axis slider. This is not the X-axis payload.

Dimensions

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



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



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

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

| Model Spec. Items | TTA - [] - [] | WA - [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | [] - [] | |
|--|-----------------|----------------|--|--|---------------------------------|--|---------------|------------------------|--|---|--|--------------------------------|----------------------|--|------------------------------------|--|-----------|-----------|---|--|
| | Series | Type | Encoder Type | X-axis Stroke | X-axis Option | Y-axis Stroke | Y-axis Option | Z-axis Stroke | Z-axis Option | R-axis Stroke | R-axis Option | Standard I/O Slot | Expansion I/O Slot 1 | Expansion I/O Slot 2 | I/O Cable Length | Power Supply Cable Spec. | Options | | | |
| A4SL: 4-axis ZR type, low lead spec. A4SLG: 4-axis ZR type, low lead Safety category specification | | | WA: 20: 200mm Battery-less Abs. 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 | |
| A4SH: 4-axis ZR type, high lead spec. A4SHG: 4-axis ZR type, high lead Safety category specification | | | | | | | | | | | | | | | | | | | | |
| A4: 4-axis ZR type, standard spec. A4G: 4-axis ZR type, safety category spec. | | | | | | | | | | | | | | | | | | | | |
| | | | | | NM: Non-motor end specification | | | | B: Brake (Standard) CO: With cover NM: Non-motor end spec. | | ML: Motor side-mounted to the left MR: Motor side-mounted to the right *One of these must be selected. | | | Refer to the expansion I/O slot table below. * Enter [E] if unused. | | PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m) | | | | |



*CE marking only supports safety category specifications.



- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57) Please note that depending on the load moment of inertia, the rotational axis may not reach the maximum speed. (See P.58 and 60)
- (Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
- (Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
- (Note 4) When placing the workpiece on the X-slider, be sure to allow at least 2mm clearance from the unit surface.

Model / Specifications

Lead and Payload

| Model Number | Axis Configuration | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg)/(Note 1) | Max. Load Inertia Moment (kg-m ²) |
|--|--------------------|-----------------------|-----------------------|----------------|-----------------------|---|
| TTA-A4SL(G)-WA-{20/30/40/50}[]-{20/30/40/50}[] | X-axis | 8 | 200~500 | 1~600 | 30 | - |
| | Y-axis | 8 | 200~500 | 1~600 | - | - |
| | Z-axis | 2.14 or equiv. | 100/150 | 1~170 | - | - |
| | R-axis | - | 18: ±180°, 36L: ±360° | 1,500deg/s | 15 | 0.01 |
| TTA-A4SH(G)-WA-{20/30/40/50}[]-{20/30/40/50}[] | X-axis | 16 | 200 300~500 | 1,000 1,200 | 15 | - |
| | | | 200 300 | 700 900 | | |
| | Y-axis | 16 | 400 500 | 1,050 1,200 | - | - |
| | | | 500 | 1,200 | | |
| | | | 500 | 1,200 | | |
| | Z-axis | 5 or equiv. | 100/150 | 1~400 | 7 | - |
| R-axis | - | 18: ±180°, 36L: ±360° | 1,500deg/s | - | 0.01 | |
| TTA-A4(G)-WA-{20/30/40/50}[]-{20/30/40/50}[] | X-axis | 24 or equiv. | 200~500 | 1~800 | 20 | - |
| | Y-axis | 24 or equiv. | 200~500 | 1~800 | - | - |
| | Z-axis | 12 | 100/150 | 1~400 | - | - |
| | R-axis | - | 18: ±180°, 36L: ±360° | 1,000deg/s | 6 | 0.01 |

Options

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

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

Expansion I/O Slot

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

Dimensions

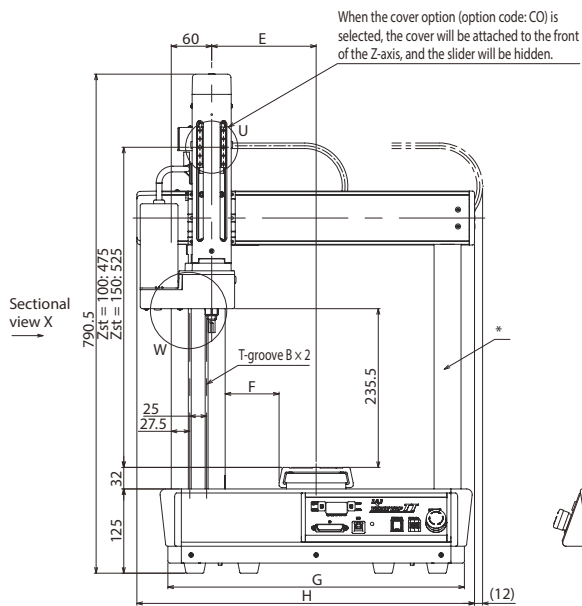
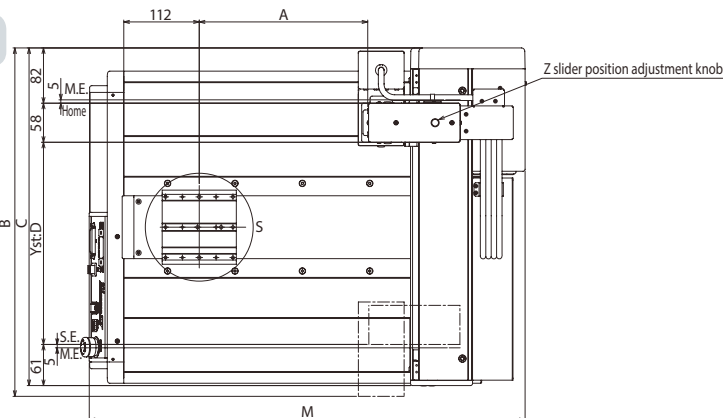
CAD drawings can be downloaded from our website.

www.intelligentactuator.com

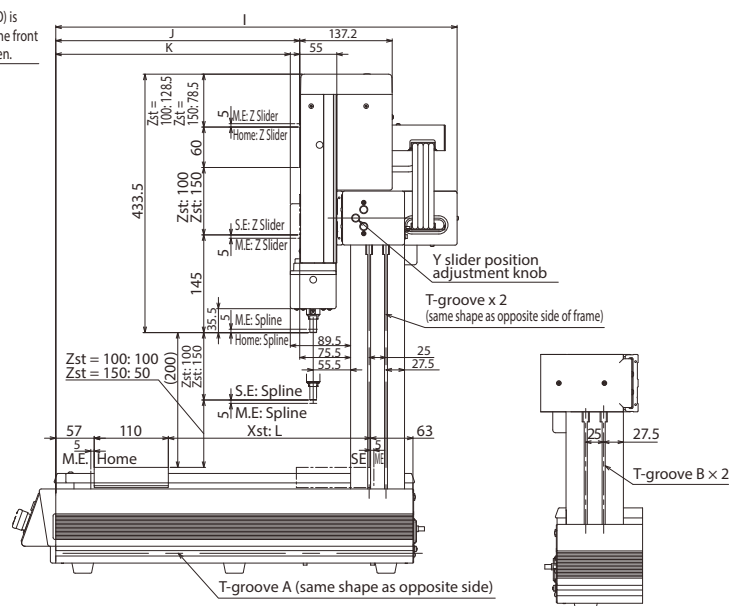


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

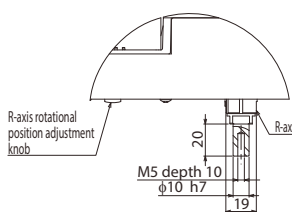
S.E: Stroke end
M.E: Mechanical end



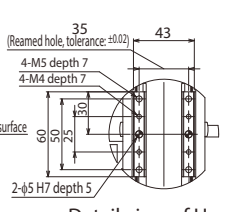
*Not available for A4-20-20 model.



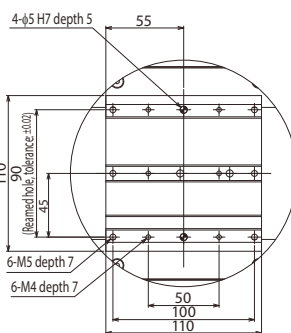
Sectional view X



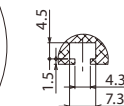
Detail view of W (R spline tip details)



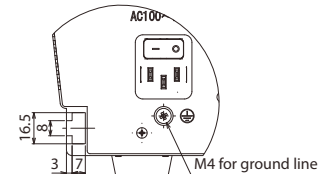
Detail view of U (Z-axis slider details)



Detail view of S (X-axis slider details)



T-groove B shape



T-groove A shape

Actuator Specifications

| Item | Description | |
|------------------------------------|--|--|
| | AC Servo Motor | Stepper Motor |
| Drive system | Ball screw (X, Y-axis: $\phi 12\text{mm}$, Z-axis: $\phi 10\text{mm}$, 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: $\phi 12\text{mm}$, Z-axis: $\phi 10\text{mm}$, Rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt |
| Positioning repeatability (Note 2) | $\pm 0.005\text{mm}$, R-axis: $\pm 0.008^\circ$ | $\pm 0.01\text{mm}$, R-axis: $\pm 0.01^\circ$ |
| 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 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*2 | 20-20: 20kg, 30-30: 30kg, 40-40: 40kg, 50-50: 50kg | |
| Unit weight | 20-20: 29.3kg 30-30: 36.3kg 40-40: 42.3kg 50-50: 49.3kg | 20-20: 28.3kg 30-30: 35.3kg 40-40: 41.3kg 50-50: 48.3kg |

| | 20-20 | 30-30 | 40-40 | 50-50 |
|---|-------|-------|-------|-------|
| A | 150 | 250 | 350 | 450 |
| B | 421.2 | 521.2 | 621.2 | 721.2 |
| C | 401 | 501 | 601 | 701 |
| D | 200 | 300 | 400 | 500 |
| E | 105 | 155 | 205 | 255 |
| F | 30 | 80 | 130 | 180 |
| G | 340 | 440 | 540 | 640 |
| H | 401 | 501 | 601 | 701 |
| I | 495.5 | 595.5 | 695.5 | 795.5 |
| J | 262 | 362 | 462 | 562 |
| K | 248 | 348 | 448 | 548 |
| L | 200 | 300 | 400 | 500 |
| M | 546.8 | 646.8 | 746.8 | 846.8 |

* Reference for overhang load length / R-axis: $r=100\text{mm}$ or less
*1 Ma and Mb for ZR-axis are the total of those for the Z-axis and R-axis. Mc is the value of the Z-axis only.

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

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

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

| Model Specification Items | Series | Type | Encoder Type | X-axis Stroke | X-axis Option | Y-axis Stroke | Y-axis Option | Standard I/O Slot | Expansion I/O Slot 1 | Expansion I/O Slot 2 | I/O Cable Length | Power Supply Cable Spec. | Options |
|---------------------------|--|------|--------------|---------------|---------------|---------------|---------------|-------------------|--------------------------------|----------------------|------------------|------------------------------------|--|
| | C2SL: 2-axis low lead spec. C2SLG: 2-axis low lead safety category spec. C2SH: 2-axis high lead spec. C2SHG: 2-axis high lead safety category spec. C2: 2-axis standard spec. C2G: 2-axis safety category spec. | TTA | □ | WA | 20:200mm | □ | 15:150mm | □ | NP: NPN spec. PN: PNP spec. | □ | □ | 0: None 2: 2m 3: 3m 5: 5m | PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m) |



*CE marking only supports safety category specifications.



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

Model / Specifications

Lead and Payload

| Model Number | Axis Configuration | Encoder Type | Motor Type | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg) (Note 1) |
|------------------------------|--------------------|-----------------------|----------------|----------------|-------------|--------------|-----------------------|
| TTA-C2SL(G)-WA-20①-15②③④⑤⑥⑦⑧ | X-axis | Battery-less absolute | AC servo motor | 8 | 200 | 1~600 | - |
| | Y-axis | | | 8 | 150 | 1~600 | 20 |
| TTA-C2SH(G)-WA-20①-15②③④⑤⑥⑦⑧ | X-axis | | | 13.3 or equiv. | 200 | 1~700 | - |
| | Y-axis | | | 13.3 or equiv. | 150 | 1~600 | 15 |
| TTA-C2(G)-WA-20①-15②③④⑤⑥⑦⑧ | X-axis | Stepper motor | | 24 or equiv. | 200 | 1~600 | - |
| | Y-axis | | | 24 or equiv. | 150 | 1~540 | 10 |

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

④⑤ Expansion I/O Slot

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

①②⑧ Options

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

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

*1 Additional pillar for 20-15/20-20 types (AP) can only be selected for the stepper motor specification.

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

Actuator Specifications

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

Dimensions

CAD drawings can be downloaded from our website.

www.intelligentactuator.com

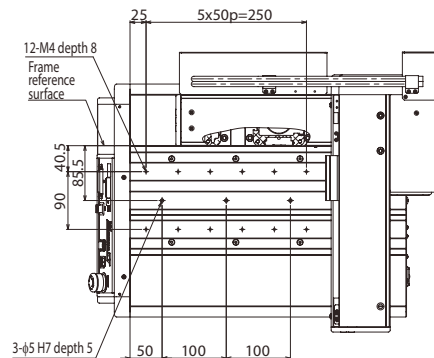
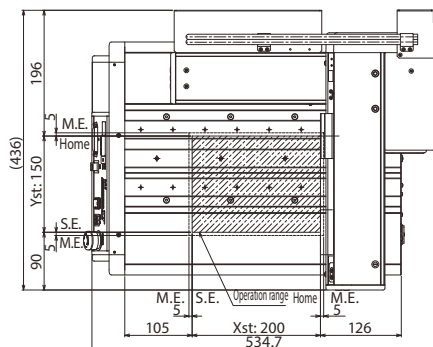
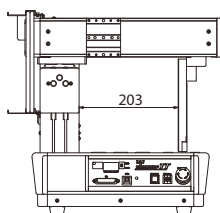


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

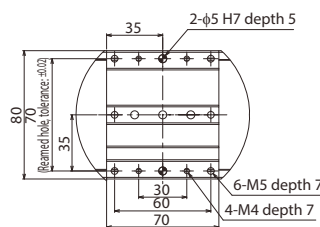
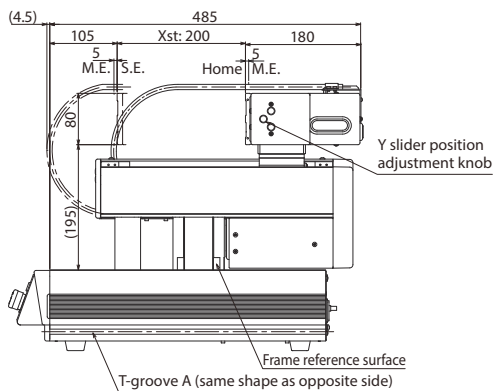
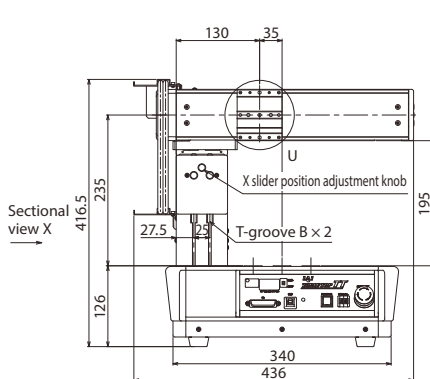
S.E: Stroke end

M.E: Mechanical end

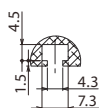
■ Dimensions for AC servo motor type and stepper motor type with the additional pillar option (AP)



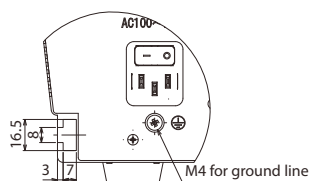
Top base hole layout



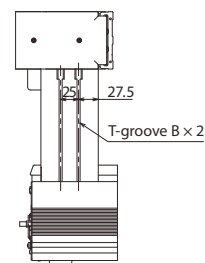
Detail view of U (Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

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

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

Model Specification Items

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

Series Type Encoder Type X-axis Stroke X-axis Option Y-axis Stroke Y-axis Option Standard I/O Slot Expansion I/O Slot 1 Expansion I/O Slot 2 I/O Cable Length Power Supply Cable Spec. Options

C2SL: 2-axis low lead spec.
C2SLG: 2-axis low lead safety category spec.
C2SH: 2-axis high lead spec.
C2SHG: 2-axis high lead safety category spec.
C2: 2-axis standard spec.
C2G: 2-axis safety category spec.

WA: Battery-less Abs.

30:300mm 25:250mm

NM: Non-motor end specification

NP: NPN spec.
PN: PNP spec.

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

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

PU: Power connector only
1: Power supply cable for 100VAC (2m)
2: Power supply cable for 200VAC (2m)

Please refer to the options table below



* CE marking only supports safety category specifications.



POINT
Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

④⑤ Expansion I/O Slot

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

①②⑧ Options

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

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

Actuator Specifications

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

Dimensions

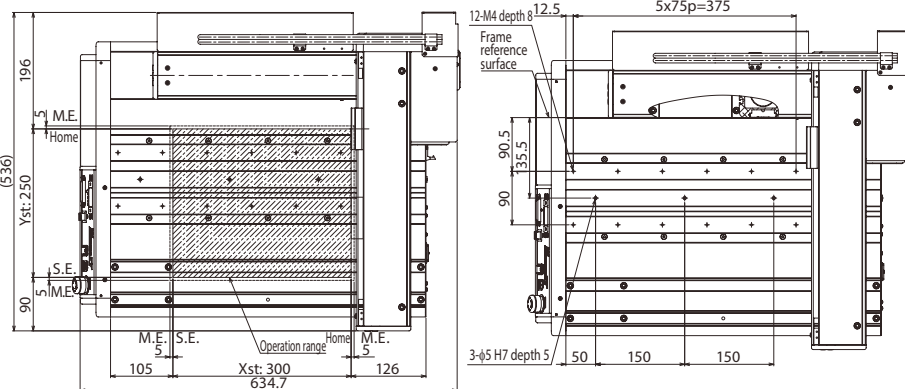
CAD drawings can be downloaded from our website.

www.intelligentactuator.com

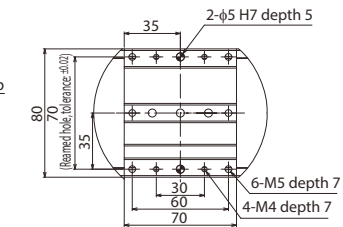
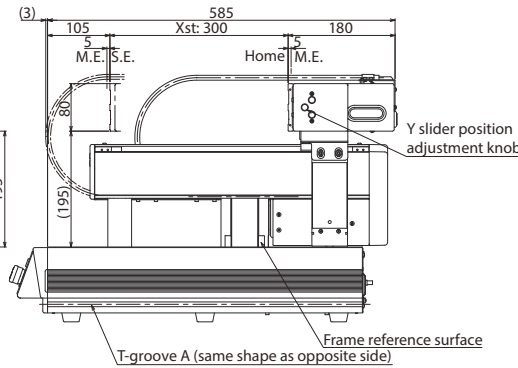
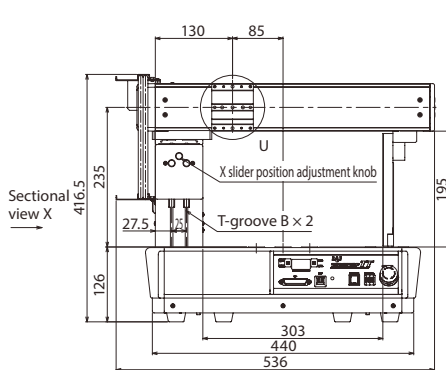
2D CAD

3D CAD

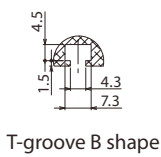
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
S.E: Stroke end
M.E: Mechanical end



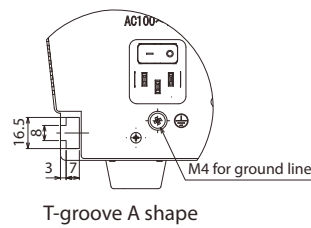
Top base hole layout



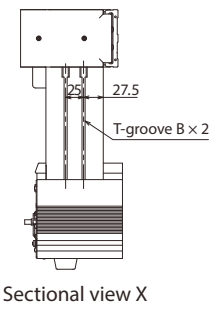
Detail view of U (Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

TTA-C2S□(G)-40-35

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

TTA-C2(G)-40-35

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

Model Specification Items

C2SL: 2-axis low lead spec.
 C2SLG: 2-axis low lead safety category spec.
 C2SH: 2-axis high lead spec.
 C2SHG: 2-axis high lead safety category spec.
 C2: 2-axis standard spec.
 C2G: 2-axis safety category spec.

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 Abs.

40:400mm

□ — 35 □ — □ — □ — □ — □ — □ — □ — □

X-axis Stroke Option Y-axis Stroke Option

35:350mm

NM: Non-motor end specification

Standard I/O Slot Expansion I/O Slot 1 Expansion I/O Slot 2 I/O Cable Length

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

Power Supply Cable Spec. Options

PU: Power connector only
 1: Power supply cable for 100VAC (2m)
 2: Power supply cable for 200VAC (2m)

Please refer to the options table below



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

④⑤ Expansion I/O Slot

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

①②⑧ Options

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

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

Actuator Specifications

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

Dimensions

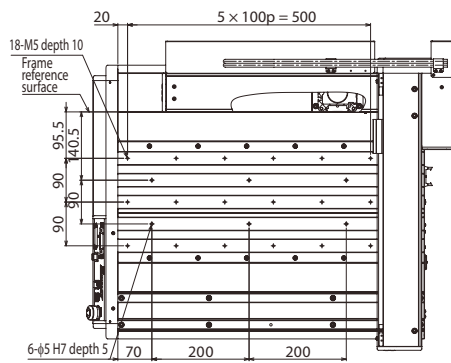
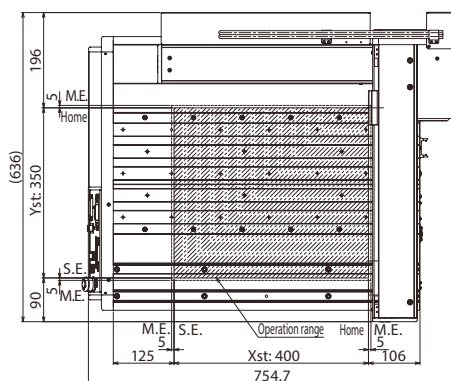
CAD drawings can be downloaded from our website.

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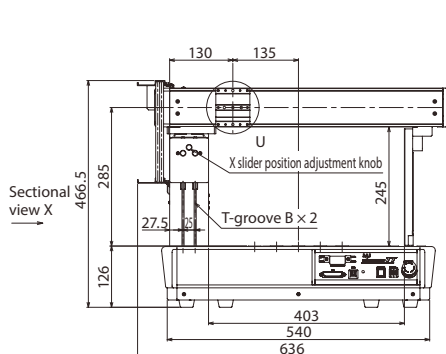


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

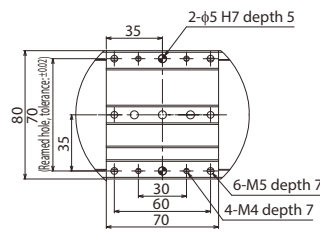
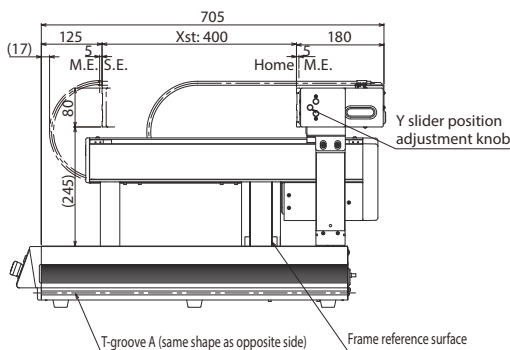
S.E: Stroke end
M.E: Mechanical end



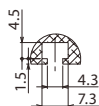
Top base hole layout



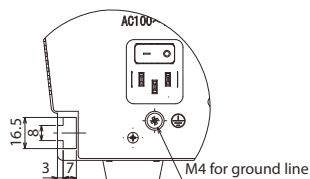
Sectional view X



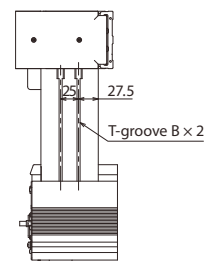
Detail view of U (Y-axis slider details)



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

| 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 Spec. | Options |
|--|--------|------|--------------|---------------|---------------|---------------|---------------|--------------------------------|----------------------|----------------------|------------------------------------|--|---|
| C2SL: 2-axis low lead spec. C2SLG: 2-axis low lead safety category spec. C2SH: 2-axis high lead spec. C2SHG: 2-axis high lead safety category spec. C2: 2-axis standard spec. C2G: 2-axis safety category spec. | TTA | □ | WA | 50:500mm | □ | 45 | □ | NP: NPN spec. PN: PNP spec. | □ | □ | 0: None 2: 2m 3: 3m 5: 5m | PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m) | Please refer to the options table below |



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

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

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

④⑤ Expansion I/O Slot

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

①②⑧ Options

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

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

Actuator Specifications

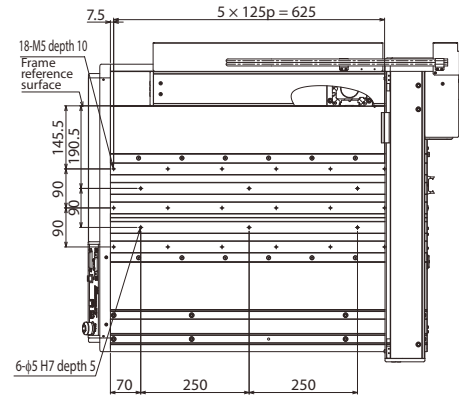
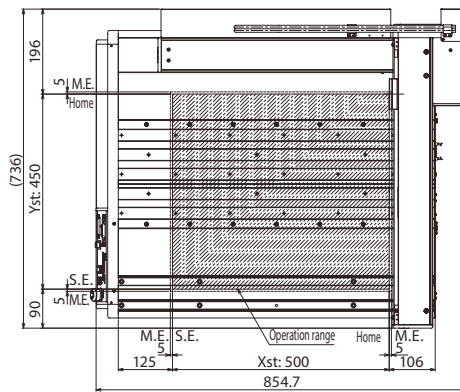
| Item | Description | |
|------------------------------------|--|---|
| | AC Servo Motor | Stepper Motor |
| Drive system | Ball screw (φ12mm, rolled C5 or equiv.) High lead: 1:1.2 speed reduction with timing belt | Ball screw (φ12mm, rolled C10) 1.5:1 speed increase with timing belt |
| Positioning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

Dimensions

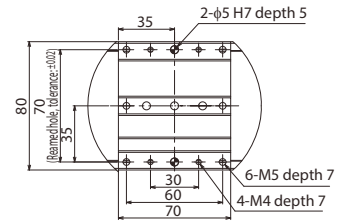
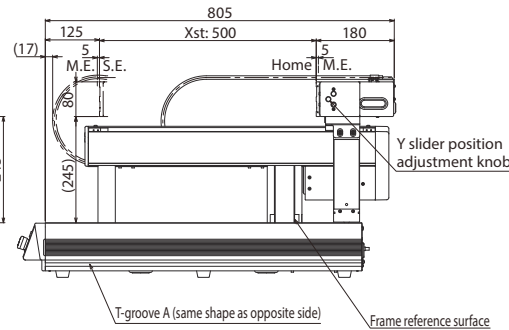
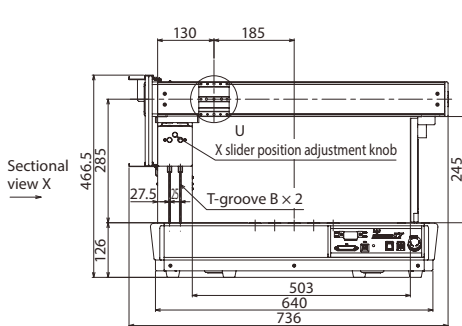
CAD drawings can be downloaded from our website.
www.intelligentactuator.com



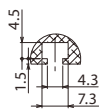
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
S.E: Stroke end
M.E: Mechanical end



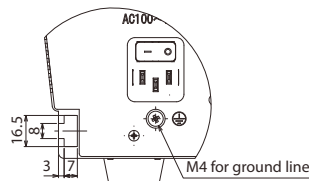
Top base hole layout



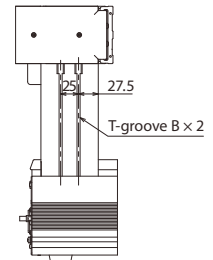
Detail view of U (Y-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

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

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

| Model Specification Items | Series | Type | Encoder Type | X-axis Stroke | X-axis Option | Y-axis Stroke | Y-axis Option | Z-axis Stroke | Z-axis Option | Standard I/O Slot | Expansion I/O Slot 1 | Expansion I/O Slot 2 | I/O Cable Length | Power Supply Cable Spec. | Options |
|---------------------------|--|-------|--------------|---------------|---------------|---------------|---------------|---------------|----------------------|-------------------|--------------------------------|----------------------|------------------|------------------------------------|--|
| | C3SL: 3-axis low lead spec. C3SLG: 3-axis low lead safety category spec. C3SH: 3-axis high lead spec. C3SHG: 3-axis high lead safety category spec. C3: 3-axis standard spec. C3G: 3-axis safety category spec. | TTA-□ | □ | WA | 20:200mm | □ | 15:150mm | □ | 10:100mm 15:150mm | □ | NP: NPN spec. PN: PNP spec. | □ | □ | 0: None 2: 2m 3: 3m 5: 5m | PU: Power connector only 1: Power supply cable for 100VAC (2m) 2: Power supply cable for 200VAC (2m) |



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

| Model Number | Axis Configuration | Encoder Type | Motor Type | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg) (Note 1) | |
|---|--------------------|-----------------------|----------------|----------------|--------------|--------------|-----------------------|---|
| TTA-C3SL(G)-WA-20□1-15□2-□3B□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-C3SH(G)-WA-20□1-15□2-□3B□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-C3(G)-WA-20□1-15□2-□3B□4-□5-□6-□7-□8-□9-□10 | X-axis | | Stepper motor | Stepper motor | 24 or equiv. | 200 | 1~600 | - |
| | Y-axis | | | | 24 or equiv. | 150 | 1~540 | - |
| | Z-axis | | | | 12 | 100/150 | 1~400 | 6 |

Legend: □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

6 7 Expansion I/O Slot

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

Actuator Specifications

| Item | Description | |
|------------------------------------|--|--|
| | AC Servo Motor | Stepper Motor |
| Drive system | Ball screw (X, Y-axis: φ12mm, Z-axis: φ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt | Ball screw (X, Y-axis: φ12mm, Z-axis: φ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt |
| Positioning repeatability (Note 2) | ±0.005mm | ±0.01mm |
| Lost motion | Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less | 0.05mm or less |
| Dynamic allowable moment (Note 3) | X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) 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 | |

1 2 4 10 Options

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

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

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

Dimensions

CAD drawings can be downloaded from our website.

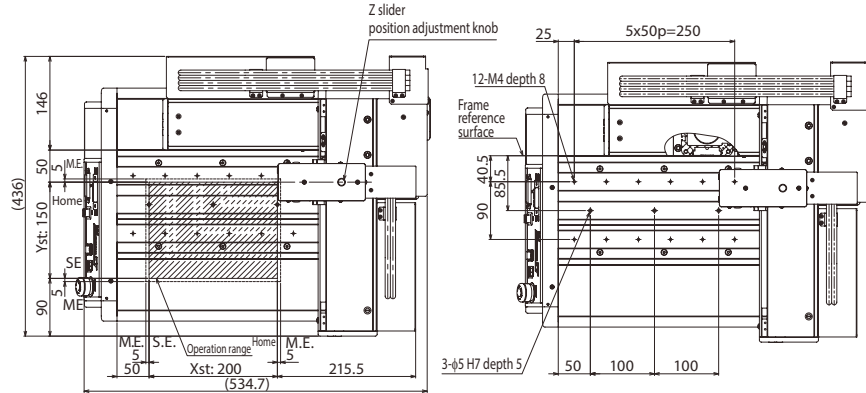
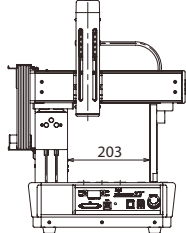
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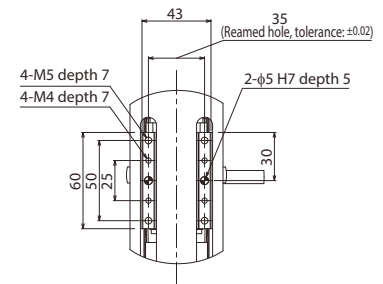
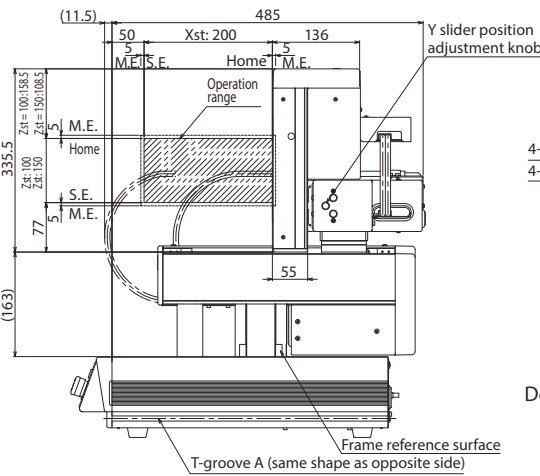
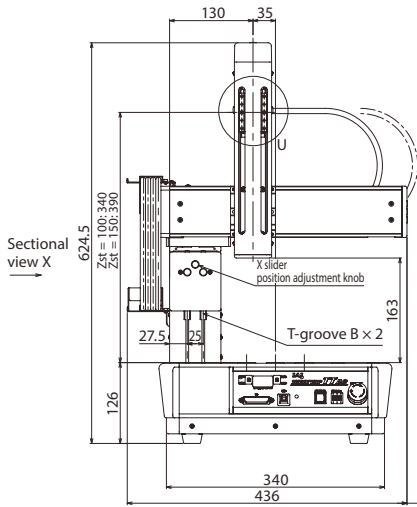
*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

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

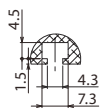
■ Dimensions for AC servo motor type and stepper motor type with the additional pillar option (AP)



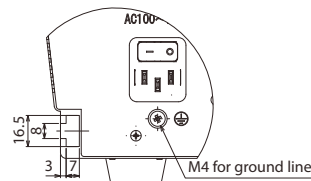
Top base hole layout



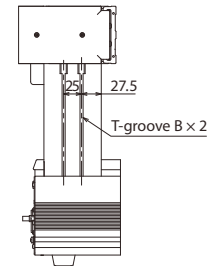
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

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

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

■ Model Specification Items

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



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

■ Lead and Payload

| Model Number | Axis Configuration | Encoder Type | Motor Type | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg) (Note 1) |
|---|--------------------|-----------------------|----------------|----------------|-------------|--------------|-----------------------|
| TTA-C3SL(G)-WA-30□1-25□2-□3B□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-C3SH(G)-WA-30□1-25□2-□3B□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-C3(G)-WA-30□1-25□2-□3B□4-□5-□6-□7-□8-□9-□10 | X-axis | | Stepper motor | 24 or equiv. | 300 | 1~700 | - |
| | Y-axis | | | 24 or equiv. | 250 | 1~640 | - |
| | Z-axis | | | 12 | 100/150 | 1~400 | 6 |

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

⑥⑦ Expansion I/O Slot

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

①②④⑩ Options

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

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

Actuator Specifications

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

Dimensions

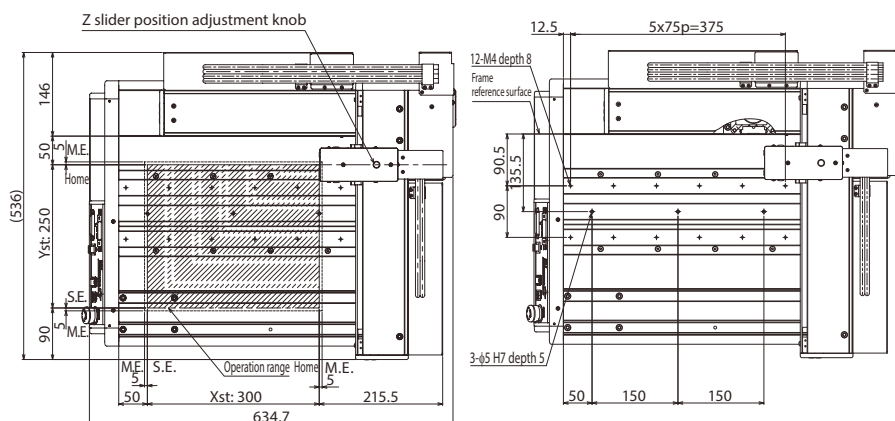
CAD drawings can be downloaded from our website.

www.intelligentactuator.com

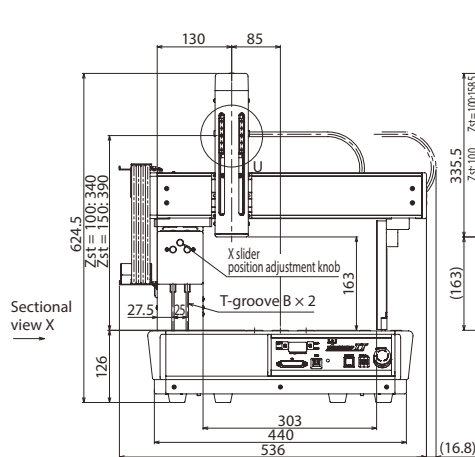


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

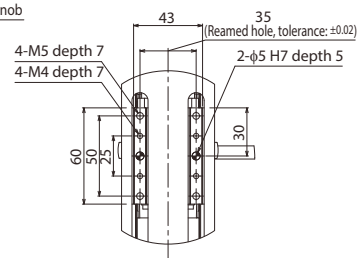
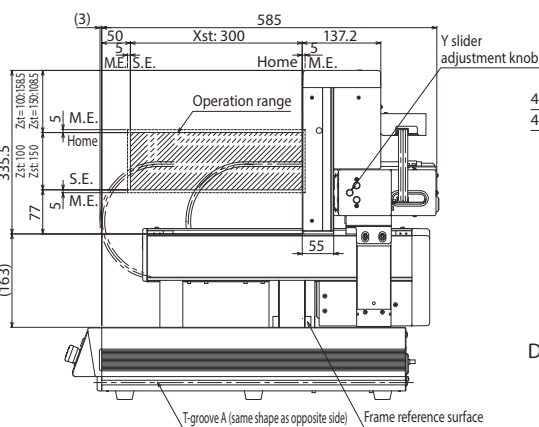
S.E: Stroke end
M.E: Mechanical end



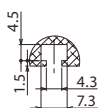
Top base hole layout



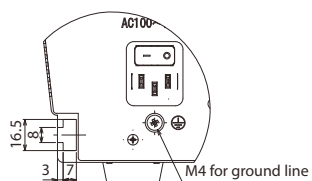
Sectional view X



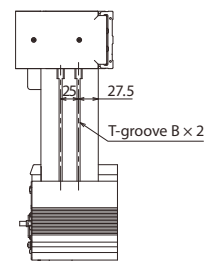
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

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

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

Model Specification Items

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



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

Lead and Payload

| Model Number | Axis Configuration | Encoder Type | Motor Type | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg) (Note 1) | |
|---|--------------------|-----------------------|----------------|----------------|--------------|--------------|-----------------------|---|
| TTA-C3SL(G)-WA-40[1]-35[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | Battery-less absolute | AC servo motor | 8 | 400 | 1~600 | - | |
| | Y-axis | | | 8 | 350 | 1~600 | - | |
| | Z-axis | | | 2.14 or equiv. | 100/150 | 1~170 | 15 | |
| TTA-C3SH(G)-WA-40[1]-35[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | | | 13.3 or equiv. | 400 | 1~850 | - | |
| | Y-axis | | | 13.3 or equiv. | 350 | 1~1,000 | - | |
| | Z-axis | | | 5 or equiv. | 100/150 | 1~400 | 7 | |
| TTA-C3(G)-WA-40[1]-35[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | | Stepper motor | Stepper motor | 24 or equiv. | 400 | 1~800 | - |
| | Y-axis | | | | 24 or equiv. | 350 | 1~800 | - |
| | Z-axis | | | | 12 | 100/150 | 1~400 | 6 |

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

Expansion I/O Slot

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

Options

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

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

Actuator Specifications

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

Dimensions

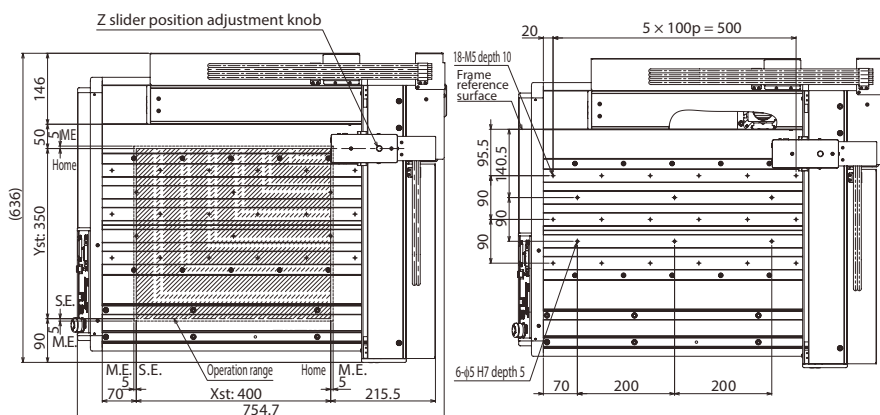
CAD drawings can be downloaded from our website.

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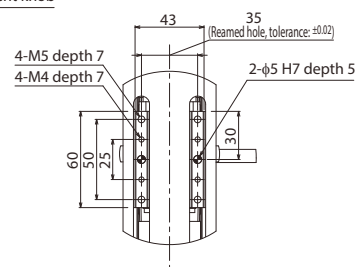
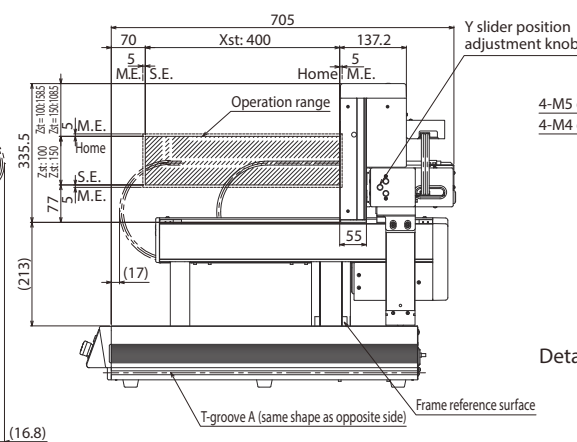
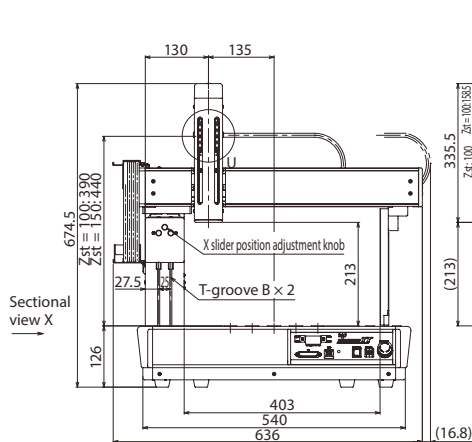


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

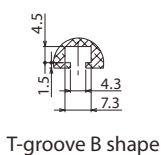
S.E: Stroke end
M.E: Mechanical end



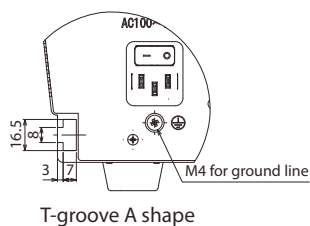
Top base hole layout



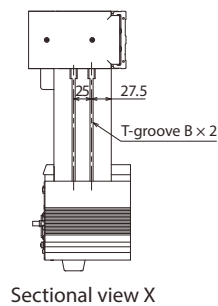
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

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

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

■ Model Specification Items

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



*CE marking only supports safety category specifications.



POINT Selection Notes

(Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57)

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

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

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

Model / Specifications

■ Lead and Payload

| Model Number | Axis Configuration | Encoder Type | Motor Type | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg) (Note 1) |
|---|--------------------|-----------------------|----------------|----------------|-------------|--------------|-----------------------|
| TTA-C3SL(G)-WA-50[1]-45[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | Battery-less absolute | AC servo motor | 8 | 500 | 1~600 | - |
| | Y-axis | | | 8 | 450 | 1~600 | - |
| | Z-axis | | | 2.14 or equiv. | 100/150 | 1~170 | 15 |
| TTA-C3SH(G)-WA-50[1]-45[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | | | 13.3 or equiv. | 500 | 1~1,000 | - |
| | Y-axis | | | 13.3 or equiv. | 450 | 1~1,000 | - |
| | Z-axis | | | 5 or equiv. | 100/150 | 1~400 | 7 |
| TTA-C3(G)-WA-50[1]-45[2]-[3]B[4]-[5]-[6]-[7]-[8]-[9]-[10] | X-axis | | Stepper motor | 24 or equiv. | 500 | 1~800 | - |
| | Y-axis | | | 24 or equiv. | 450 | 1~800 | - |
| | Z-axis | | | 12 | 100/150 | 1~400 | 6 |

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

⑥⑦ Expansion I/O Slot

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

①②④⑩ Options

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

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

Actuator Specifications

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

Dimensions

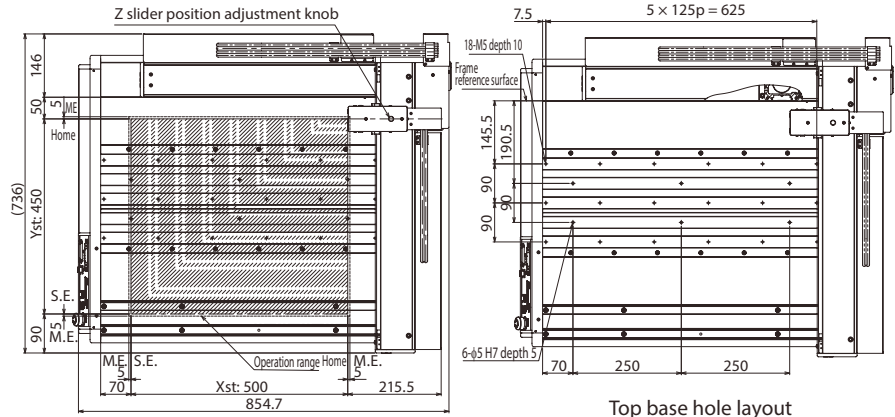
CAD drawings can be downloaded from our website.

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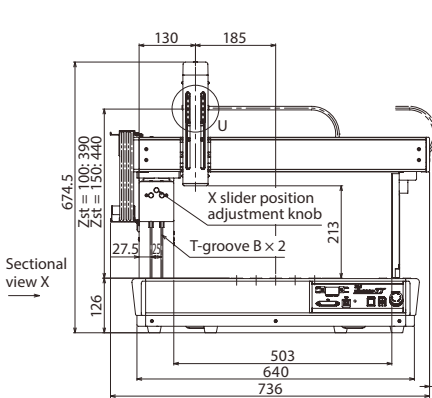


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

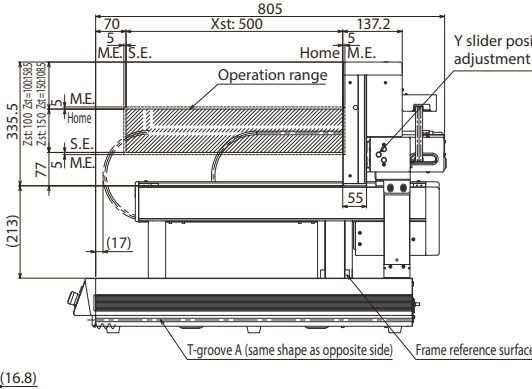
S.E: Stroke end
M.E: Mechanical end



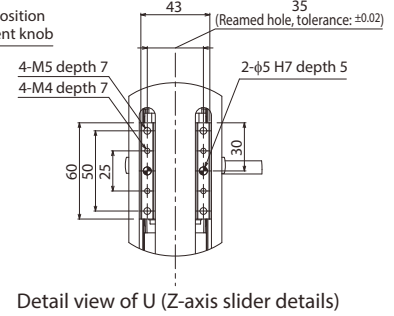
Top base hole layout



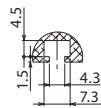
Sectional view X



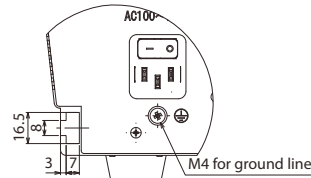
Y slider position adjustment knob



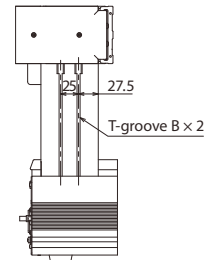
Detail view of U (Z-axis slider details)



T-groove B shape



T-groove A shape



Sectional view X

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

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

| Model Spec. Items | 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 |
|--|--------|------|--|--|---------------|--|---------------|------------------------|---------------|---|---------------|--------------------------------|----------------------|----------------------|------------------------------------|--------------------------|---|
| C4SL: 4-axis ZR type, low lead spec. C4SLG: 4-axis ZR type, low lead Safety category specification | | | WA: 20: 200mm Battery-less Abs. 30: 300mm 40: 400mm 50: 500mm | 20: 200mm 30: 300mm 40: 400mm 50: 500mm | | 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 |
| C4SH: 4-axis ZR type, high lead spec. C4SHG: 4-axis ZR type, high lead Safety category specification | | | | | | | | | | | | | | | | | |
| C4: 4-axis ZR type, standard spec. C4G: 4-axis ZR type, safety category spec. | | | | | | | | | | | | | | | | | |

B: Brake (Standard) MR: Motor side-mounted to the right
 CO: With cover
 NM: Non-motor end spec.

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

PU: Power connector only
 1: Power supply cable for 100VAC (2m)
 2: Power supply cable for 200VAC (2m)



*CE marking only supports safety category specifications.



- (Note 1) The maximum acceleration/deceleration varies depending on the payload, but stepper motors cannot operate at maximum speed with the maximum payload. When the payload is reduced, the speed increases. (See P.57) Please note that depending on the load moment of inertia, the rotational axis may not reach the maximum speed. (See P.58 and 60)
- (Note 2) Positioning repeatability only be guaranteed when actuator's body temperature is constant. It does not guarantee the absolute accuracy.
- (Note 3) The dynamic allowable moment is the value for each axis. The standard service life is 5,000km for a standard load coefficient of 1.5. (Please refer to P.61 for more information about dynamic allowable moment)
- (Note 4) When fixing the workpiece to the unit, be sure to allow at least 2mm clearance from the operation range of the pillar.

Model / Specifications

Lead and Payload

| Model Number | Axis Configuration | Lead (mm) | Stroke (mm) | Speed (mm/s) | Payload (kg)(Note 1) | Max. Load Inertia Moment (kg-m ²) |
|--|--------------------|-----------------------|-----------------------|--------------|----------------------|---|
| TTA-C4SL(G)-WA-{20/30/40/50}□-{15/25/35/45}□ | X-axis | 8 | 200~500 | 1~600 | - | - |
| | Y-axis | 8 | 150~450 | 1~600 | - | - |
| | Z-axis | 2.14 or equiv. | 100/150 | 1~170 | - | - |
| | R-axis | - | 18: ±180°, 36L: ±360° | 1,500deg./s | 15 | 0.01 |
| TTA-C4SH(G)-WA-{20/30/40/50}□-{15/25/35/45}□ | X-axis | 13.3 or equiv. | 200 | 600 | - | - |
| | | | 300 | 750 | | |
| | | | 400 | 850 | | |
| | | | 500 | 1,000 | | |
| | Y-axis | 13.3 or equiv. | 150 | 600 | - | - |
| | | | 250 | 800 | | |
| Z-axis | 5 or equiv. | 350~450 | 1,000 | - | - | |
| R-axis | - | 100/150 | 1~400 | 7 | 0.01 | |
| TTA-C4(G)-WA-{20/30/40/50}□-{15/25/35/45}□ | X-axis | 24 or equiv. | 200 | 600 | - | - |
| | | | 300 | 700 | | |
| | | | 400~500 | 800 | | |
| | Y-axis | 24 or equiv. | 150 | 540 | - | - |
| | | | 250 | 640 | | |
| | | | 350~450 | 800 | | |
| Z-axis | 12 | 100/150 | 1~400 | 6 | - | |
| R-axis | - | 18: ±180°, 36L: ±360° | 1,000deg./s | | | 0.01 |

Options

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

Expansion I/O Slot

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

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

*1 Additional pillar for 20-15/20-20 types (AP) can only be selected for the stepper motor specification.

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

Dimensions

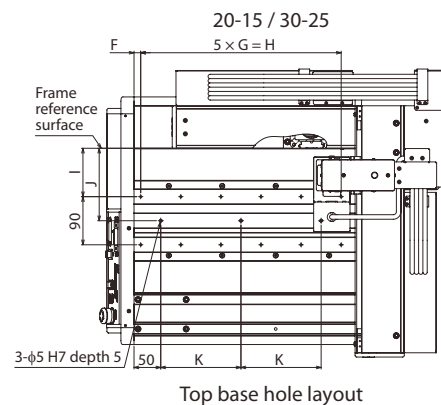
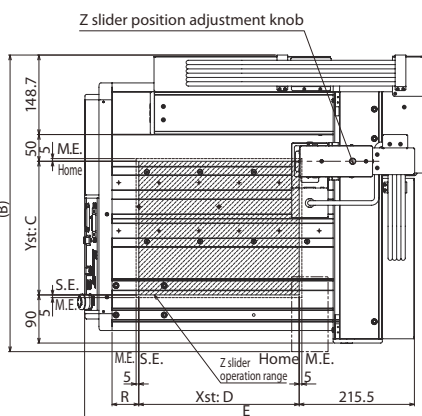
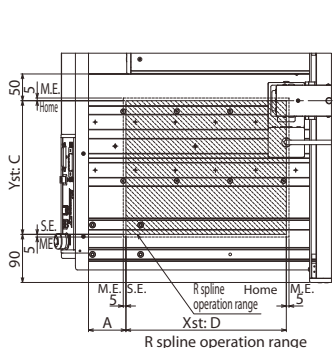
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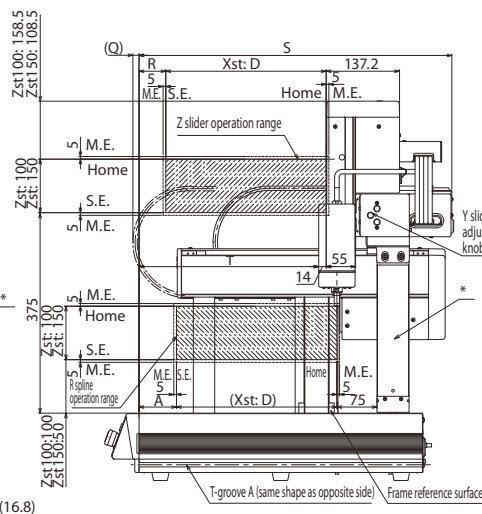
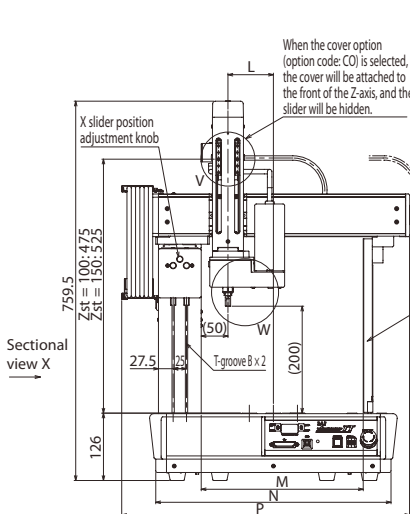


*When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.

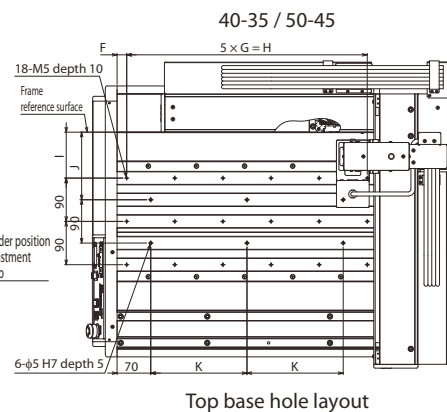
SE: Stroke end, ME: Mechanical end



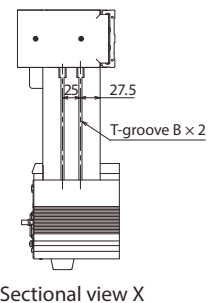
Top base hole layout



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

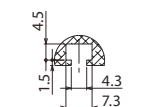
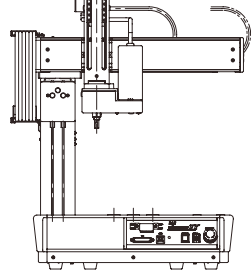


Top base hole layout

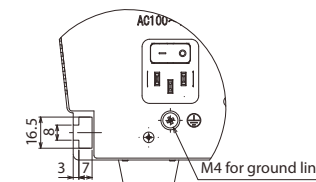


Sectional view X

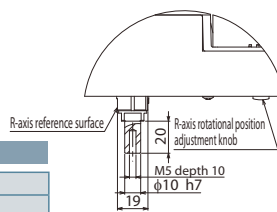
Stepper Motor Type 20-15 size



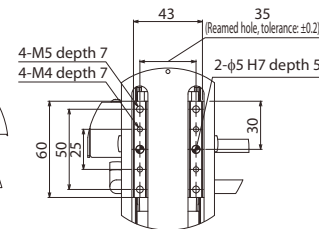
T-groove B shape



T-groove A shape



Detail view of W (R spline tip details)



Detail view of V (Z-axis slider details)

Actuator Specifications

| Item | Description | |
|------------------------------------|--|--|
| | AC Servo Motor | Stepper Motor |
| Drive system | Ball screw (X, Y-axis: φ12mm, Z-axis: φ10mm, rolled C5 or equiv.) Low lead Z-axis: 1:1.4 speed reduction with timing belt High lead X, Y, Z-axis: 1:1.2 speed reduction with timing belt | Ball screw (X, Y-axis: φ12mm, Z-axis: φ10mm, rolled C10) X, Y-axis: 1.5:1 speed increase with timing belt |
| Positioning repeatability (Note 2) | ±0.005mm, R-axis: ±0.008° | ±0.01mm, R-axis: ±0.01° |
| Lost motion | Low lead X, Y-axis: 0.025mm or less Z-axis: 0.02mm or less, R-axis: 0.06° or less High lead X, Y-axis: 0.04mm or less Z-axis: 0.02mm or less, R-axis: 0.06° or less | X, Y, Z-axis: 0.05mm or less R-axis: 0.06° or less |
| Dynamic allowable moment (Note 3) | X-axis: Ma: 18.8N·m Mb: 18.8N·m Mc: 37.8N·m (AC servo) X-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m (stepper) Y-axis: Ma: 14.9N·m Mb: 14.9N·m Mc: 44.3N·m 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.

| | 20-15 | 30-25 | 40-35 | 50-45 |
|---|-------|-------|-------|-------|
| A | 70 | 70 | 90 | 90 |
| B | 455.8 | 555.8 | 655.8 | 755.8 |
| C | 150 | 250 | 350 | 450 |
| D | 200 | 300 | 400 | 500 |
| E | 534.8 | 634.8 | 754.8 | 854.8 |
| F | 25 | 12.5 | 20 | 7.5 |
| G | 50 | 75 | 100 | 125 |
| H | 250 | 375 | 500 | 625 |
| I | 40.5 | 90.5 | 95.5 | 145.5 |
| J | 85.5 | 135.5 | 140.5 | 190.5 |
| K | 100 | 150 | 200 | 250 |
| L | 35 | 85 | 90 | 140 |
| M | 203 | 303 | 403 | 503 |
| N | 340 | 440 | 540 | 640 |
| P | 439.7 | 539.7 | 639.7 | 739.7 |
| Q | 11.5 | 11.5 | 17 | 17 |
| R | 50 | 50 | 70 | 70 |
| S | 485 | 585 | 705 | 805 |

Tabletop Robot Series PIO Signal Chart

PIO Signal Chart

Standard Pio Connector Pin Layout

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

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 | |

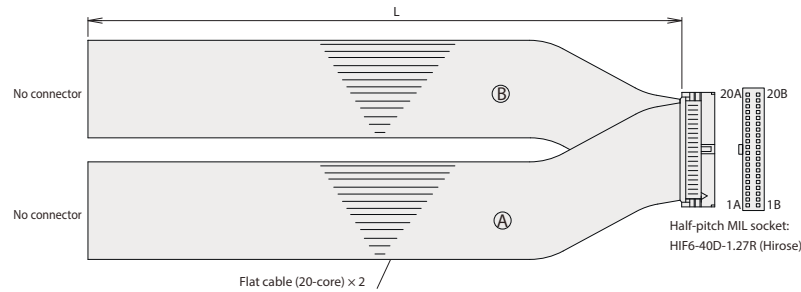
* When the internal/external I/O power switch is off, the I/O power supply ([24V][0V]) is externally supplied while when it's on, the power is supplied internally from the TTA.

* When the internal/external I/O power switch is on, do not externally supply the I/O power ([24V][0V]).

* 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) ② | 18 | OUT0 | Brown-3 | Flat Cable (Crimped) ② AWG28 |
| 2A | 24V | Red-1 | | 28 | OUT1 | Red-3 | |
| 3A | - | Orange-1 | | 38 | OUT2 | Orange-3 | |
| 4A | - | Yellow-1 | | 48 | OUT3 | Yellow-3 | |
| 5A | IN0 | Green-1 | | 58 | OUT4 | Green-3 | |
| 6A | IN1 | Blue-1 | | 68 | OUT5 | Blue-3 | |
| 7A | IN2 | Purple-1 | | 78 | OUT6 | Purple-3 | |
| 8A | IN3 | Gray-1 | | 88 | OUT7 | Gray-3 | |
| 9A | IN4 | White-1 | | 98 | OUT8 | White-3 | |
| 10A | IN5 | Black-1 | | 108 | OUT9 | Black-3 | |
| 11A | IN6 | Brown-2 | | 118 | OUT10 | Brown-4 | |
| 12A | IN7 | Red-2 | | 128 | OUT11 | Red-4 | |
| 13A | IN8 | Orange-2 | | 138 | OUT12 | Orange-4 | |
| 14A | IN9 | Yellow-2 | | 148 | OUT13 | Yellow-4 | |
| 15A | IN10 | Green-2 | | 158 | OUT14 | Green-4 | |
| 16A | IN11 | Blue-2 | | 168 | OUT15 | Blue-4 | |
| 17A | IN12 | Purple-2 | | 178 | - | Purple-4 | |
| 18A | IN13 | Gray-2 | | 188 | - | Gray-4 | |
| 19A | IN14 | White-2 | | 198 | 0V | White-4 | |
| 20A | IN15 | Black-2 | | 208 | 0V | Black-4 | |

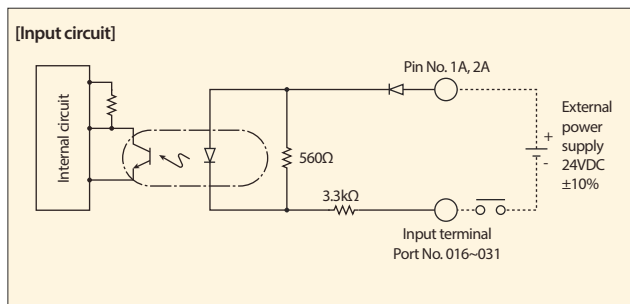
I/O Wiring Diagrams

Standard PIO

Input External input specification (NPN specification)

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

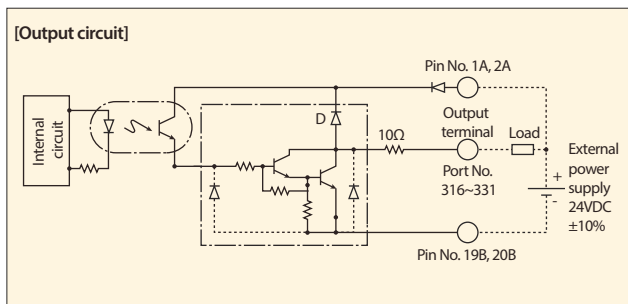
- * The circuit diagram below shows external power input (I/O power supply output is off).
- * The port numbers in the circuit diagram below are the default port numbers at time of shipping.
- * The allowable leak current when input is off is 1mA or less.



Output External output specification (NPN specification)

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

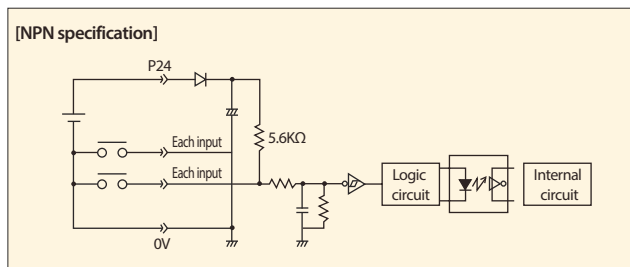
- * This circuit diagram shows external power input (I/O power supply output is off).
 - * The port numbers in the circuit diagram below are the default port numbers at time of shipping.
- Note: The total load current from standard I/O number 316 onwards is 400mA per 8 points. (100mA maximum per 1 point)



Expansion PIO

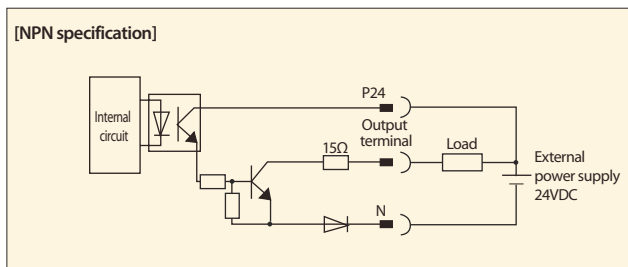
Input External input specification

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

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

Tabletop Robot Series Options

Additional pillar for 20-15 and 20-20 types

Option code **AP**

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

Brake (Standard equipment)

Option code **B**

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

With cover (Dedicated for 4-axis specification)

Option code **CO**

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

Foot bracket included specification (4 pcs)

Option code **FT4**

Description For X-axis stroke of 20/30

Foot bracket included specification (6 pcs)

Option code **FT6**

Description For X-axis stroke of 40/50

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

Option code **FZ**

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

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

ZR-axis with adjustable mounting position

Standard 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 (Standard)

90mm F1 (90mm closer to front than standard)

180mm 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-A4(G). ML specifies motor mounting left, and MR specifies motor mounting right, when viewed from the motor side of the actuator. Be sure to enter one of the option codes when specifying the model. * TTA-C4(G) is only available as MR.

Non-motor end specification

Option code NM

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

Installation side plate

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

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

Side slot 180mm installation specification

Option code SLT0

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

Individual stroke side slot installation specification

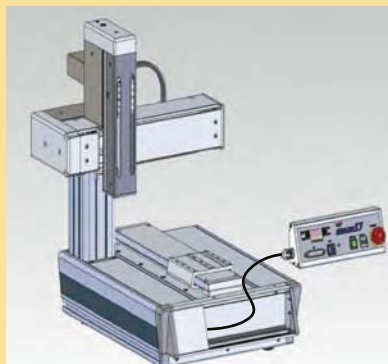
Option code SLT

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

Detachable operation console

Option code OS

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



Additional switch

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

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

| Switch No. | Color | Specification |
|------------|-------|-------------------------|
| | | 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)

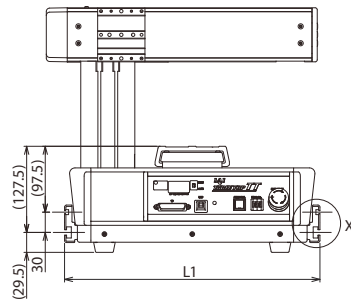
Side slot lengths vary depending on the size of the TTA. This option is not compatible with the FT4 or FT6 options.

Dimensions Chart

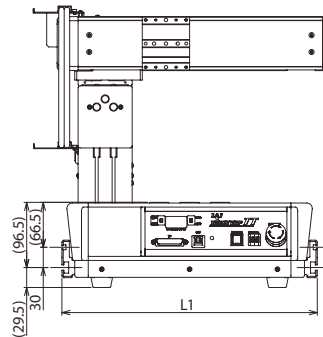
| Model | L1 | L2 |
|---------------|-----|-----|
| 20-20 / 20-15 | 378 | 430 |
| 30-30 / 30-25 | 478 | 530 |
| 40-40 / 40-35 | 578 | 630 |
| 50-50 / 50-45 | 678 | 730 |

Front View

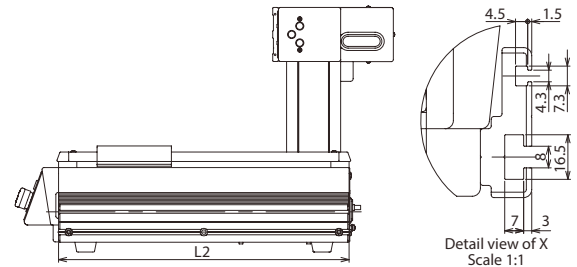
TTA-A type



TTA-C type



Side View (TTA-A, TTA-C)

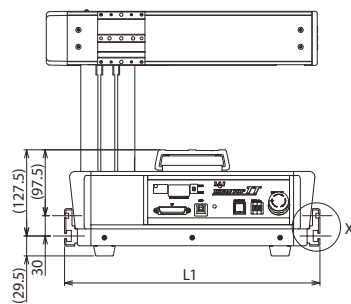


Side Slot 180mm Mounting Specification (Option Code: SLT0)

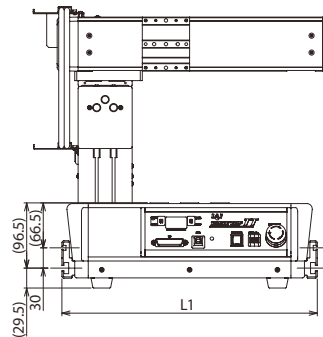
Select this option to add 180mm long side slots if the FT4 or FT6 option has been selected. Types with a 20/30 X-axis stroke can have two 180mm side slots, while 40/50 types can have four.

Front View

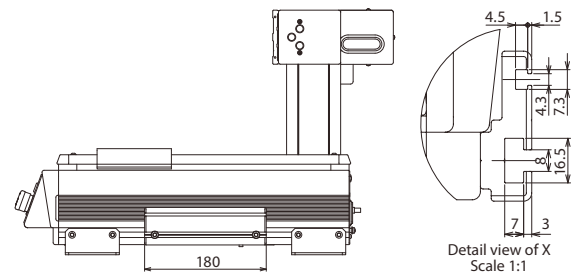
TTA-A type



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).

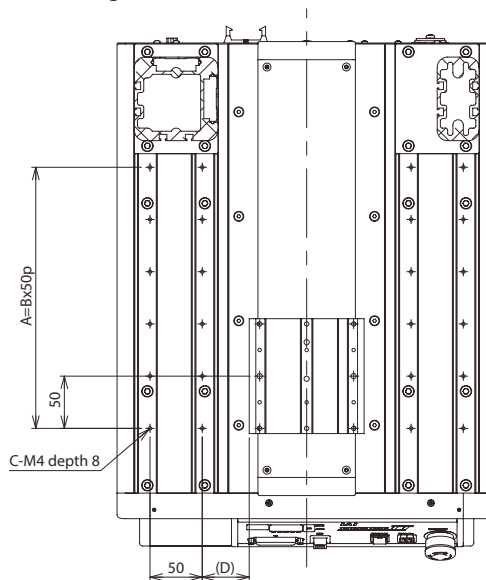
* These options are only available with the TTA-A types.

* 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 |

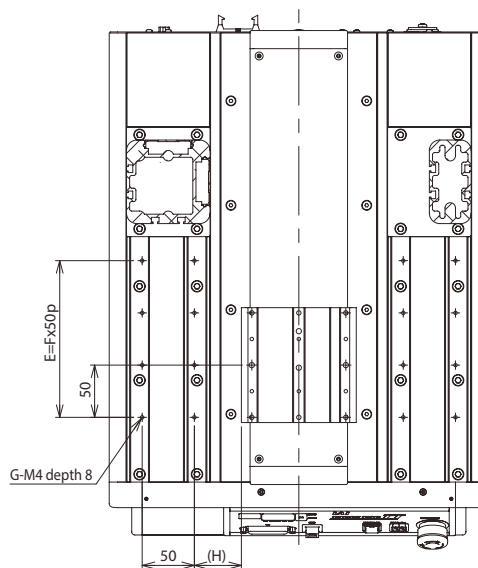


Frame Position F1 Specification Hole Positions

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 |

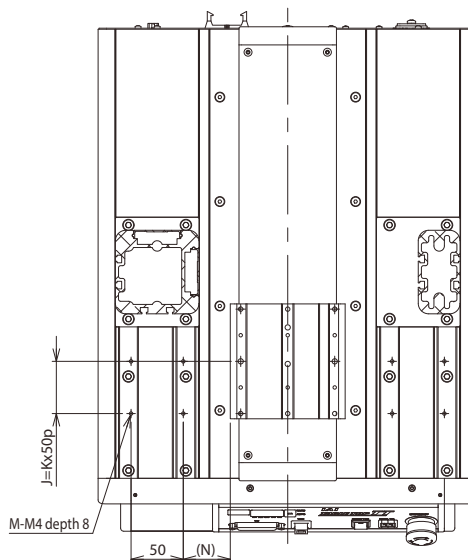


Frame Position F2 Specification Hole Positions

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 |



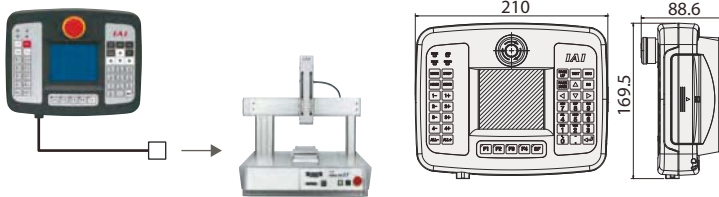
Tabletop Robot Series Options

Touch Panel Teaching

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

■ **Model** TB-01-□

■ **Configuration**



■ **Specification**

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

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

PC Compatible Software (for Windows)

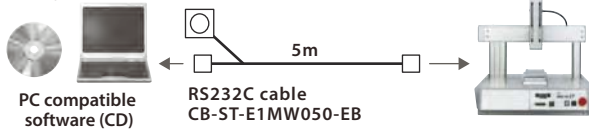
■ **Features:** This is start-up support software which comes equipped with functions such as program/position input, trial operation, monitoring, etc. Improve functions requiring debugging work contributes to a reduced start-up time.

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

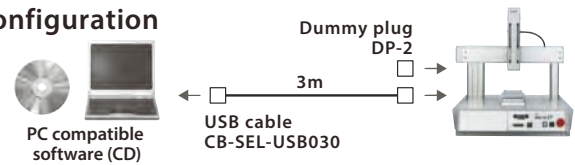
■ **Model** IA-101-X-MW
(Supplied with RS232C cable)

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

■ **Configuration**

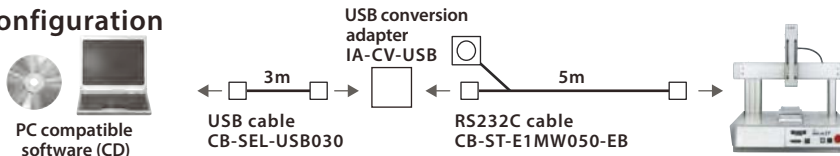


■ **Configuration**



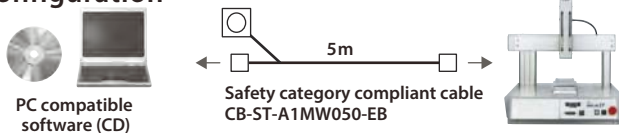
■ **Model** IA-101-X-USBMW (Supplied with USB adapter + cable)

■ **Configuration**



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

■ **Configuration**



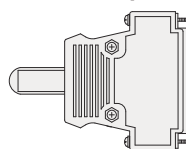
<For IA-101-TT-USB>

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

Dummy Plug

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

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



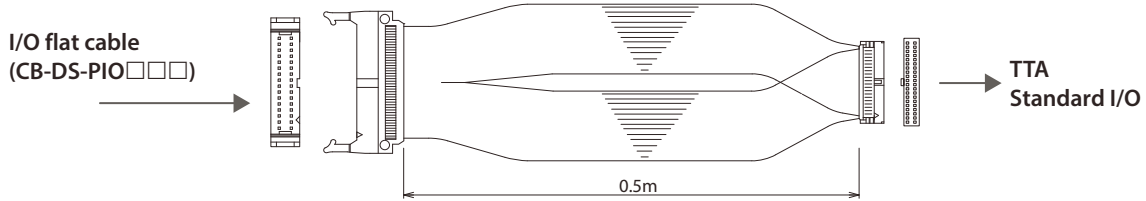
• Compatible with emergency stop and redundant enable circuit (up to Category 3).

Tabletop Robot Series Options

I/O Adapter Cable

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

■ **Model** **CB-TTA-PIOJ005**



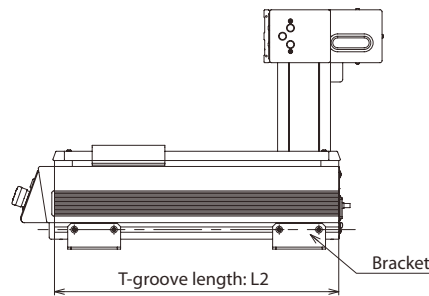
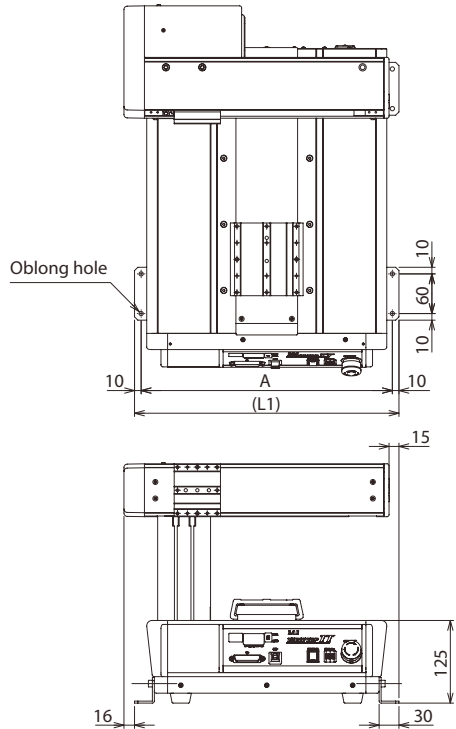
Foot Bracket (4 or 6 pcs to 1 set, bolts and nuts for mounting to body supplied)

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

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

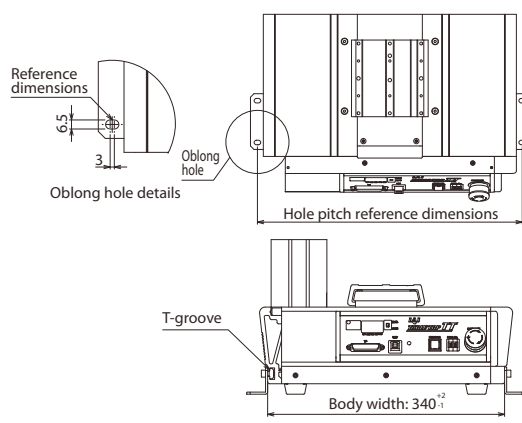
■ **Dimensions**

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



When making custom brackets

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



AC Servo Motor Type Cautionary Notes

■ Tables of Payload by Acceleration/Deceleration

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

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

■ Tables of Payload by Acceleration/Deceleration

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

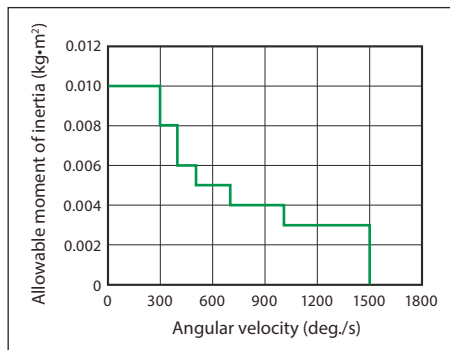
| Type | Specification | Y-axis Acceleration/Deceleration and Z-axis Payload (kg) | | | |
|----------------------------|---------------|--|------|------|------|
| | | 0.1G | 0.2G | 0.3G | 0.4G |
| TTA-A (Gate Type) | Low lead | 15 | 13 | 6 | 2 |
| | High lead | 7 | 7 | 4 | 1 |
| TTA-C (Cantilever Type)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

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

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

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

R-axis



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

| Allowable Moment of Inertia | Angular Velocity | Acceleration/Deceleration |
|-----------------------------|------------------|---------------------------|
| 0.010kg·m ² | 300deg./s | 490deg./s ² |
| 0.008kg·m ² | 400deg./s | 980deg./s ² |
| 0.006kg·m ² | 500deg./s | 1,960deg./s ² |
| 0.005kg·m ² | 700deg./s | 4,900deg./s ² |
| 0.004kg·m ² | 1,000deg./s | 9,800deg./s ² |
| 0.003kg·m ² | 1,500deg./s | 14,700deg./s ² |

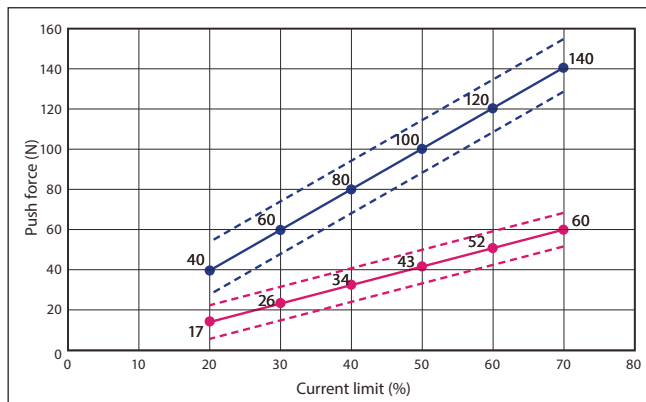
(Note) Use G to convert for configuration using PC compatible software and other teaching tools. (1G=9,800deg./s²).

■ Correlation Diagram of Push Force and Current Limit

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

The push forces listed below are for reference only.

Z-axis

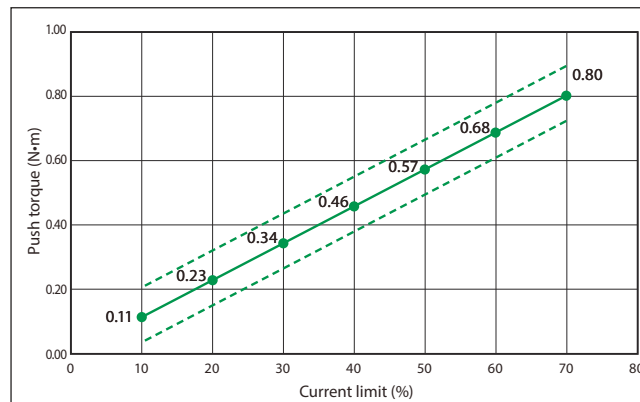


* Maximum push force has a variance of ±10% (dashed lines).

Please consult with IAI if push force control using the rotational axis (R-axis) is desired.

The graph below is for reference only.

R-axis



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

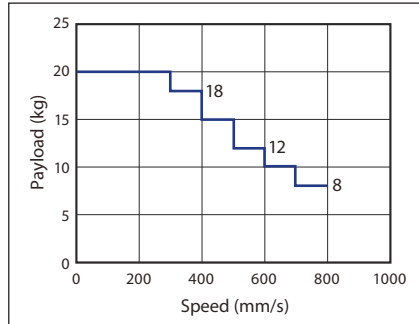
Stepper Motor Type Cautionary Notes

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

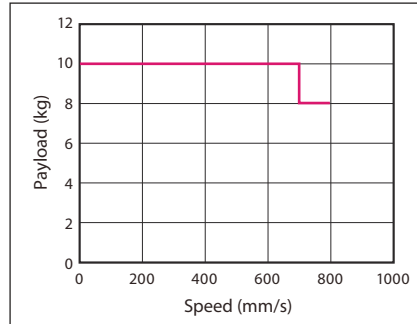
Due to the characteristics of the stepper motor, the maximum payload decreases as speed increases. Check the table below to verify that both speed and payload requirements are satisfied.

[TTA-A series]

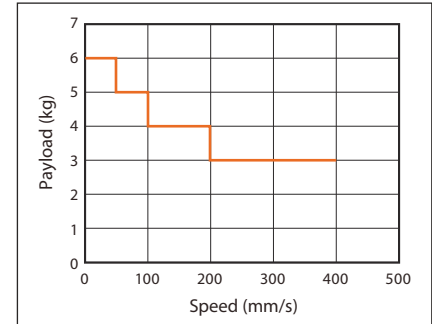
X-axis



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

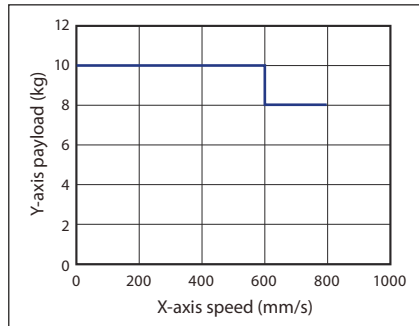
· Set the acceleration/deceleration to 0.2G or less

[TTA-C series]

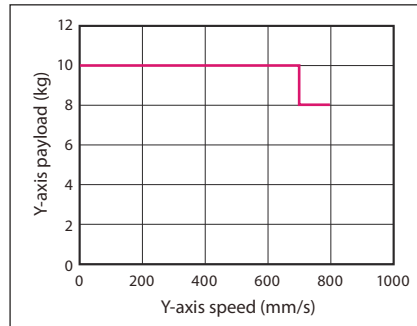
The maximum X-axis speed of the TTA-C2 varies depending on the Y-axis payload. For TTA-C3 and TTA-C4, the maximum X-axis and Y-axis speeds vary depending on the Z-axis payload.

TTA-C2

X-axis



Y-axis

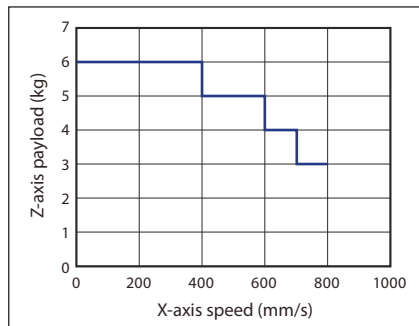


· Set the acceleration/deceleration to 0.2G or less

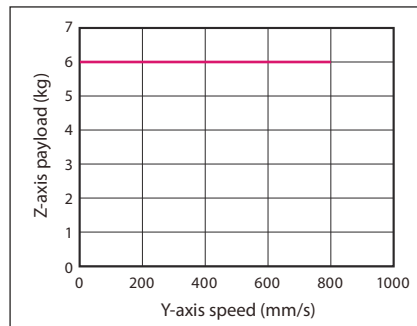
· Set the acceleration/deceleration to 0.2G or less

TTA-C3 / C4

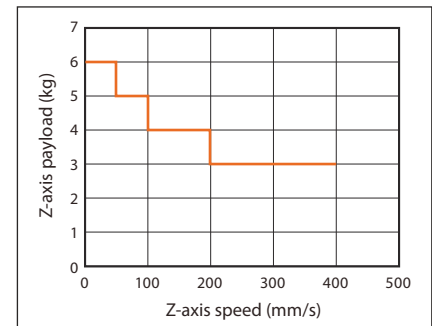
X-axis



Y-axis



Z-axis



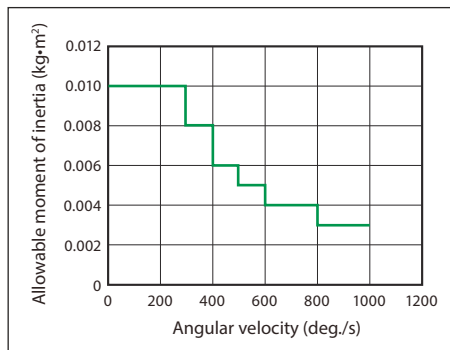
· Set the acceleration/deceleration to 0.2G or less

· 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 | 1,000deg./s ² |
| 0.010kg·m ² | 200deg./s | 1,000deg./s ² |
| 0.010kg·m ² | 300deg./s | 1,000deg./s ² |
| 0.008kg·m ² | 400deg./s | 1,778deg./s ² |
| 0.006kg·m ² | 500deg./s | 2,778deg./s ² |
| 0.005kg·m ² | 600deg./s | 4,000deg./s ² |
| 0.004kg·m ² | 700deg./s | 5,444deg./s ² |
| 0.004kg·m ² | 800deg./s | 7,111deg./s ² |
| 0.003kg·m ² | 900deg./s | 9,000deg./s ² |
| 0.003kg·m ² | 1,000deg./s | 11,111deg./s ² |

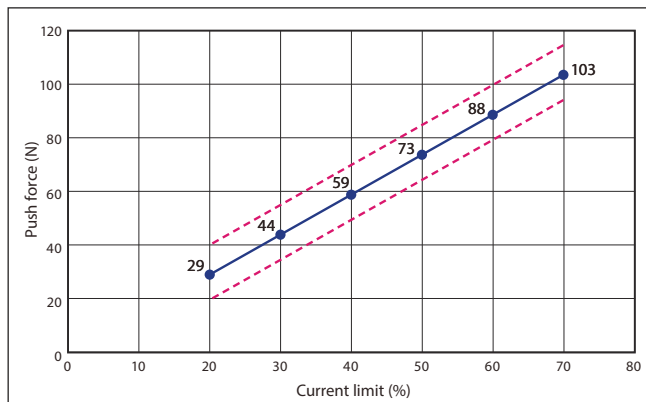
(Note) Use G to convert for configuration using PC compatible software and other teaching tools.
(1G=9,800deg./s²).

■ Correlation Diagram of Push Force and Current Limit

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

The push forces listed below are for reference only.

Z-axis

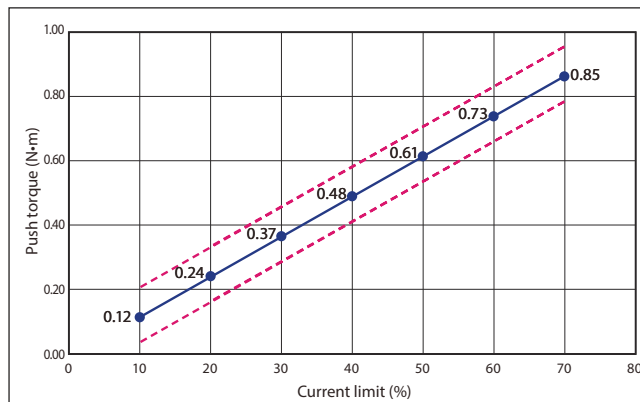


* Maximum push force has a variance of ±10% (dashed lines).

Please consult with IAI if push force control using the rotational axis (R-axis) is desired.

The graph below is for reference only.

R-axis



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

Tabletop Robot Series Cautionary Notes

Notes about catalog specs

Speed

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

Acceleration/Deceleration

"Acceleration" refers to the rate at which the speed increases from a stationary state until the set speed is reached. "Deceleration" refers to the rate at which the speed decreases from the set speed until the slider comes to a stop. Acceleration and deceleration are set in "G" (0.3G = 2,940mm/s². For the rotational axis, 0.3G = 2,940deg./s²)

Duty Cycle

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

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

Positioning Repeatability

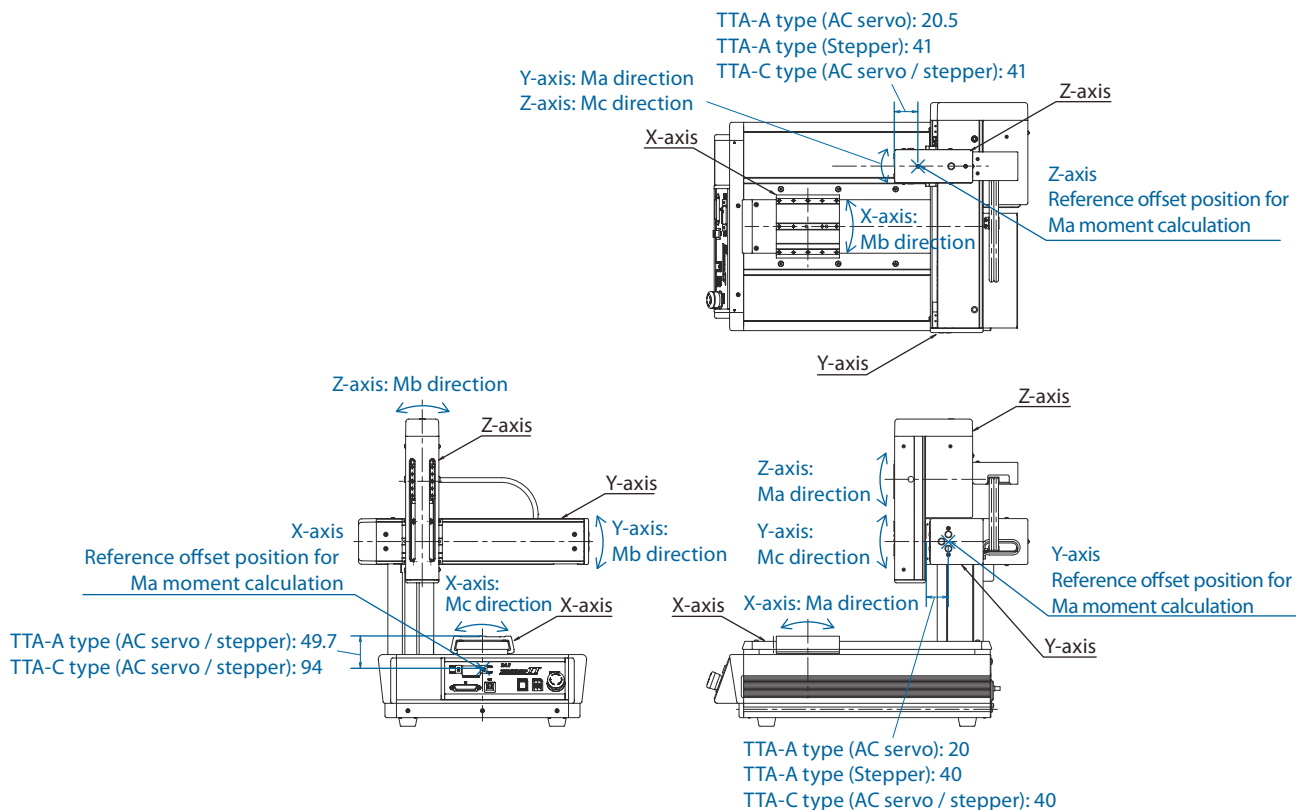
"Positioning repeatability" refers to the accuracy of repeated movements to a predetermined position. This is not the same as "absolute positioning accuracy."

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



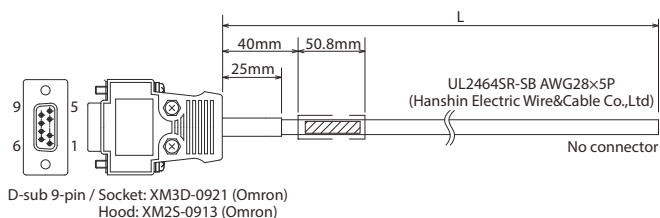
Tabletop Robot Series Options

Expansion SIO Board Connection Cables

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

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

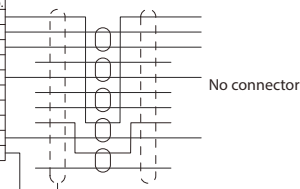
* Please indicate the cable length (L) in , maximum 10m, e.g.) 030 = 3m



Controller side

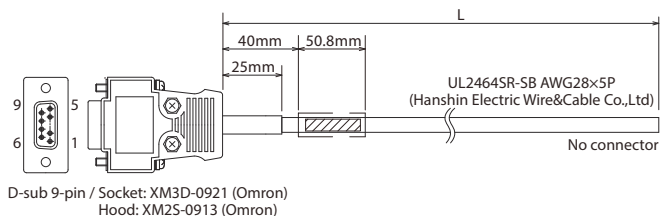
XM3D-0921

| 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 |



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

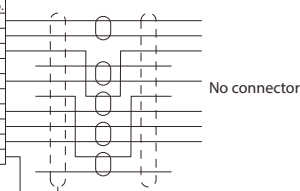
* Please indicate the cable length (L) in , maximum 10m, e.g.) 030 = 3m



Controller side

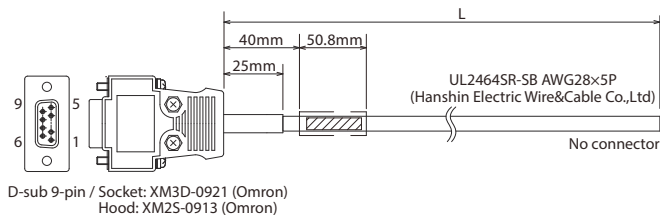
XM3D-0921

| 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 |



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

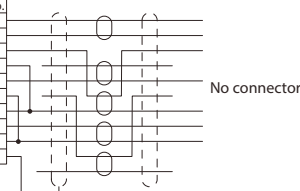
* Please indicate the cable length (L) in , maximum 10m, e.g.) 030 = 3m



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 |



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may change without prior notice due to product improvements.

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