SINGLE-AXIS ROBOTS

General-purpose single-axis robots can be used for various applications, such as assembly and inspection work. 6 types and 29 models ranging from compact size to long-stroke robots are available.

Various custom specifications are also supported.

Various custom specifications, such as double-slider and wide slider are also supported. For details, please consult YAMAHA.
Six types with high reliability and durability

**T type Frame-less structure model** P.174

- Double appeal of compact body and low price.
- Ideal in applications as an actuator directly installed on an installation base.

**R type Rotation axis model** P.212

- Repeated positioning accuracy +/- 30 sec. (0.0083 °)
- The robot can be used as the rotation axis when combined with other robots or utilized for a wide variety of applications, such as index tables.
- High rigidity and high accuracy by harmonic drive.

**N type Nut rotation type model**

- Repeated positioning accuracy +/- 0.01 mm
- Maximum payload 80 kg
- Double-carrier available as a standard

**F type Model with high rigidity frame** P.181

- Tolerable load moment is large and highly resistant to the offset load.
- Suitable for Cartesian robots needing rigid arm or moving arms that move the entire axis.

**B type Timing belt drive model** P.206

- Maximum stroke is 3050 mm. Long-distance transfer between the processes is possible.

**GF type Long stroke model with high rigidity frame** P.190

- Movable at 1200 mm/sec. in the whole area without critical speed.
- Suitable for long distance transfer.
### POINT 1

4-row circular arc groove type 2-point contact guide that is resistant to large moment load is adopted.\(^{\text{Note 1}}\)

4-row circular arc groove type 2-point contact guide with less differential slip is used for the linear guide. This guide has less ball differential slip due to its structure when compared to the 2-row Gothic arch type 4-point contact guide and maintains a satisfactory rolling movement even if a large moment load is applied or the installation surface precision is poor. The guide has characteristics that are difficult to malfunction, such as unusual wear and provides excellent reliability.

\(^{\text{Note 1}}\) Except for T4L/T4LH and T5L/T5LH

### F/N/B type \(^{\text{Note 2}}\)

For the F type, N type, and B type, two guide frames are laid out on the high rigidity aluminum extruded material frame. Two bearing units per rail, four bearing units in total, support a large load firmly. As a large moment load is mainly converted into vertical force, the moment applied to one bearing unit becomes small to ensure excellent durability.

\(^{\text{Note 2}}\) Except for F8 series/F10/B10.

### F8 series

The F8 series uses a newly developed module guide to greatly reduce the cross-sectional area (70 % when compared to F10). The rail is laid out in the full width of the frame to ensure the high rigidity even with compact design. Of course, this series also uses the 4-row circular arc groove type 2-point contact guide.

### POINT 2

**Resolver with excellent environment resistance is used for the position detector.**

- **Optical encoder**
  - Optical type
  - Electronic components are required and structure is complicated.
  - Damaged easily by electronic component breakdown, dew condensation on or oil sticking to the disk.

- **Resolver**
  - Magnetic type
  - Simple structure only with iron core and winding has less potential failure factors.
  - Immune to shock and electric noise.

A resolver is used for the position detector. The resolver has a simple and rigid structure without using electronic components and optical elements. Detection problems due to electronic component breakdown, dew condensation on or oil sticking to the disk that may occur in optical encoders do not occur in the resolver. The resolver provides excellent durability. Additionally, as the absolute specifications and incremental specifications use the same mechanical specifications and common controller, desired specifications can be selected only by setting parameters. Furthermore, even when the absolute battery is consumed completely, the robot can still operate as the incremental specifications. So, even if a trouble occurs, the line stop is not needed to ensure the safe production line. Furthermore, the backup circuit has been completely renovated and now has a backup period of one year in the non-energizing state.
**POINT 3**

Long service life greatly reduces the maintenance cost.

As the acceleration is determined by the weight parameter, the service life can be assured when the weight and position of center of gravity are known.

As YAMAHA’s robot uses high rigidity ball screw or guide, it provides excellent durability. This greatly contributes to reduction of the customer's maintenance cost.

<table>
<thead>
<tr>
<th>Allowable overhang Note</th>
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Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

**POINT 4**

Controllers suitable for applications are prepared.

In addition to the robot program operation and pulse train control, a positioner that is operated by specifying a point number was added to the product lineup. Additionally, multi specifications that control multiple robots using one controller are also supported. You can select an optimal controller suitable for your application.

**POINT 5**

Various custom specifications are supported.

YAMAHA supports custom orders flexibility to meet the customers' various needs.

<table>
<thead>
<tr>
<th>Addition of free slider</th>
<th>Wide slider</th>
<th>Specified stroke</th>
<th>Lead beyond catalog</th>
<th>Origin non-motor specifications</th>
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<td>Free slider is added. Various applications, such as rigidity increase or use of two heads are supported.</td>
<td>To increase the slider rigidity, the standard slider is processed to the wide slider.</td>
<td>A stroke smaller than the minimum stroke may be supported. For details, please consult YAMAHA.</td>
<td>The lead may be changed to that not stated in the catalog. For details, please consult YAMAHA.</td>
<td>Even when not stated in the catalog, the origin may be changed to the non-motor side. For details, please consult YAMAHA.</td>
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YAMAHA has a wide variety of custom order results other than those shown above. If you have any requirement or request, please feel free to contact YAMAHA.
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<th>Type</th>
<th>Size (mm) Note 1</th>
<th>Model</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
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Note 1. The size shows approximate maximum cross sectional size.
Multi-robot
MULTI-FLIP/MULTI-PHASER

This robot has multi specifications that control multiple robots using one controller.

Advantages of control with multi-axis controller
● Sequence control is easy. System upgrades are easy at less expensive price.
● Compact and space saving when compared to the operation with multiple single-axis controllers.
● More advanced control is possible.
● RCX221, RCX240, RCX240S, and RCX340 provide mixed control of the FLIP-X series and PHASER series (linear single-axis).

Multi-robot ordering method
Up to 8 units can be controlled.

<table>
<thead>
<tr>
<th>Note 1</th>
<th>Note 2</th>
<th>Note 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLTX</td>
<td>1st unit robot type</td>
<td>2nd unit robot type</td>
</tr>
<tr>
<td>1st unit robot type</td>
<td>2nd unit robot type</td>
<td>3rd unit robot type</td>
</tr>
<tr>
<td>Cable length</td>
<td>Controller</td>
<td>Controller option</td>
</tr>
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<td>2K: 2 m</td>
<td>RCX221</td>
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<td>5K: 5 m</td>
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<td>10K: 10 m</td>
<td>RCX240S</td>
<td>RCX340</td>
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</table>

Note 1. When ordering a multi-robot, prefix “MLTX” to the top of the order model.
Note 2. Select either MULTI-FLIP or MULTI-PHASER shown below.
Note 3. For details about the controller and controller option models, please refer to relevant page of each controller.

### MULTI-FLIP

<table>
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<th>Model</th>
<th>Lead (mm)</th>
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<tr>
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<td>T9H (High thrust)</td>
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<tr>
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<tr>
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<td>F17XL</td>
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<td>850 to 2500</td>
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### MULTI-PHASER

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<td>50 to 1050</td>
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</table>
## Robot settings

### 2-robot settings

Use of 2-robot settings and multi-task program makes it possible to perform asynchronous independent operation. As the auxiliary axis setting is used together, more free axis assignment can be made.

### Double-carrier

In robot types that the motor runs separately, such as linear motor single-axis PHASER series or N type (nut rotation type) of FLIP-X series, two motors can be added to one axis.

---

## Main auxiliary axis setting

This auxiliary axis setting is used when it is inconvenient that two axes move simultaneously by the MOVE command. The axis set for the main auxiliary axis does not operate by the MOVE command and it operates only by the DRIVE command (movement command in axis units). This setting is recommended for the axis that needs to be operated asynchronously from the main robot.

### Dual setting

This setting is used when performing the dual drive (2-axis synchronous control). This setting is used when the gantry type Cartesian robot with a long Y-axis stroke stabilizes the high acceleration/deceleration or when a high load or high thrust is needed.

## Applicable controllers

<table>
<thead>
<tr>
<th>Name</th>
<th>1 to 2 axes controller</th>
<th>1 to 4 axes controller</th>
<th>1 to 4 axes controller</th>
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<td>RCX221</td>
<td>RCX222</td>
<td>RCX240/RCX240S</td>
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<td>Absolute</td>
<td>Incremental/Absolute</td>
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<td>FLIP-X</td>
<td>FLIP-X and PHASER can be mixed.</td>
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<td>100 programs</td>
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<td>10,000 points</td>
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<tr>
<td>Number of input/output points</td>
<td>Dedicated input 10 points/dedicated output 12 points General-purpose input 16 points/general-purpose output 8 points</td>
<td>Dedicated input 10 points/dedicated output 11 points General-purpose input 16 points/general-purpose output 8 points</td>
<td>Dedicated input 8 points/dedicated output 9 points General-purpose input 16 points/general-purpose output 8 points</td>
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<td>General-purpose input 24 points/general-purpose output 16 points</td>
<td>General-purpose input 24 points/general-purpose output 16 points</td>
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<td>CC-Link, DeviceNet™, EtherNet/IP™, Ethernet, PROFIBUS</td>
<td>CC-Link, DeviceNet™, EtherNet/IP™, Ethernet, PROFIBUS, PROFINET</td>
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</tbody>
</table>
Examples of multi-robot ordering methods

Separate single axes

<Example> F14H and F10 are installed separately.

2 axes + 1 axis

<Example> T6 is installed on the base for the 1st axis, C6 is secured to the upper portion for the 2nd axis, and CH4 is secured to the upper portion for the 3rd axis to assemble the C6 and C4H to the XZ. (Either 2 axes + 1 axis or 3 axes simultaneous control can be made by the setting.)

3 axes combination

<Example> C17L, C14H, and C14H are used for the X-axis, Y-axis, and Z-axis, respectively to form a 3-axis XYZ combination.

Double-carrier

Example of 4-axis control

<Example> Two T6 are assembled to the double-carrier of the MF20A, and they are used as XZ type and controlled using one controller.

CAUTION

Conditions needing regenerative unit on multi-robot

- The total motor capacity exceeds 450 W.
- The total motor capacity of the vertical axis exceeds 240 W.
- The B14H performs the operation at a maximum speed of more than 1250 mm/s.
- When the vertical axis is 240 W or less, the conditions shown below are satisfied.
  - There is a 200 W-vertical axis.
  - A 100 W-vertical axis has a stroke of 700 mm or more.
  - There are two 100 W-vertical axes with a 5 mm-lead.

Note. When the customer combines each axis, it is recommended to use the cable terminal (relay cable) for the wiring among axes. For details about cable terminal, please contact YAMAHA.

Note. For the double-carrier, since one robot occupies two axes of the controller, the number of robots may differ from the number of controllable axes.

Note. For this specification, when writing one controller model, two controller will be arranged automatically.
**FLIP-X terminology**

**High lead**
This term indicates models supporting ball screw leads that exceed the standard lead (12 mm or 20 mm). (The standard lead of the F17L and C17L is 50.)

**Origin on non-motor side**
This term indicates models that are applicable to the origin non-motor specifications as standard. The origin on the non-motor side in the standard state is not supported with a lead not stated in the catalog. If special specifications are needed, please consult YAMAHA.

**Maximum speed**
This term indicates the maximum transfer speed. YAMAHA's single-axis robots can transfer a workpiece at this speed regardless of the transfer weight as long as it is within the maximum payload. However, as the workpiece is heavier, the acceleration/deceleration curve becomes gentle. If the movement distance is short, the speed does not reach the maximum speed stated in the catalog.

**Allowable overhang**
This term indicates an allowable overhang of an object to be transferred. In the specification data, this indicates the distance from the center of the top face of the slider to the center of gravity of an object to be transferred by the weight. This value is determined according to the service life of the linear guide. Under normal operation conditions, the 90%-service life of the linear guide is 10,000 km or more if gravity centers of the workpiece and tool are kept within the allowable overhang. When using with an overhang amount exceeding the specification data, it is necessary to install a separate support guide or restrict operating conditions (speed, acceleration) so that a load is not applied to the linear guide of the single-axis robot. For detail, please consult YAMAHA.

**Static tolerance moment**
This term indicates the load moment applied to the slider in the robot stationary state.

**Critical speed**
When the stroke of the ball screw drive type is long, noise or vibration is produced due to resonance of the ball screw if moved at the maximum speed. If this happens, lower the speed to that stated in the note column. (It is also possible to lower the transfer speed of the entire program using the SPEED setting or make the adjustment for each movement command.)

**Maximum payload**
This term indicates the maximum weight that can be loaded on the slider and transferred. Select an appropriate model so that the total weight of the customer's tools (air cylinder or chuck) and workpiece is less than this data. When the center of gravity of the tool or workpiece is offset from the center of the slider, the allowable overhang needs to be taken into consideration. Additionally, when entering the total weight of the tool and workpiece for the payload parameter of the controller, optimal acceleration/deceleration and servo parameter are automatically set.

**Rated thrust**
This term indicates the force to be applied in the slider advancing direction in the slider stationary (hold) state. When using vertically, the weight of the loaded workpiece is subtracted from this value (when the force is applied downward from the top). The slider can move only at a low speed (approximately 10% of the maximum speed), but this value becomes lower than the specification value. Additionally, the type B of the timing belt drive cannot be used for applications, in which thrust is applied.
SINGLE-AXIS ROBOTS

FLIP-X SERIES

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<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Motor output (W)</th>
<th>Repeatability (mm)</th>
<th>Payload (kg)</th>
<th>Stroke (mm) and maximum speed (mm/s)</th>
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<td>10</td>
<td>–</td>
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</table>

### Precautions for use

- **Handling**
  - Fully understand the contents stated in the "FLIP-X Series User's Manual" and strictly observe the handling precautions during operation.
- **Allowable ambient temperature**
  - 5 to 45 °C

---

### Detailed info

**Type Model**
- **Type**
  - Fully understand the contents stated in the "FLIP-X Series User's Manual" and strictly observe the handling precautions during operation.

---

### Precautions for use

- **Handling**
  - Fully understand the contents stated in the "FLIP-X Series User's Manual" and strictly observe the handling precautions during operation.
- **Allowable ambient temperature**
  - 5 to 45 °C
### Articulated Robots

**YA**
- Compact single-axis robots
  - TRANSERVO
  - FLIP-X
  - Linear motor
- Single-axis robots
- Phaser
  - XY-X
  - SCARA
  - YK-X
- Pick & place robots
  - YP-X

### Linear Conveyor Modules
- LCM100

### FLIP-X Specification Sheet

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Motor</th>
<th>Output (W)</th>
<th>Repeat Ability (mm)</th>
<th>Lead (mm)</th>
<th>Payload (kg)</th>
<th>Stroke (mm) and Maximum Speed (mm/s)</th>
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<td>120</td>
<td>25</td>
<td>1875</td>
<td>B90: P.210</td>
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</table>
In the order format for the YAMAHA single-axis robots FLIP-X series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

**[Example]**

- **Mechanical** → F8
  - Lead > 20mm
  - Brake > Yes
  - Stroke > 500mm
  - Origin position > Non-motor side
  - Cable length > 3.5m

- **Controller** → SR1-X
  - Usable for CE > Not required
  - Regenerative unit > Not required
  - Battery > With battery

### Ordering method

**F8-20-BK-Z-500-3L-SR1-X05-N-B**

#### Mechanical section

- **T type / F type (F8 / F8L / F8LH)**
  - Model
  - Lead designation
  - Brake
  - Stroke
  - Option
  - Stroke
  - Cable length

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead designation</th>
<th>Brake</th>
<th>Stroke</th>
<th>Option</th>
<th>Stroke</th>
<th>Cable length</th>
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<td>50</td>
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<td>T2H</td>
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<td>30</td>
<td>Non-brakes</td>
<td>50</td>
<td>3.5m</td>
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<td>T6L</td>
<td>T5H</td>
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<td>30</td>
<td>Non-brakes</td>
<td>50</td>
<td>3.5m</td>
</tr>
<tr>
<td>T7L</td>
<td>T1H</td>
<td>No entry</td>
<td>30</td>
<td>Non-brakes</td>
<td>50</td>
<td>3.5m</td>
</tr>
<tr>
<td>T8L</td>
<td>T2H</td>
<td>No entry</td>
<td>30</td>
<td>Non-brakes</td>
<td>50</td>
<td>3.5m</td>
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<tr>
<td>T9H</td>
<td>T1H</td>
<td>No entry</td>
<td>30</td>
<td>Non-brakes</td>
<td>50</td>
<td>3.5m</td>
</tr>
</tbody>
</table>

- **F type (Except F8 / F8L / F8LH)**
  - Model
  - Lead designation
  - Cable entry location
  - Option
  - Stroke
  - Cable length

- **GF type**
  - Model
  - Lead designation
  - Stroke
  - Option
  - Stroke
  - Cable length

- **N type (Single carriage)**
  - Model
  - Lead designation
  - Cable entry location
  - Option
  - Stroke
  - Cable length

- **N type (Double carriage)**
  - Model
  - Lead designation
  - Cable entry location
  - Option
  - Stroke
  - Cable length

- **B type**
  - Model
  - Lead designation
  - Option
  - Stroke
  - Cable length

- **R type**
  - Model
  - Lead designation
  - Option
  - Stroke
  - Cable length

---

To find detailed controller information, see the controller page.
### Robot ordering method terminology

<table>
<thead>
<tr>
<th>① Model</th>
<th>Enter the robot unit model.</th>
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<tbody>
<tr>
<td>② Model</td>
<td>Straight model only (GF type)</td>
</tr>
<tr>
<td>③ Lead designation</td>
<td>Select the ball screw lead.</td>
</tr>
</tbody>
</table>
| ④ Brake | Select Brake or No-brake.  
**Horizontal specs**: No-brake  
**Vertical specs**: with Brake |
| ⑤ Take out direction | Select what direction to install the robot (horizontal / wall mounted). |
| ⑥ Cable entry location | Select what direction to extract the robot cable connecting the robot and controller. |

#### ⑦ Cable carrier entry location
Select what direction to install the robot (horizontal / wall mounted) and what direction to extract the robot cable carrier.

- **RH**: Horizontal, right
- **RW**: Wall, right
- **LH**: Horizontal, left
- **LW**: Wall, left

Note: Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

#### ⑧ Cable carrier specification
Select the cable carrier size for the customer wiring.

- **S type**: Standard cable carrier
- **M type**: Optional cable carrier

Note: Cannot pass more than 3 urethane hoses (ϕ6 x 4).

#### ⑨ Motor installation direction
Select what direction to install the motor.

- **LT type**: Leftward at horizontal position
- **RT type**: Rightward at horizontal position
- **LU type**: Leftward at upper position
- **RU type**: Rightward at upper position
- **LD type**: Leftward at lower position
- **RD type**: Rightward at lower position

#### ⑩ Option
**Origin position change**: Origin point position can be changed.  
**Frame**: Hole to secure the frame can be selected. (Spot facing/tapping)  
**Grease type**: Clean grease can be selected.

#### ⑪ Stroke
Select the stroke for the robot movement range.

- **1L**: 1m  (You can select a 1m cable only when you use T4L/T5L.)  
- **3L**: 3.5m  (Standard)  
- **5L**: 5m  
- **10L**: 10m  
- **3K**: 3.5m  (Flexible cable)  
- **5K**: 5m  (Flexible cable)  
- **10K**: 10m  (Flexible cable)

#### ⑫ Cable length
Select the robot cable length to use for connecting the robot to the controller.

- **1L**: 1m  
- **3L**: 3.5m  
- **5L**: 5m  
- **10L**: 10m  
- **3K**: 3.5m  
- **5K**: 5m  
- **10K**: 10m
Articulated robots

Compact single-axis robots

TRANSERVO Single-axis robots

FLIP-X Linear motor single-axis robots

XY-X SCARA robots

YK-X Pick & place robots

YP-X CLEAN CONTROLLER INFORMATION

Linear conveyor modules

LCM100

I/O connector specification

Allowable overhang Note

Grease type

Static loading moment

C

A

Stroke

GF

Cable length

Lead

ERCD

Controller

Note 2. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

Specifications

Model

Load designation

Stroke

Origin position change

Grease type

Cable length Type

YP-X CLEAN CONTROLLER INFORMATION

T4L

Controller: 24V

Note 1. The robot cable is standard cable (1L/3L/5L/10L), but can be changed to flexible cable. See P.594 for details on robot cable.

Specifications

AC servo motor output (W)

30

Repeatability (mm)

+/-0.02

Ball screw lead (mm)

12 6 2

Maximum speed (mm/sec)

720 380 120

Maximum payload (kg)

4.5 6 7.2

Rated thrust (N)

32 64 153

Overall horizontal (mm)

Stroke+198

Vertical Linear guide type

Stroke+236

Position detector

Resolvers

Resolution (Pulse/rotation)

16384

Allowable overhang Note

Horizontal installation (Unit: mm)

Wall installation (Unit: mm)

Vertical installation (Unit: mm)

Effective stroke

60 100 150 200 250 300 350 400

50 100 150 200 250 300 350 400

50 100 150 200 250 300 350 400

M 15 19 18

Controller Operation method

ERCD Pulse train control / Programming / DO joint trace / Remote command / Operation using RS-232C communication

Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.

Note 4. The under-head length of the hex socket-head bolt (M4×0.7) to be used for the installation work is 12mm or less.

Note 5. External view of T4LH is identical to T4L.

Controller

ERCD 510
T4LH

Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead screw size</th>
<th>Stroke</th>
<th>Origin position change</th>
<th>Grease type</th>
<th>Stroke length</th>
<th>Ball screw pitch</th>
<th>Deceleration mechanism</th>
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<tbody>
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<td></td>
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<td></td>
<td>3</td>
<td>90</td>
<td>2</td>
<td>Ball screw (8)</td>
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</table>

Specifications

- AC servo motor output (W): 30
- Repeatability (mm): +/-0.02
- Deceleration mechanism: Ball screw (8) (Class C10)
- Ball screw lead (mm): 32
- Maximum speed (mm/sec): 720
- Maximum payload (kg): 4.5
- Stroke (mm): 50 to 400 (50mm pitch)
- Overall length (mm): Stroke+236
- Maximum dimension of cross section of main unit (mm): W40 x H63
- Cable length (m): Standard: 3.5 (Option: 5.10)
- Linear guide type: 2 rows of gothic arch grooves x 1 rail
- Position detector: Resolvers
- Resolution (Pulse/rotation): 10394

Note 1: Positioning repeatability in one direction.
Note 2: Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

Allowable overhang

- Horizontal installation (Unit: mm)
  - Load: 2kg
  - Stroke: 341
  - Vertical: 90
  - Load: 3kg
  - Stroke: 355
  - Vertical: 134
  - Load: 6kg
  - Stroke: 235
  - Vertical: 62

- Vertical installation (Unit: mm)
  - Load: 2kg
  - Stroke: 140
  - Vertical: 73
  - Load: 3kg
  - Stroke: 105
  - Vertical: 42
  - Load: 6kg
  - Stroke: 83
  - Vertical: 31

Static loading moment

- Moment (N·m): 2.4kg
- Stroke: 56
- Vertical: 57

Controller

- Controller: 100V / 200V
- Operation method: Programming / IO point trace / Remote command
- Communication: RS-232C
- Communication: EtherNet/IP
- Communication: PROFINET
- Communication: CC-Link
- Communication: None
- Controller Driver: Power capacity
- Power capacity: 100W or less
- Power capacity: 200W or less
- Power capacity: None
- Power capacity: Standard
- Power capacity: With battery
- Power capacity: PNP
- Power capacity: NPN
- Power capacity: No entry

Note 1: Stop positions are determined by the mechanical stoppers at both ends.
Note 2: Minimum bend radius of motor cable is R30.
Note 3: Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.
Note 4: The under-head length of the hex socket-head bolt (M4×0.7) to be used for the installation work is 12mm or less.
Note 5: External view of T4LH is identical to T4L.
**Specifications**

- **AC servo motor output (W):** 30
- **Repeatability**\(^{\text{Note 1}}\) (mm): 7.0/0.07
- **Deceleration mechanism:** Ball screw \(12\) Class C10
- **Ball screw lead (mm):** 20 12 6
- **Maximum speed (mm/sec):** 800 400
- **Maximum payload (kg):** 3 5 9
- **Rated speed (mm/sec):** 30
- **Stroke (mm):** 50 to 800 (50mm pitch)
- **Overall length (mm):** Vertical
- **Maximum dimensions of cross section of main unit (mm):** W55\(\times\)H52
- **Cable length (m):** Standard 3.5 / Option: 15.10
- **Linear motor type:** 2 rows of gothic arch grooves × 1 rail
- **Position detector:** Resolvers
- **Resolution (Pulse/rotation):** 16384

**Allowable overhang**

- **Horizontal installation**
  - **A:** 1kg 600 323 683
  - **B:** 3kg 675 103 247
  - **C:** 5kg 1179 159 406

- **Vertical installation**
  - **A:** 1kg 600 291 600
  - **B:** 3kg 215 73 589
  - **C:** 5kg 365 127 1082

**Note:**
- **Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.**
- **Service life is calculated for 600mm stroke models.**

**Static loading moment**

- **Horizontal:** MY
  - **MP:** 30
  - **MR:** 34

- **Vertical:** MY
  - **MP:** 40

**Controller**

- **Operation method:** ERCD
- **Remote command / Programming / I/O point trace / Operation using RS-232C communication**

**Ordering method**

<table>
<thead>
<tr>
<th>T5L</th>
<th>Lead designation</th>
<th>Cross-section B-B</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>20mm</td>
<td></td>
<td>ERCD</td>
</tr>
<tr>
<td>Compact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANSERVO</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>FLIP-X</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TRANSERVO</td>
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<td></td>
</tr>
<tr>
<td>XY-X</td>
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<tr>
<td>PHASER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MICRO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear Motor</td>
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</tr>
<tr>
<td>Compact Lineal Motor</td>
<td></td>
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</tr>
</tbody>
</table>

**Notes:**
- **Note 1:** Positioning repeatability in one direction.
- **Note 2:** When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.
- **Note 3:** Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.
- **Note 4:** The model with a lead of 20mm cannot select specifications with brake (vertical specifications).
- **Note 5:** When the stroke is longer than 600mm, the effective stroke and maximum speed may be used for the installation work is 15mm or less.
- **Note 6:** The under-head length of the hex socket-head bolt (M4x0.7) to be used for the installation work is 15mm or less.
- **Note 7:** When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.
- **Note 8:** External view of T5LH is identical to T5L.
Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).
Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.
Note 3. Position detectors (readers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

### Specifications

**AC servo motor output (W)**
- 30

**Repeatability (mm)**
- +0.002

**Deceleration mechanism**
- Ball screw: 12 (Class C10)

**Ball screw lead (mm)**
- 20

**Maximum speed (mm/sec)**
- 1250

**Maximum payload (kg)**
- 500

**Horizontal stroke (mm)**
- 50 to 800 (50mm pitch)

**Stroke (mm)**
- 50 to 800 (50mm pitch)

**Overall length (mm)**
- 250 to 4500

**Maximum dimensions of cross section of main unit (mm)**
- 500 X 500 X 500

**Cable length (m)**
- Standard: 3.5 / Option: 5, 10

**Linear guide type**
- 2 wear rings and grooves X 10

**Resolution (Pulse/rotation)**
- 1024

**Ordering method**

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Brake</th>
<th>Position change</th>
<th>Grease type</th>
<th>Stroke change</th>
<th>Cable length</th>
<th>Controller</th>
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</thead>
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<tr>
<td>T5LH</td>
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<td></td>
<td></td>
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<td>SR1-X</td>
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**Allowable overhang**

**Horizontal installation**

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
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<tbody>
<tr>
<td>Vertical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1kg</td>
<td>967</td>
<td>324</td>
<td>598</td>
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<td></td>
</tr>
<tr>
<td>2kg</td>
<td>429</td>
<td>104</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5kg</td>
<td>436</td>
<td>60</td>
<td>152</td>
<td></td>
<td></td>
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<tr>
<td>9kg</td>
<td>624</td>
<td>31</td>
<td></td>
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**Wall installation**

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1kg</td>
<td>551</td>
<td>304</td>
<td>925</td>
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<tr>
<td>2kg</td>
<td>185</td>
<td>89</td>
<td>378</td>
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<td></td>
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<tr>
<td>5kg</td>
<td>347</td>
<td>141</td>
<td>600</td>
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<td></td>
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<td>9kg</td>
<td>259</td>
<td>87</td>
<td>960</td>
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**Vertical installation**

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>239</td>
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<tr>
<td>2.4kg</td>
<td>109</td>
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**Controller**

<table>
<thead>
<tr>
<th>Controller</th>
<th>SR1-X</th>
<th>TS-X</th>
<th>RDV-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation method</td>
<td>X05</td>
<td>X221</td>
<td>X205</td>
</tr>
<tr>
<td>Communication</td>
<td>PT: PROFINET</td>
<td>PB: PROFIBUS</td>
<td>EP: EtherNet/IP</td>
</tr>
<tr>
<td>Power supply</td>
<td>MY MP MR</td>
<td>MY MP MR</td>
<td>MY MP MR</td>
</tr>
<tr>
<td>Power</td>
<td>30 34 30 40 30 40 30 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>10 20 10 20 10 20 10 20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Controller Information**

<table>
<thead>
<tr>
<th>Controller</th>
<th>SR1-X</th>
<th>TS-X</th>
<th>RDV-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Power-supply voltage / Driver: Power capacity</td>
<td>24VAC/200V</td>
<td>24VAC/200V</td>
<td>24VAC/200V</td>
</tr>
<tr>
<td>Power supply</td>
<td>MY MP MR</td>
<td>MY MP MR</td>
<td>MY MP MR</td>
</tr>
<tr>
<td>Power</td>
<td>10 20 10 20 10 20 10 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>10 20 10 20 10 20 10 20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

- Distance from center of slider top to center of gravity of object being carried at a service life of 10,000 km.
- Service life is calculated for 600mm stroke models.
- In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
- The model with a lead of 20mm cannot select specifications with brake (vertical specifications).
- When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
- Position detectors (readers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.
Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).

Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P594 for details on robot cable.

Note 3. See P498 for DIN rail mounting bracket.

Note 4. Select this selection when using the gateway function. For details, see P60.

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Controller: 100V / 200V</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6L</td>
<td>Controller: 100V / 200V</td>
</tr>
</tbody>
</table>

#### Ordering method

**T6L** -

**Ordering method**

- **Model**: [Articulated robots], [Compact single-axis robots], [TRANSERVO Single-axis robots], [FLIP-X Linear motor single-axis robots], [XY-X SCARA robots], [YK-X Pick & place robots], [YP-XCLEANCONTROLLER INFORMATION Linear conveyor modules], [LCM100]

**Note**

- **Articulated robots**
- **Compact**
- **Single-axis robots**
- **TRANSERVO**
- **FLIP-X**
- **XY-X**
- **SCARA**
- **YK-X**
- **Pick & place robots**
- **YP-XCLEANCONTROLLER INFORMATION**
- **Linear conveyor modules**
- **LCM100**

### Allowable overhang

#### Horizontal installation

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kg</td>
<td>400</td>
<td>40</td>
</tr>
<tr>
<td>2kg</td>
<td>640</td>
<td>68</td>
</tr>
<tr>
<td>3kg</td>
<td>880</td>
<td>84</td>
</tr>
<tr>
<td>4kg</td>
<td>1120</td>
<td>120</td>
</tr>
<tr>
<td>5kg</td>
<td>1360</td>
<td>138</td>
</tr>
<tr>
<td>6kg</td>
<td>1600</td>
<td>170</td>
</tr>
</tbody>
</table>

#### Wall installation

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kg</td>
<td>400</td>
<td>40</td>
</tr>
<tr>
<td>2kg</td>
<td>640</td>
<td>68</td>
</tr>
<tr>
<td>3kg</td>
<td>880</td>
<td>84</td>
</tr>
<tr>
<td>4kg</td>
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<td>120</td>
</tr>
<tr>
<td>5kg</td>
<td>1360</td>
<td>138</td>
</tr>
<tr>
<td>6kg</td>
<td>1600</td>
<td>170</td>
</tr>
</tbody>
</table>

#### Vertical installation

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kg</td>
<td>400</td>
<td>40</td>
</tr>
<tr>
<td>2kg</td>
<td>640</td>
<td>68</td>
</tr>
<tr>
<td>3kg</td>
<td>880</td>
<td>84</td>
</tr>
<tr>
<td>4kg</td>
<td>1120</td>
<td>120</td>
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<tr>
<td>5kg</td>
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<td>138</td>
</tr>
<tr>
<td>6kg</td>
<td>1600</td>
<td>170</td>
</tr>
</tbody>
</table>

### Static loading moment

<table>
<thead>
<tr>
<th>MY</th>
<th>MP</th>
<th>MR</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

**Controller**

- **SR1-X**: Programming / I/O point/wire / Remote command / Operation (using RS-232C communication)
- **TS-X**: 100V / 200V
- **RDV-X**: 200V / 200V

**Note**

- **SR1-X**: See P498 for DIN rail mounting bracket.
- **TS-X**: See P498 for DIN rail mounting bracket.
- **RDV-X**: See P498 for DIN rail mounting bracket.

**Controller Operation method**

- **SR1-X**: Programming / I/O point/wire / Remote command / Operation (using RS-232C communication)
- **TS-X**: 100V / 200V
- **RDV-X**: 200V / 200V

**Ordering method**

- **T6L**: Controller: 100V / 200V

**Note**

- **ARTICO**: High lead: Lead 20
- **ONOT**: Origin on the non-motor side is selectable

**Controller**

- **SR1-X**: 516
- **TS-X**: 490
- **RDV-X**: 504
Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).
Note 2. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.
Note 3. The model is standard cable (3L/5L/10L), but can be changed to flexible cable. Please see P.594 for details on robot cable.
Note 4. See P.498 for DIN rail mounting bracket.
Note 5. Select this setting when using the gateway function. For details, see P.60.

### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (mm)</td>
<td>1/10</td>
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<tr>
<td>Ball screw lead (mm)</td>
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<tr>
<td>Maximum stroke (mm)</td>
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</tr>
<tr>
<td>Payload (kg)</td>
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</tr>
<tr>
<td>Rated thrust (N)</td>
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<td>Stroke (mm)</td>
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<tr>
<td>Overall length (mm)</td>
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<td>Ball screw lead (mm)</td>
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<td>Maximum stroke (mm)</td>
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<td>Payload (kg)</td>
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<td>Rated thrust (N)</td>
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<td>Stroke (mm)</td>
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<td>Overall length (mm)</td>
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<td>Ball screw lead (mm)</td>
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<tr>
<td>Maximum stroke (mm)</td>
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<tr>
<td>Payload (kg)</td>
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<tr>
<td>Rated thrust (N)</td>
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<tr>
<td>Stroke (mm)</td>
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<td>Ball screw lead (mm)</td>
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<td>Rated thrust (N)</td>
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<td>Overall length (mm)</td>
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<tr>
<td>Ball screw lead (mm)</td>
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<tr>
<td>Maximum stroke (mm)</td>
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</tr>
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<td>Rated thrust (N)</td>
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<td>Stroke (mm)</td>
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<tr>
<td>Overall length (mm)</td>
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<td>Ball screw lead (mm)</td>
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<tr>
<td>Maximum stroke (mm)</td>
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</tr>
<tr>
<td>Payload (kg)</td>
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### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead (mm)</th>
<th>Stroke (mm)</th>
<th>Maximum stroke (mm)</th>
<th>Payload (kg)</th>
<th>Rated thrust (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>30</td>
<td>1050</td>
<td>1500</td>
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<td>56</td>
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<td>YA</td>
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<td>1250</td>
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<tr>
<td>YA</td>
<td>50</td>
<td>400</td>
<td>500</td>
<td>10</td>
<td>53</td>
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</table>

### ALLOWABLE OVERHANG

**Horizontal Installation**
- (Unit: mm)
  - A: 586
  - B: 501
  - C: 383

**Vertical Installation**
- (Unit: mm)
  - A: 510
  - B: 450
  - C: 370

**Static loading moment**
- (Unit: N·m)
  - A: 150
  - B: 1250

### Controller

<table>
<thead>
<tr>
<th>Programming / Remote command</th>
<th>Operation method</th>
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<td>SR1-X05 (RS-232)</td>
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<td>TC221/222</td>
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<tr>
<td>RC240/340</td>
<td>RC240/340</td>
</tr>
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</table>

### Regenerative unit

- MY: 504
- MP: 504
- MR: 504

### Note

1. Stop positions are determined by the mechanical stoppers at both ends.
2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
3. Strokes longer than 1050mm are available only for high lead specification (Lead 30).
4. When origin is on motor side, the maximum speed is reduced to 60%. When origin is on non-motor side, the maximum speed is reduced to 80%.
5. When installing the unit, washers, etc., cannot be used in the installation environment.
6. When the unit is used in a stationary position, the unit should be fixed with washers and screws.
7. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.
8. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.
9. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
### Ordering method

**T9H**

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Load</th>
<th>Brake</th>
<th>Origin on the non-motor side</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>90</td>
<td>54</td>
<td>No</td>
<td>Non-motor side</td>
<td>SR1-X</td>
</tr>
<tr>
<td>Compact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SL</td>
<td>180</td>
<td>84</td>
<td>No</td>
<td>Non-motor side</td>
<td>TS-X</td>
</tr>
<tr>
<td>Single-axis robots</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RDV-X</td>
</tr>
<tr>
<td>TRANSERVO</td>
<td></td>
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<td>2</td>
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<tr>
<td>FLIP-X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RBR1</td>
</tr>
<tr>
<td>Linear motor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YK-X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick &amp; place robots</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YP-X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1.** The model with a lead of 30mm cannot select specifications with brake (vertical specifications).

**Note 2.** If selecting 10mm-5mm lead specifications then the origin point cannot be changed to the non-motor side.

**Note 3.** The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.594 for details on robot cable.

**Note 4.** When installing the unit, washers, etc., cannot be used in the guide service block. See P.594 for details on robot cable.

**Note 5.** Minimum bend radius of motor cable is R5.

**Note 6.** Strokes longer than 1050mm are special order items. Please consult us for speed setting.

**Note 7.** Weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.

**Note 8.** Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

Note 9. Strokes longer than 1050mm are special order items. Please consult us for speed setting.

---

### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC servo motor output (W)</td>
<td>200</td>
</tr>
<tr>
<td>Repeatability (mm)</td>
<td>±0.01</td>
</tr>
<tr>
<td>Ball screw (mm)</td>
<td>Ball screw (C7)</td>
</tr>
<tr>
<td>Maximum load (kg)</td>
<td>30</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>150 to 1250</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>Horizontal: 607, Vertical: 300</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>W64 x H68</td>
</tr>
<tr>
<td>Linear type</td>
<td>P type, T type, F type, N type, B/R type, GF type</td>
</tr>
<tr>
<td>Speed (rpm)</td>
<td>2500</td>
</tr>
<tr>
<td>Maximum speed (m/min)</td>
<td>80</td>
</tr>
<tr>
<td>Deceleration mechanism</td>
<td>10 kgf</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>83.7</td>
</tr>
<tr>
<td>Speed setting</td>
<td>10</td>
</tr>
</tbody>
</table>

**Note 1.** Positioning repeatability in one direction.

**Note 2.** When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

**Note 3.** Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order item)

**Note 4.** Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

---

### Allowable overhang

<table>
<thead>
<tr>
<th>Horizontal installation</th>
<th>(Unit: mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>10kg</td>
<td>415</td>
</tr>
<tr>
<td>20kg</td>
<td>278</td>
</tr>
<tr>
<td>30kg</td>
<td>170</td>
</tr>
<tr>
<td>40kg</td>
<td>80</td>
</tr>
<tr>
<td>50kg</td>
<td>46</td>
</tr>
</tbody>
</table>

**Note 1.** Step positions are determined by the mechanical stoppers at both ends.

**Note 2.** When installing the unit, washers, etc., cannot be used in the guide service block.

**Note 3.** Minimum bend radius of motor cable is R5.

**Note 4.** Weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.

---

### Static loading moment

<table>
<thead>
<tr>
<th>Controller</th>
<th>SR1-X</th>
<th>TS-X</th>
<th>RDV-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation method</td>
<td>Programming / HO point brake / Remote command</td>
<td>Operation using RS-232C communication</td>
<td>Pulse train control</td>
</tr>
</tbody>
</table>

**Note 1.** When using the unit vertically, a regeneration unit is required.

---

### T9H

<table>
<thead>
<tr>
<th>Approx. (Motor cable length)</th>
<th>Effective stroke</th>
<th>(N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T9H: [129H + 1] (Note 1)</td>
<td>1500</td>
<td>150</td>
</tr>
<tr>
<td>2400</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>2500</td>
<td>1100</td>
<td>1100</td>
</tr>
<tr>
<td>2600</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>2700</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>2800</td>
<td>810</td>
<td>810</td>
</tr>
<tr>
<td>2900</td>
<td>730</td>
<td>730</td>
</tr>
<tr>
<td>3000</td>
<td>650</td>
<td>650</td>
</tr>
<tr>
<td>3100</td>
<td>570</td>
<td>570</td>
</tr>
<tr>
<td>3200</td>
<td>490</td>
<td>490</td>
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<tr>
<td>3300</td>
<td>410</td>
<td>410</td>
</tr>
<tr>
<td>3400</td>
<td>330</td>
<td>330</td>
</tr>
<tr>
<td>3500</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>3600</td>
<td>170</td>
<td>170</td>
</tr>
</tbody>
</table>

**Note 1.** When installing the unit, washers, etc., cannot be used in the x11 counter bore hole.

**Note 2.** Minimum bend radius of motor cable is R5.

**Note 3.** Weight of models with no brake. The weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.

---

### Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>SR1-X</th>
<th>TS-X</th>
<th>RDV-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation method</td>
<td>Programming / HO point brake / Remote command</td>
<td>Operation using RS-232C communication</td>
<td>Pulse train control</td>
</tr>
</tbody>
</table>

**Note 1.** When using the unit vertically, a regeneration unit is required.
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor</th>
<th>Gearbox</th>
<th>Encoder</th>
<th>Grease type</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Regenerative unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>F8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

#### AC servo motor output (W)
- 100

*Repeatability [mm]*: 100%

*Motor screw (Class C10)*: M5 × 0.8

*Lead screw*: 20, 6

*Maximum speed [mm/min]*: 1200

*Rated thrust*:
- 84 141 283

*Battery*: No entry: Without battery

*I/O selection*: No entry: Standard

#### Resolution (Pulse/rotation)
- 16384

*Type*: SR1-X

*Driver*: MR

*Driver*: Power capacity 300V or less

*Controller*: No I/O board

*Operation*: SR-X

*Programming*: No I/O board

*Communication*: RS-232C

#### Controller

- SR1-X: 05

- TSX: 205

- RDV-X: 205–206

*Type*: B/R type

*Type*: N type

*Type*: GF type

*Type*: B type

*Type*: R type

*Type*: T type

*Type*: N type

*Type*: B/R type

*Type*: P type

*Type*: T type

*Type*: N type

*Type*: B/R type

#### Allowable overhang

**Horizontal installation**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5kg</td>
<td>197</td>
<td>76</td>
<td>120</td>
</tr>
<tr>
<td>10kg</td>
<td>160</td>
<td>32</td>
<td>54</td>
</tr>
<tr>
<td>12kg</td>
<td>85</td>
<td>25</td>
<td>43</td>
</tr>
<tr>
<td>5kg</td>
<td>364</td>
<td>89</td>
<td>188</td>
</tr>
<tr>
<td>10kg</td>
<td>203</td>
<td>39</td>
<td>87</td>
</tr>
<tr>
<td>15kg</td>
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<td>22</td>
<td>51</td>
</tr>
<tr>
<td>20kg</td>
<td>103</td>
<td>14</td>
<td>33</td>
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<tr>
<td>10kg</td>
<td>403</td>
<td>87</td>
<td>188</td>
</tr>
<tr>
<td>20kg</td>
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<td>16</td>
<td>43</td>
</tr>
<tr>
<td>30kg</td>
<td>140</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>40kg</td>
<td>113</td>
<td>0</td>
<td>8</td>
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**Wall installation**

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</tr>
</thead>
<tbody>
<tr>
<td>5kg</td>
<td>104</td>
<td>67</td>
<td>174</td>
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<td>87</td>
<td>23</td>
<td>72</td>
</tr>
<tr>
<td>12kg</td>
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<td>15</td>
<td>56</td>
</tr>
<tr>
<td>5kg</td>
<td>171</td>
<td>81</td>
<td>348</td>
</tr>
<tr>
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<td>69</td>
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<td>172</td>
</tr>
<tr>
<td>15kg</td>
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<td>15</td>
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</tr>
<tr>
<td>20kg</td>
<td>15</td>
<td>6</td>
<td>56</td>
</tr>
<tr>
<td>10kg</td>
<td>94</td>
<td>36</td>
<td>369</td>
</tr>
<tr>
<td>20kg</td>
<td>25</td>
<td>9</td>
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</tr>
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<td>30kg</td>
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<td>14</td>
</tr>
<tr>
<td>40kg</td>
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</table>

#### Static loading moment

**X type**

<table>
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<tr>
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<th>C</th>
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<tbody>
<tr>
<td>2kg</td>
<td>70</td>
<td>55</td>
<td>110</td>
</tr>
<tr>
<td>2kg</td>
<td>214</td>
<td>16</td>
<td>216</td>
</tr>
<tr>
<td>3kg</td>
<td>137</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>4kg</td>
<td>98</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>2kg</td>
<td>244</td>
<td>245</td>
<td></td>
</tr>
<tr>
<td>4kg</td>
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<td>113</td>
<td></td>
</tr>
<tr>
<td>6kg</td>
<td>69</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>8kg</td>
<td>84</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>

### Controller

- **Controller**: SR1-X
- **Type**: X type
- **Power capacity**: 300V or less
- **Type**: B/R type
- **Type**: Pulse train control

**Operation**: SR-X

**Programming**: No I/O board

**Communication**: RS-232C

**IO port**: Remote command

**Module**: RDV-X 205

**Control type**: B/R type

**Power capacity**: 300V or less

**Power supply voltage**: 240V

**Dimensions of cross section of main unit (mm)**: 80 × 65

**Horizontal installation**

Horizontal (Unit: mm) Wall installation (Unit: mm) Vertical installation (Unit: mm)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5kg</td>
<td>109</td>
<td>154</td>
<td>174</td>
</tr>
<tr>
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</tr>
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<td>206</td>
<td>238</td>
</tr>
<tr>
<td>5kg</td>
<td>137</td>
<td>189</td>
<td>214</td>
</tr>
<tr>
<td>10kg</td>
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<td>230</td>
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<tr>
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<td>197</td>
<td>249</td>
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<td>214</td>
<td>266</td>
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<tr>
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<td>369</td>
<td>420</td>
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<tr>
<td>20kg</td>
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<td>468</td>
<td>529</td>
</tr>
</tbody>
</table>

**Rated thrust (N·m)**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5kg</td>
<td>70</td>
<td>55</td>
<td>110</td>
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<tr>
<td>10kg</td>
<td>137</td>
<td>133</td>
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</tr>
<tr>
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<td>20kg</td>
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</tr>
<tr>
<td>20kg</td>
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<td>369</td>
<td></td>
</tr>
</tbody>
</table>

**Rated thrust (N)**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
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<td>444</td>
<td>444</td>
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<tr>
<td>10kg</td>
<td>214</td>
<td>216</td>
<td></td>
</tr>
<tr>
<td>15kg</td>
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<td>20kg</td>
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<td>98</td>
<td></td>
</tr>
<tr>
<td>10kg</td>
<td>244</td>
<td>244</td>
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</tr>
<tr>
<td>20kg</td>
<td>113</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>30kg</td>
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</tr>
<tr>
<td>40kg</td>
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<td></td>
</tr>
</tbody>
</table>

**Effective stroke**

<table>
<thead>
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<th>200</th>
<th>250</th>
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<th>350</th>
<th>400</th>
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<th>550</th>
<th>600</th>
<th>650</th>
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<th>800</th>
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<tr>
<td>D</td>
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</tr>
<tr>
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<td>4.2</td>
<td>4.4</td>
<td>4.7</td>
<td>5.0</td>
<td>5.3</td>
<td>5.6</td>
<td>5.9</td>
<td>6.2</td>
<td>6.4</td>
<td>6.7</td>
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<td>181</td>
<td>181</td>
<td>181</td>
<td>181</td>
<td>181</td>
</tr>
</tbody>
</table>

**Maximum speed [mm/sec]**

- **Lead 20**: 1200
- **Lead 6**: 360

**Power capacity**: 300V or less

**Power supply voltage**: 240V

**Dimensions of cross section of main unit (mm)**: 80 × 65

**Rated thrust (N·m)**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5kg</td>
<td>70</td>
<td>55</td>
<td>110</td>
</tr>
<tr>
<td>10kg</td>
<td>137</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>15kg</td>
<td>69</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>20kg</td>
<td>94</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>10kg</td>
<td>369</td>
<td>369</td>
<td></td>
</tr>
<tr>
<td>20kg</td>
<td>369</td>
<td>369</td>
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</tr>
</tbody>
</table>

Note 1. Positioning repeatability in one direction.

Note 2. When installing the robot, do not use washers inside the robot body.

Note 3. When the stroke is longer than 550mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.

Note 4. When using this function, (incremental) DN: DeviceNet TM

Note 5. Weight of models with no brake. The weight of brake-attached models is 0.3 kg heavier than the models with no brake shown in the table.

Note 6. When the stroke is longer than 550mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
### Ordering method

#### F8L

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>AC servo motor output (W)</th>
<th>Repeatability <strong>a</strong> (mm)</th>
<th>Rated thrust (N)</th>
<th>Stroke (mm)</th>
<th>Overall length (mm)</th>
<th>Maximum dimensions of cross section of main unit (mm)</th>
<th>Greasing hole (mm)</th>
<th>Battery</th>
<th>I/O selection</th>
<th>Deceleration mechanism</th>
<th>Position detector</th>
<th>Resolutio <strong>b</strong> (Pulse/rotation)</th>
<th>Speed (Unit N/m)</th>
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<tbody>
<tr>
<td>F8L</td>
<td>30</td>
<td>100</td>
<td>0.01</td>
<td>56</td>
<td>150</td>
<td>1050</td>
<td>100 x 160</td>
<td>50</td>
<td>None</td>
<td>C-</td>
<td>Ball screw (C7)</td>
<td>Resolvers</td>
<td>5100 (3000)</td>
<td>≤ 30</td>
</tr>
</tbody>
</table>

*Note 1. Positioning repeatability in one direction.*

*Note 2. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.*

*Note 3. Position detector (resolution) is necessary to set incremental and absolute specifications. If the controller has a backup function, it will be absolute specifications.*

#### Specifications

- **High lead:** Lead 30
- **Origin on the non-motor side is selectable**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Model</th>
<th>Lead</th>
<th>AC servo motor output (W)</th>
<th>Repeatability <strong>a</strong> (mm)</th>
<th>Rated thrust (N)</th>
<th>Stroke (mm)</th>
<th>Overall length (mm)</th>
<th>Maximum dimensions of cross section of main unit (mm)</th>
<th>Greasing hole (mm)</th>
<th>Battery</th>
<th>I/O selection</th>
<th>Deceleration mechanism</th>
<th>Position detector</th>
<th>Resolution (Pulse/rotation)</th>
<th>Speed (Unit N/m)</th>
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<tr>
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<td>100</td>
<td>0.01</td>
<td>56</td>
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<td>1050</td>
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<td>Resolvers</td>
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<td>≤ 30</td>
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<th>Repeatability <strong>a</strong> (mm)</th>
<th>Rated thrust (N)</th>
<th>Stroke (mm)</th>
<th>Overall length (mm)</th>
<th>Maximum dimensions of cross section of main unit (mm)</th>
<th>Greasing hole (mm)</th>
<th>Battery</th>
<th>I/O selection</th>
<th>Deceleration mechanism</th>
<th>Position detector</th>
<th>Resolution (Pulse/rotation)</th>
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</thead>
<tbody>
<tr>
<td><strong>Ordering method</strong></td>
<td>F8L</td>
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<td>100</td>
<td>0.01</td>
<td>56</td>
<td>150</td>
<td>1050</td>
<td>100 x 160</td>
<td>50</td>
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<td>C-</td>
<td>Ball screw (C7)</td>
<td>Resolvers</td>
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<td>≤ 30</td>
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<table>
<thead>
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<th>Model</th>
<th>Lead</th>
<th>AC servo motor output (W)</th>
<th>Repeatability <strong>a</strong> (mm)</th>
<th>Rated thrust (N)</th>
<th>Stroke (mm)</th>
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<th>Maximum dimensions of cross section of main unit (mm)</th>
<th>Greasing hole (mm)</th>
<th>Battery</th>
<th>I/O selection</th>
<th>Deceleration mechanism</th>
<th>Position detector</th>
<th>Resolution (Pulse/rotation)</th>
<th>Speed (Unit N/m)</th>
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</thead>
<tbody>
<tr>
<td><strong>Ordering method</strong></td>
<td>F8L</td>
<td>30</td>
<td>100</td>
<td>0.01</td>
<td>56</td>
<td>150</td>
<td>1050</td>
<td>100 x 160</td>
<td>50</td>
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<td>C-</td>
<td>Ball screw (C7)</td>
<td>Resolvers</td>
<td>5100 (3000)</td>
<td>≤ 30</td>
</tr>
</tbody>
</table>

### Static loading moment

<table>
<thead>
<tr>
<th>Controller</th>
<th>Operator method</th>
<th>SR1-X</th>
<th>Programming / IO point trace / Remote command</th>
<th>TS-X</th>
<th>Operation using RS-232C communication</th>
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</thead>
<tbody>
<tr>
<td>Controller</td>
<td>Operation method</td>
<td>SR1-X</td>
<td>Programming / IO point trace / Remote command</td>
<td>TS-X</td>
<td>Operation using RS-232C communication</td>
</tr>
<tr>
<td>Driver</td>
<td>Power-supply voltage</td>
<td>LAC 200V</td>
<td>Driver: Power capacity</td>
<td>200V or less</td>
<td>Driver: Power capacity</td>
</tr>
<tr>
<td>Control</td>
<td>Driver: Power capacity</td>
<td>200V or less</td>
<td>Driver: Power capacity</td>
<td>200V or less</td>
<td>Driver: Power capacity</td>
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<td>Unit</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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### Controller

- **Controller:** SR1-X
- **Ordering method:** SR1-X
- **Programming / IO point trace / Remote command:** SR1-X
- **Operation using RS-232C communication:** SR1-X

### Note

1. *Stop positions are determined by the mechanical stoppers at both ends.*
2. When installing the robot, do not use washers inside the robot body. The maximum thickness of the washers is 10mm.
3. When using the motor to rotate the non-motor side, the knuckle must protrude more than 10mm inside the robot body.
4. When installing the robot, make sure that the knockpin must not protrude more than 10mm inside the robot body. Weight of models with no brakes is 0.3 kg heavier than the models with no brake shown in the table.

### Note

- When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.

### Diagram

- **Diagram:** F8L
- **Diagram:** F8L
- **Diagram:** F8L

### Table

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Model</th>
<th>Lead</th>
<th>AC servo motor output (W)</th>
<th>Repeatability <strong>a</strong> (mm)</th>
<th>Rated thrust (N)</th>
<th>Stroke (mm)</th>
<th>Overall length (mm)</th>
<th>Maximum dimensions of cross section of main unit (mm)</th>
<th>Greasing hole (mm)</th>
<th>Battery</th>
<th>I/O selection</th>
<th>Deceleration mechanism</th>
<th>Position detector</th>
<th>Resolution (Pulse/rotation)</th>
<th>Speed (Unit N/m)</th>
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</thead>
<tbody>
<tr>
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<td>30</td>
<td>100</td>
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<td>None</td>
<td>C-</td>
<td>Ball screw (C7)</td>
<td>Resolvers</td>
<td>5100 (3000)</td>
<td>≤ 30</td>
</tr>
</tbody>
</table>
### F8L: High lead type: Lead 30

**Effective stroke**

<table>
<thead>
<tr>
<th></th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>450</th>
<th>500</th>
<th>550</th>
<th>600</th>
<th>650</th>
<th>700</th>
<th>750</th>
<th>800</th>
<th>850</th>
<th>900</th>
<th>950</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>A</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>14</td>
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<td>16</td>
<td>16</td>
<td>18</td>
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<td>20</td>
<td>20</td>
<td>22</td>
<td>22</td>
<td>24</td>
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<tr>
<td>C</td>
<td>240</td>
<td>290</td>
<td>340</td>
<td>390</td>
<td>440</td>
<td>490</td>
<td>540</td>
<td>590</td>
<td>640</td>
<td>690</td>
<td>740</td>
<td>790</td>
<td>840</td>
<td>890</td>
<td>940</td>
<td>990</td>
<td>1040</td>
<td>1090</td>
</tr>
</tbody>
</table>

**Maximum speed (mm/sec)**

|   | 3.9 | 4.2 | 4.5 | 4.8 | 5.1 | 5.4 | 5.7 | 6.1 | 6.4 | 6.7 | 7.0 | 7.3 | 7.6 | 7.9 | 8.2 | 8.5 | 8.8 | 9.2 | 9.5 |

**Weight (kg)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>1800</th>
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</thead>
<tbody>
<tr>
<td>L</td>
<td>1530</td>
<td>1350</td>
</tr>
<tr>
<td>A</td>
<td>855</td>
<td>75%</td>
</tr>
<tr>
<td>B</td>
<td>2.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**Note 1.** Stop positions are determined by the mechanical stops at both ends.
**Note 2.** When installing the robot, do not use washers inside the robot body.
**Note 3.** Minimum bend radius of motor cable is R50.
**Note 4.** When using this ø10 knock-pin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.
**Note 5.** When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.

---

**Cross-section E-E**

**Grounding terminal (M1)**

**Note:** Recommended plate nut M5 (6 * t 1.6)

---

**Diagram:**

- **F8L (Motor cable length):** 212±4: When origin is on motor side
- **Effective Stroke:** 90.5±1: When origin is on motor side
- **Effective Stroke:** 18.5±1: When origin is on non-motor side
- **Effective Stroke:** 30±0.02
- **Effective Stroke:** 44±1.1
- **Effective Stroke:** 49±0.5
- **Effective Stroke:** 60±0.5
- **Effective Stroke:** 80±1
- **Effective Stroke:** 165.5±1
- **Effective Stroke:** 18.5±1
- **Effective Stroke:** 10.5±1
- **Effective Stroke:** 20.5±1

---

**Controller:** SR1-X > 516, TS-X > 490, RDV-X > 504
### Ordering method

**F8LH**
- Model: SR1-X
- Controller: 05
- Origin position change: Non-motor side
- Grease type: Enjoy Clean
- Stroke: 150 to 1050mm (pitch)
- Cable length: Note 1
- Care length: LC-SK-10L, flexible cable

### Specifications

**AC servo motor output (W)**: 100

**Repeatability (mm)**: ±0.01

**Deceleration mechanism**
- Ball screw: (Class C7)
- Ball screw lead: 20, 10, 6

**Maximum speed (mm/sec)**
- Horizontal: 1205, 1000, 800
- Vertical: 30, 60, 80

**Rated Thrust (N)**: 84, 169, 339

**Maximum Payload (kg)**
- Horizontal: 150 to 1050 (50mm pitch)
- Vertical: 368

**Overall length (mm)**
- Horizontal Stroke: 368
- Vertical: 368

**Maximum dimension of cross section of main unit (mm)**
- W80 × H65

**Cable length (m)**: Standard: 3.5 / Option: 6.10

**Position detector**
- Resolvers

**Resolution (Pulse/rotation)**: 16384

**Lead 10**
- Motor cable: R50

**Grounding terminal**
- M4, 6-M6 x 1.0, Depth 12

**Effective stroke**
- Horizontal: 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1050
- Vertical: A, B, C

**Weight (kg)**
- 4.7, 5.0, 5.3, 5.6, 5.9, 6.2, 6.6, 6.9, 7.2, 7.5, 7.8, 8.1, 8.4, 8.7, 9.0, 9.3, 9.7, 10.0, 10.3

**Maximum speed (mm/sec)**
- Horizontal: 20, 10
- Vertical: 600

**Speed setting**
- 85% to 100%

**Battery**
- Charge (V): 12, 24
- Capacity (Ah): 20, 20, 22, 24, 26, 28

Note 1: Positions of repeatability are absolute in one direction.

Note 2: When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program from the maximum speeds shown in the table below.

---

### Controller

**Controller**
- Operation method: SR1-X05
  - Programming / Remote command / Communication
  - TS-X205

---

### Allowable overhang

- **Horizontal installation**: A, B, C
- **Wall installation**: A, B, C

- **Position detector**
  - Resolvers

- **Resolution (Pulse/rotation)**: 16384

---

### Static loading moment

**MR**
- Payload (kg): 20, 29, 60

**MP**
- Payload (kg): 22, 26, 60

**MY**
- Payload (kg): 22, 26, 60

---

### Other Information

- **F8LH**: Approx. 240 (Motor cable length)
- **Effective stroke**: 242×3: When origin is on motor side
- **120×1.5**: When origin is on non-motor side
- **60kg**: 714, 34, 29
- **60kg**: 714, 34, 29
- **60kg**: 800g, 25, 17

---

**Note 1**: Stop positions are determined by the mechanical stoppers at both ends.

**Note 2**: When installing the robot, do not use washers inside the robot body.

**Note 3**: Minimum bend radius of motor cable is R50.

**Note 4**: When using this φ10 knockpin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.

**Note 5**: When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program from the maximum speeds shown in the table above.

---

**F8LH**
- Motor: SR1-X
- Controller: 05
- Origin position change: Non-motor side
- Grease type: Enjoy Clean
- Stroke: 150 to 1050mm (pitch)
- Cable length: Note 1
- Care length: LC-SK-10L, flexible cable

---

**Specifications**

<table>
<thead>
<tr>
<th>Effective stroke (mm/sec)</th>
<th>150</th>
<th>200</th>
<th>250</th>
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<th>400</th>
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---

**Weight (kg)**

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<th>4.7</th>
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<th>5.3</th>
<th>5.6</th>
<th>5.9</th>
<th>6.2</th>
<th>6.6</th>
<th>6.9</th>
<th>7.2</th>
<th>7.5</th>
<th>7.8</th>
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<th>8.4</th>
<th>8.7</th>
<th>9.0</th>
<th>9.3</th>
<th>9.7</th>
<th>10.0</th>
<th>10.3</th>
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**Maximum speed (mm/sec)**

<table>
<thead>
<tr>
<th>Maximum speed (mm/sec)</th>
<th>20 10</th>
<th>600</th>
<th>300</th>
<th>255 225 195 165 135 120 105</th>
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</thead>
</table>

---

**Battery**

<table>
<thead>
<tr>
<th>Charge (V)</th>
<th>12 24</th>
</tr>
</thead>
</table>

---

**Other Information**

**Note 1**: Positioning repeatability is absolute in one direction.

**Note 2**: When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

**Note 3**: Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

**Note 4**: Select this selection when using the gateway function. For details, see P.60.**

**Note 5**: When using this φ10 knockpin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.
Articulated robots

Compact single-axis robots

TRANSERVO Single-axis robots

FLIP-X Linear motor single-axis robots

XY-X SCARA robots

YK-X Pick & place robots

YP-X CLEAN CONTROLLER INFORMATION

Linear conveyor modules

LCM100

C

I/O selection

Battery LCD monitor

A

I/O selection

Regenerative unit

RBR1 Grease type

Static loading moment

Allowable overhang

Effective stroke

Static loading moment

Controller

Ordering method

Specifications

Servo motor output (W)

Repeatability (mm)

Deceleration time (sec)

Ball screw lead (mm)

Maximum speed (mm/sec)

Maximum payload (kg)

Rated thrust (N)

Stroke (mm)

Overall length (mm)

Linear guide type

Position detector

Resolution (Pulse/rotation)

Linear encoder type

Note 1. Positioning repeatability in one direction.

Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, we recommend using the speed setting on the program by referring to the maximum speeds shown in the table below.

Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order items).

Note 4. Position detectors (resolvers) are common to incremental and absolute encoders. If the controller has a backup function then it will be absolute encoders.

Specifications

Ordering method

Controller

Note: When strokes longer than 1050mm are special order items. Please consult us for delivery time.
Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).

Note 2. If selecting 3mm lead specifications then the origin point cannot be changed to the non-motor side.

Note 3. The robot is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.594 for details on robot cable.

Note 4. See P.498 for DIN rail mounting bracket.

Note 5. Select this selection when using the gateway function. For details, see P.60.

Note 6. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

Note. Service life is calculated for 600mm stroke models.

Note 1. Positioning repeatability in one direction.

Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

Note. Service life is calculated for 600mm stroke models.

Note 1. Positioning repeatability in one direction.

Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

Note. Service life is calculated for 600mm stroke models.

Note 1. Positioning repeatability in one direction.

Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

Note. Service life is calculated for 600mm stroke models.
F10H  High lead type: Lead 30

Effective stroke 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000
L 305 355 405 455 505 555 605 655 705 755 800 850 900 950 1000 1050 1100 1150 1200
A 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100
M 0 0 1 1 1 1 2 2 2 2 3 3 3 3 4 4 4 4 5
N 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
K 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200
Weight (kg) 6.9 7.7 8.4 8.9 9.2 9.6 10.0 10.3 10.7 11.1 11.5 11.8 12.2 12.6 13.0 13.4

Maximum speed** (mm/sec)

| Lead 30 | 1600 | 1640 | 1680 | 1720 | 1760 | 1800 | 1840 | 1880 | 1920 | 1960 | 2000 | 2040 | 2080 | 2120 | 2160 | 2200 | 2240 | 2280 | 2320 |
| Lead 20 | 1200 | 1240 | 1280 | 1320 | 1360 | 1400 | 1440 | 1480 | 1520 | 1560 | 1600 | 1640 | 1680 | 1720 | 1760 | 1800 | 1840 | 1880 | 1920 |
| Lead 10 | 900  | 940  | 980  | 1020 | 1060 | 1100 | 1140 | 1180 | 1220 | 1260 | 1300 | 1340 | 1380 | 1420 | 1460 | 1500 | 1540 | 1580 | 1620 |

**Speed setting 80% 70% 60% 50% 40% 30% 20% 10%

Note 1. Stop positions determined by the mechanical stoppers at both ends.
Note 2. When installing the unit, washers, etc., cannot be used in the \( \phi 9.5 \) counter bore hole.
Note 3. Minimum bend radius of motor cable is R50.
Note 4. When using this \( \phi 10 \) knock-pin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.
Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
### Ordering method

Select the model when using the gateway function. For details, see P.60.

### Specifying

- **AC servo motor output (W)**: 100
- **Repeatability** (mm): 0.001
- **Maximum speed** (mm/sec): 70
- **Maximum stroke (mm): 150 to 1250
- **Rated thrust (N): 10kg
- **Resolution (Pulse/rotation)**: 16384
- **Position detector**: 4 rows of circular arc grooves × 2 rail
- **Payload (kg): 5kg
- **Maximum speed** (mm/sec): 200
- **Effective stroke**: 200+/-3
- **Max. number of rotation steps**: 104
- **Resolution**: (50mm pitch)
- **Position detector**: Resolver
- **Driver Power-supply voltage**: AC220V
- **Controller**: SR1-X05, RDV-X205
- **Encoder**: 1024 pulses
- **I/O point trace**: Remote command
- **Regenerative**: SR1-X05
- **Controller**: TS-X-490
- **Driver**: Power-supply voltage: 240V

### Specifications

- **AXIS**
  - **Type**:
    - M: 3000VDC
    - N: 2500VDC
    - P: 1500VDC
    - A: 400VDC
    - R: 240VDC
- **Max. speed (m/min)**: 188
- **Lead 30**: 5.5
- **Power-supply voltage**: 240V

### Allowable overhang

- **Horizontal installation**
  - **Stroke** (mm): 150 to 1250
  - **Rated thrust (N): 30kg
- **Wall installation**
  - **Stroke** (mm): 150 to 1250
  - **Rated thrust (N): 30kg
- **Vertical installation**
  - **Stroke** (mm): 150 to 1250
  - **Rated thrust (N): 30kg

### Static loading moment

- **Controller**: SR1-X05, RDV-X205
- **Operation method**: Programming / I/O point trace / Remote command / Operation using RS-232C communication
- **Controller**: TS-X-490
- **Driver**: Power-supply voltage: 240V

Note: When the stroke is longer than 700mm, the resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.

Note: 85+/-4 when the high lead specification (Lead 30) is used.

Note: 172.5+/-4 when the high lead specification (Lead 30) is used.

Note: 30kg when the models used vertically and with 700mm or larger stroke.
Articulated robots

Compact single-axis robots

TRANSERVO

Single-axis robots

FLIP-X

Linear motor single-axis robots

XY-X

SCARA robots

YK-X

Pick & place robots

YP-X

CLEAN CONTROLLER INFORMATION

Linear conveyor modules

LCM100

Allowable overhang

Note 1. Strokes longer than 1050mm are available only for high lead (Lead 30).

Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30).

Note 4. 32.5+/-1 when the high lead specification (Lead 30) is used.

Note 5. 150+/-4 when the high lead specification (Lead 30) is used.

Note 6. When origin is on motor side.

Effective stroke

150 200 250 300 350 400 500 550 600 650 700

150 200 250 300 350 400 500 550 600 650 700

Weigths (N)

240 240 240 240 240 240 240 240 240 240 240

Maximum speed (mm/sec)

9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5

Note 7. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.

Note 8. Strokes longer than 1050mm are special order items. Please contact us for speed setting.
Note 1. The robot cable is standard cable (SL/SL10L1), but can be changed to flexible cable.

Note 2. See P.498 for DIN rail mounting bracket.

Note 3. Select this selection when using the gateway function. For details, see P.60.

[Caution after purchase]
- When changing the origin position, contact us since the adjustment is needed.
- When changing the cable entry location, contact us since necessary parts may vary depending on the cable entry location.
- Do not install the robot with the horizontal installation specifications in a direction other than the horizontal direction.

### Specifications

**GF14XL**

- **Model**
  - GF14XL - S
  - GF14XL - H - 20

- **Ball screw lead (mm)**
  - 20

- **Maximum speed (mm/sec)**
  - 1200

- **Maximum payload (kg)**
  - 45

- **Rated thrust (N)**
  - 170

- **Overall length (mm)**
  - Stroke=561

- **Maximum dimensions of cross section of main unit (mm)**
  - W140 × H91.5

- **Linear guide type**
  - 4 rows of circular arc grooves × 2 rail

- **Position detector**
  - Resolvers (Note 1)

- **Resolution (Pulse/rotation)**
  - 20480

### Allowable overhang

**Note**

- **Horizontal installation**
  - A: 10kg 550 1270 1210
  - B: 20kg 1280 308 308
  - C: 40kg 1620 44 44

- **Note**
  - Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

- **Note**
  - Service life is calculated for 1000mm stroke models.

### Static loading moment

**Note**

- **Effective stroke**
  - (215:When origin is on motor side)

- **Note**
  - It is recommended that the length under head of the hexagonal socket head bolts (M x 1.0) that are used to install the main body with the spot facing hole installation specifications is 20mm or more.

### Controller

**Ordering method**

**GF14XL - S H - 20**

- **Model**
  - GF14XL - S
  - GF14XL - H - 20

- **Cable entry location**
  - R: From the right
  - S: Straight
  - T: From the top
  - U: From the left
  - L: From the left

- **Dimensional notation**
  - B: Basic
  - C: Controller
  - D: Display
  - E: Encoder
  - F: Filter
  - G: Generator
  - H: Head
  - I: Interface
  - J: Junction
  - K: Key
  - L: Latch
  - M: Motor
  - N: Connector
  - O: Output
  - P: Processor
  - Q: Query
  - R: Register
  - S: Switch
  - T: Transformer
  - U: Unit
  - V: Valve
  - W: Work

- **Ordering method**
  - SR1-X 10
  - RDV-X 20

- **Controller Driver**
  - Power-supply voltage:
    - 2: AC200V
    - 20: 600W or less

- **Usable for CE**
  - MY: Non-CE
  - MP: CE
  - MR: CE

- **I/O selection**
  - PB: PROFIBUS
  - PN: PNP
  - CC: CC-Link
  - NP: NPN
  - B: With battery

- **Usable for encoder**
  - EP: EtherNet/IP
  - PT: PROFINET

- **Usable for communication**
  - TS-X110: No I/O board
  - TS-X210: Remote command
  - RDV-X20-R: Pulse train control

### GF14XL

- **Direction of robot cable extraction**
  - (14) 4-M5×8
  - (15) B: 340+0.3
  - (16) 8-M5×1.0 Depth 13

- **Ground terminal (2.6)**

- **Cross-section A-A**

- **Details of B**

- **Details of D**

**Note**

- **Stop positions** are determined by the mechanical stoppers at both ends.
- **When changing the return-to-origin direction**, the adjustment is needed. (The standard is the origin on the motor side.)
- **Secure the cable with a tie-band** 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
- **When changing the origin position**, contact us since the adjustment is needed. (The standard is the origin on the motor side.)
- **Stop positions** are determined by the mechanical stoppers at both ends.
- **Do not install the robot with the horizontal installation specifications in a direction other than the horizontal direction.**

**Note**

- **Static loading moment**
  - **Effective stroke**
    - 750 800 850 900 950 1000 1150 1200 1250 1300 1400 1500 1600 1700 1800 1900 2000
    - L: 313 390 457 521 585 649 713 777 841 905 969 1033 1097 1161 1225 1289 1353
    - A: 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000
    - B: 14 14 14 16 16 16 16 18 18 18 20 20 20 22 22 22 24 24 24 26 26 26 26
    - C: 105 150 200 50 150 150 200 50 100 150 200 50 100 150 200 50 100 150 200 50 100 150
    - Weight (kg)
      - 22.5 23.2 23.8 24.5 25.2 25.9 26.6 27.2 27.9 28.6 29.2 29.9 30.6 31.3 31.9 32.6 33.3 33.9 34.6 35.3 36.0 36.6 37.3 38.0 38.7 39.3

**Controller**

- SR1-X × 516
- TS-X × 490
- RDV-X × 504
Articulated robots

Compact single-axis robots

TRANSERVO

Single-axis robots

FLIP-X

Linear motor

Pick & place robots

YP-X

CLEAN CONTROLLER INFORMATION

Linear conveyor modules

LCM100

Note 1. The model with a lead of 40mm cannot select specifications with brake (vertical specifications).

Note 2. Upper robot cable (U) on models equipped with brake is a special-order item. See P.594 for details on robot cable.

Note 4. See P.498 for DIN rail mounting bracket.

Note 5. When using the gateway function. For details, see P.60.

Ordering method

Model | Lead | Length (mm) | C (metrics) | Single-axis | Non-motor side | Cables for Y, Z, and A-D (mm) | C (selectable) | Cables for M, E, and F (mm) | Cables for U (mm) | Cables for I, J, and K (mm) | Cables for L, H, and G (mm) |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>F17</td>
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</tbody>
</table>

Specifications

AC servo motor output (W) | 400
Repeatability (mm) | 0.01
Deceleration mechanism | Ball screw (class C7)
Ball screw lead (mm) | 40 to 20 to 10
Maximum speed (mm/sec) | 2500 to 1000 to 600
Maximum payload (kg) | Vertical: 40 to 80 to 120
Rated thrust (N) | 169 to 339 to 678
Stroke (mm) | Horizontal: 400 to 1450 to 2000
Overall length (mm) | Vertical: 240 to 970 to 1250
Maximum dimension (mm) | W168 + H110
Linear guide type | 4 types of cross rails (greased * 1)
Position detector | Resolver

Note 1. Repeatability for single-cylinder operation.

Note 2. When the stroke exceeds 800mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustment to lower the speed on the program to prevent resonance.

Note 3. To operate the unit at a speed exceeding 1000mm/sec. (Max. speed), a regeneration unit RG1 is required.

Note 4. Longer than 1250mm stroke can be handled by the high lead specifications (140mm) only.

Note 5. The robot with the high lead specifications (lead 40) needs a regenerative unit.

Note 4. See P.498 for DIN rail mounting bracket.

Note 5. When using the gateway function. For details, see P.60.

Allowable overhang

Horizontal installation (Unit:mm) | A | B | C
---|---|---|---
10kg | 1750 | 2750 | 3950
20kg | 1500 | 2550 | 3750
30kg | 1250 | 2250 | 3450
40kg | 1000 | 1950 | 3150
50kg | 750 | 1450 | 2650
60kg | 500 | 1150 | 2350
70kg | 250 | 950 | 1850
80kg | 0 | 1050 | 2150
90kg | 0 | 1050 | 2150
100kg | 0 | 1050 | 2150

Wall installation (Unit:mm) | A | B | C
---|---|---|---
10kg | 1750 | 2750 | 3950
20kg | 1500 | 2550 | 3750
30kg | 1250 | 2250 | 3450
40kg | 1000 | 1950 | 3150
50kg | 750 | 1450 | 2650
60kg | 500 | 1150 | 2350
70kg | 250 | 950 | 1850
80kg | 0 | 1050 | 2150
90kg | 0 | 1050 | 2150
100kg | 0 | 1050 | 2150

Vertical installation (Unit:mm) | A | B | C
---|---|---|---
10kg | 1750 | 2750 | 3950
20kg | 1500 | 2550 | 3750
30kg | 1250 | 2250 | 3450
40kg | 1000 | 1950 | 3150
50kg | 750 | 1450 | 2650
60kg | 500 | 1150 | 2350
70kg | 250 | 950 | 1850
80kg | 0 | 1050 | 2150
90kg | 0 | 1050 | 2150
100kg | 0 | 1050 | 2150

Static loading moment

Table

Controller

SR1-X 516
TS-X 490
RDV-X 504

Articulated robots

Compact single-axis robots
F17 High lead type: Lead 40

Effective stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
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<th>900</th>
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<th>1100</th>
<th>1200</th>
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<tr>
<td>L</td>
<td>575</td>
<td>625</td>
<td>675</td>
<td>725</td>
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<tr>
<td>A</td>
<td>50</td>
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<td>150</td>
<td>200</td>
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<td>300</td>
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Weight (kg)

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
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<th>600</th>
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</tbody>
</table>

Maximum speed (mm/sec)

| Lead 40 | 2400 | 1920 | 1680 | 1440 | 1200 | 960  | 840  | 720  |

Speed setting

- 80% | 70% | 60% | 50% | 40% | 35% | 30% |

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. When installing the robot, do not use washers inside the robot body.

Note 3. Minimum bend radius of motor cable is R50.

Note 4. When the stroke is longer than 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead screw</th>
<th>Brake</th>
<th>Cable entry location</th>
<th>Stroke (mm)</th>
<th>Thrust (N)</th>
<th>Cylinder type</th>
<th>Grease type</th>
<th>Output (W)</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>F17L-50</td>
<td></td>
<td></td>
<td>No entry</td>
<td>1100 to 2050</td>
<td>220</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Upper robot cable (U) on models equipped with brake is a special-order item. Please consult our sales office for assistance. (External dimensions: overall length + 20 mm)

### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>Repeatability (mm)</th>
<th>Deceleration mechanism</th>
<th>Ball screw lead (mm)</th>
<th>Maximum speed (mm/sec)</th>
<th>Maximum payload (kg)</th>
<th>Stroke (mm)</th>
<th>Overall length (mm)</th>
<th>Maximum dimensions of cross section of main unit (mm)</th>
<th>Cable length (m)</th>
<th>Linear guide type</th>
<th>Resolution (Pulse/Rotation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>0.02</td>
<td>76°-50°</td>
<td>60</td>
<td>2200</td>
<td>50</td>
<td>1100-2050</td>
<td>50</td>
<td>W168 x H1100</td>
<td>Standard: 3.5</td>
<td>4 rows of circular arc groove x 2 rail</td>
<td>16384</td>
</tr>
</tbody>
</table>

### Allowable overhang

- **Horizontal installation**:
  - A: 18±1.7
  - B: 20±1.7

- **Vertical installation**:
  - A: 28±1.7
  - B: 30±1.7

### Static loading moment

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor cable length</th>
<th>Eff. stroke</th>
<th>Max. load (kg)</th>
<th>Max. load (kgf)</th>
<th>Max. load (kgf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>290</td>
<td>26.5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

### Controller

- **SR1-X-516**: 
  - Operation method: 
    - RBR1 (Horizontal): 200V/100W E: CE marking
    - RBR2 (Vertical): 200V/400 to 600W E: CE marking

- **Remote command**:
  - Communication using RS-232C

- **Power supply**: 
  - 200V/400W to 600W E: CE marking

### Notes

1. Positioning repeatability is in one direction.
2. Positioning repeatability is different depending on the Positioner or Controller or Driver.
3. Select this selection when using the gateway function. For details, see P.60.
4. When the stroke is longer than 1200mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program to reduce the maximum speeds shown in the table below.
5. Position detectors (resolvers) are common to incremental and absolute types.

---

**F17L**

- **Approx. 250 (Motor cable length)**: 280±1.7 When origin is on motor side
- **Effective stroke**: 18±1.7 When origin is on non-motor side

---

**Note 1:** Stop positions are determined by the mechanical stops at both ends.
**Note 2:** It is not allowed to use a counter bore washer, etc. when installing the main unit.
**Note 3:** This is the weight of the model without a brake. The weight of the model equipped with a brake is 1.2 kg heavier than this value.
**Note 4:** Make a separate consultation with us regarding robot cable (brake specifications) U extraction. (External dimensions: overall length + 20 mm)
**Note 5:** When the stroke exceeds 1200mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustments to lower the speed on the program using the maximum speed given in the above table as a guide.
### Ordering method

**GF17XL**

<table>
<thead>
<tr>
<th>Model</th>
<th>S</th>
<th>H</th>
<th>20</th>
</tr>
</thead>
</table>

- **Model**
  - STS: Standard
  - TS: Tapered
  - TSX: Tapered with X-axis
  - GSP: Guide Rail

- **Motor**
  - S: Standard
  - H: High Capacity
  - 20: 20mm

**Cable entry**

- Standard (S)
- B: With battery

**Origin position**

- Standard (S)
- Non-motor side (N)

**Frame**

- Standard (S)
- Linear (L)

**Grease**

- Standard (S)
- High Performance (H)
- Clean (C)

**Stroke**

- Standard (S)
- Extended (E)

**Cable entry**

- Standard (S)
- Flexible (F)

**Flag**

- 20mm

**Note 1.**
- The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.
- See P.594 for details on robot cable.

**Note 2.**
- See P.498 for DIN rail mounting bracket.
- Contact us when changing the cable entry location, since necessary parts may vary depending on the origin position.

**Note 3.**
- Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.

**Note 4.**
- When operating the robot at a speed that is a maximum speed of 750 mm/sec or less, the regenerative unit is not needed.
- When operating the robot at a speed exceeding 750 mm/sec, a regeneration unit is required.

**Note 5.**
- The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the spot facing hole installation specifications is 45 mm or more.
- The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.
- It is recommended that the length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.

**Specifications**

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (mm)</td>
<td>+/-0.01</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>90</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td>339</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>850 to 2500 (50mm pitch)</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>8-M8x1.25 Depth 15</td>
</tr>
<tr>
<td>Linear guide length (mm)</td>
<td>4 rows of circular arc grooves x 2 rail</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolvers (Note 1)</td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>20480</td>
</tr>
</tbody>
</table>

**Note 1.** Positioning repeatability in one direction.

**Note 2.** To operate the unit at a speed exceeding 750 mm/sec, a regenerative unit is required.

**Note 3.** Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function, then it will be absolute specifications.

**Note 4.** The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the spot facing hole installation specifications is 45 mm or more.

**Note 5.** The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.

**Effective stroke**

<table>
<thead>
<tr>
<th>L</th>
<th>150</th>
<th>160</th>
<th>175</th>
<th>190</th>
<th>200</th>
<th>210</th>
<th>220</th>
<th>230</th>
<th>240</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>150</td>
<td>160</td>
<td>175</td>
<td>190</td>
<td>200</td>
<td>210</td>
<td>220</td>
<td>230</td>
<td>240</td>
<td>250</td>
</tr>
<tr>
<td>B</td>
<td>150</td>
<td>160</td>
<td>175</td>
<td>190</td>
<td>200</td>
<td>210</td>
<td>220</td>
<td>230</td>
<td>240</td>
<td>250</td>
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<td>C</td>
<td>150</td>
<td>160</td>
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<td>200</td>
<td>210</td>
<td>220</td>
<td>230</td>
<td>240</td>
<td>250</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>194</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Controller**

- **SR1-X**
  - No I/O board
  - None

- **TS-X**
  - No I/O board
  - CE marking

- **RDV-X**
  - No I/O board
  - None

**Note 1.** The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.

**Note 2.** See P.498 for DIN rail mounting bracket.

**Note 3.** Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.

**Note 4.** When operating the robot at a speed that is a maximum speed of 750 mm/sec or less, the regenerative unit is not needed. When operating the robot at a speed exceeding 750 mm/sec, a regeneration unit is required.

**Note 5.** The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the spot facing hole installation specifications is 45 mm or more.

**Note 6.** It is recommended that the length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.

**Note 7.** The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.

**Note 8.** The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.

**Note 9.** The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is 45 mm or more.
F20

High lead: Lead 40
Origin on the non-motor side is selectable

Note. Upper robot cable (U) on models with brakes is a special order item, so please consult our sales office or sales representative for assistance. (External dimensions: overall length + 20 mm)

Ordering method

F20

- Lower motor controller type (inch type)
- Upper motor controller type (inch type)
- Cable entry (inch type)
- Non-motor side (inch type)
- Motor type (inch type)
- Drive type (inch type)
- Encoder type (inch type)
- Encoder type (inch type)
- Encoder type (inch type)
- Encoder type (inch type)
- Controller type (inch type)
- Driver type (inch type)
- Power supply voltage
- Power capacity
- Regenerative unit
- Battery
- Lead C
- Cable length

Specifications

AC servo motor output (W)
Repeatability (mm)
Ball screw lead (mm)
Maximum speed (mm/sec)
Minimum stroke
Overall length
Horizontal stroke
Maximum stroke
Ratios (Rotation/revolution)
Resolution (Microstep/revolution)
Position selection
Note 1. Positioning repeatability in one direction.
Note 2. When the stroke is longer than 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program.
Note 3. To operate the unit at a speed exceeding 1,000mm/sec., a regeneration unit RG1 is required.
Note 4. See P.498 for DIN rail mounting bracket.
Note 5. Acceleration / deceleration is different depending the Positioner or Controller or Driver.
Note 6. When the stroke exceeds 800mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustment to lower the speed on the program using the maximum speed given in the above table as a guide.
Note 7. To operate the unit at a speed exceeding 1,000mm/sec., a regeneration unit RG1 is required.

Allowable overhang

- Note 3. Distance from center of slider to top center of gravity of object being carried at a guide service life of 10,000 km.

Static loading moment

Controller

SR1-X 20
- Operation method
- Programming / I/O point trace / Operation using RS-232C
- TS-X220
- Pulse train control

Note. When using the vertical model, if the unit is operated at a speed exceeding maximum speed of the machine, it has life of 10,000km, acceleration are not recommended.

Note 1. Positioning repeatability in one direction.
Note 2. When the stroke is longer than 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program.
Note 3. To operate the unit at a speed exceeding 1,000mm/sec., a regeneration unit RG1 is required.
Note 4. See P.498 for DIN rail mounting bracket.
Note 5. Acceleration / deceleration is different depending the Positioner or Controller or Driver.
Note 6. When the stroke exceeds 800mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustment to lower the speed on the program using the maximum speed given in the above table as a guide.
Note 7. To operate the unit at a speed exceeding 1,000mm/sec., a regeneration unit RG1 is required.
**F20**

High lead type: Lead 40

---

**Note 1.** Stop positions are determined by the mechanical stoppers at both ends.

**Note 2.** When installing the robot, do not use washers inside the robot body.

**Note 3.** Minimum bend radius of motor cable is R50.

---

**Effective stroke**

<table>
<thead>
<tr>
<th>L</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>450</th>
<th>500</th>
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<th>650</th>
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<th>1250</th>
<th>1300</th>
<th>1350</th>
<th>1400</th>
<th>1450</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>627</td>
<td>677</td>
<td>727</td>
<td>777</td>
<td>827</td>
<td>877</td>
<td>927</td>
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<td>1077</td>
<td>1127</td>
<td>1177</td>
<td>1227</td>
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<td>420</td>
<td>420</td>
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<td>420</td>
</tr>
</tbody>
</table>

**Weight (kg)**

- **Lead 40**
  - 21.2
  - 22.2
  - 23.2
  - 24.3
  - 25.3
  - 26.8
  - 27.7
  - 28.7
  - 29.6
  - 30.5
  - 31.4
  - 32.3
  - 33.2
  - 34.2
  - 35.1
  - 36.0
  - 36.9
  - 37.8
  - 38.7
  - 39.7
  - 40.6
  - 41.5
  - 42.4
  - 43.3
  - 44.2

**Cross-section C-C**

- Use 18 x 1.25 hex socket head bolt with length head bolt with length (under head) of 45mm or more.

---

**Controller**

- SR1-X: 516
- TS-X: 490
- RDV-X: 504
### Ordering method

**F20N - 20**

- **Model**: 20
- **Lead connection**: 20
- **Origin-position change type**: 
  - TRANSERVO
  - FLIP-X
  - Compact
- **Grease type**: 
  - NC: N type
  - GL: GL type
  - CRH: CRH type
  - T: T type
  - F: F type
  - N: N type
  - B/R: B/R type
- **Stroke (mm)**: 
  - 100
- **Single-axis robots**
  - Transformer
  - Power capacity: 1200W
  - Desired transformer: 100W
- **Controller**: 
  - Driver: Power capacity
  - Power-supply voltage: 240V
- **I/O selection**: 
  - Option: None
  - Absolute: None
  - Incremental: None
  - Linear: None
  - Universal: None

### Specifications

- **AC servo motor output (W)**: 400
- **Repeatability (mm)**: +/-0.04
- **Deceleration mechanism**: Ball screw (Class C10)
- **Maximum speed (mm/sec)**: 1000 (1200 for SR1-X, TS-X)
- **Max. payload (kg)**: 80
- **Horizontal installation (mm)**: 
  - 20kg: 3397
  - 40kg: 2795
  - 60kg: 2443
  - 80kg: 2193
- **Vertical installation (mm)**: 
  - 20kg: 54.0
  - 40kg: 18
  - 60kg: 3
  - 80kg: 2
- **Weight (kg)**: 
  - 20kg: 56.2
  - 40kg: 56.2
  - 60kg: 56.2
  - 80kg: 56.2

### Allowable overhang

- **Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.**

### Static loading moment

- **Controller**: 
  - Driver: Power capacity
  - Power-supply voltage: 240V
  - Desired transformer: 100W
- **I/O selection**: 
  - Option: None
  - Absolute: None
  - Incremental: None
  - Linear: None
  - Universal: None

### Note

1. The robot cable is standard cable (3L/SL/10L), but can be changed to flexible cable. See P.594 for details on robot cable.
2. See P.498 for DIN rail mounting bracket.
3. Select this selection when using the gateway function. For details, see P.60.
N15

### Ordering method

**N15-20**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Controller</th>
<th>Driver</th>
<th>Power-supply voltage</th>
<th>Power capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDV-X</td>
<td>20</td>
<td>20</td>
<td>150V</td>
<td>2000W</td>
<td>15 - 2000W</td>
</tr>
<tr>
<td>TSX</td>
<td>20</td>
<td>20</td>
<td>150V</td>
<td>2000W</td>
<td>15 - 2000W</td>
</tr>
<tr>
<td>RBR1</td>
<td>20</td>
<td>150V</td>
<td>2000W</td>
<td>15 - 2000W</td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

- **AC servo motor output (W)**: 400
- **Repeatability (mm)**: ±0.01
- **Deceleration ratio**: Ball screw 8:1, (Class C)
- **Ball screw size**: M12 x 1.0
- **Rated thrust (N)**: 339
- **Maximum speed (mm/sec)**: 1200
- **Maximum payload (kg)**: 50
- **Stroke**: 2-M5 x 0.8 Depth 10
- **Static loading moment**: 2-M5 x 0.8 Depth 10
- **Grease type**: G +/-0.02
- **Stroke**: E x 200
- **Cable length**: 2-M5 x 0.8 Depth 10
- **Usable for CE**: Yes
- **RBR1**: 61
- **Battery**: LCD monitor 20
- **I/O selection**: Note 2
- **Cable length (m)**: Note 2

### Allowable overhang

**Horizontal installation**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kg</td>
<td>3048</td>
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<tr>
<td>15kg</td>
<td>3048</td>
<td>2322</td>
</tr>
<tr>
<td>20kg</td>
<td>3048</td>
<td>2322</td>
</tr>
</tbody>
</table>

**Wall installation**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kg</td>
<td>3048</td>
<td>2322</td>
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<tr>
<td>15kg</td>
<td>3048</td>
<td>2322</td>
</tr>
<tr>
<td>20kg</td>
<td>3048</td>
<td>2322</td>
</tr>
</tbody>
</table>

### Static loading moment

**MY** | **MP** | **MR**
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>691</td>
<td>692</td>
<td>608</td>
</tr>
</tbody>
</table>

### Controller

- **SR1-X**: 516
- **TS-X**: 490
- **RDV-X**: 504

---

**Note 1**: To find information on cable carrier extraction directions see P.173.

**Note 2**: The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.59 for details on robot cable.

**Note 3**: See P.498 for DIN rail mounting bracket.

**Note 4**: Select this selection when using the gateway function. For details, see P.60.

---

**N15: Horizontal installation / Standard Cable carrier specification**

**Effective stroke**

<table>
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</thead>
<tbody>
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<td>15</td>
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<td>15</td>
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</tr>
<tr>
<td>G</td>
<td>820</td>
<td>920</td>
<td>1020</td>
<td>1120</td>
<td>1220</td>
<td>1320</td>
<td>1420</td>
<td>1520</td>
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</tr>
<tr>
<td>Weight (kg)</td>
<td>19</td>
<td>20</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>30</td>
<td>32</td>
<td>33</td>
<td>35</td>
</tr>
</tbody>
</table>

---

**Footnotes**

1. Positioning repeatability in one direction.
2. The maximum speed may not be reached when the moving distance is short.
3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.
4. Select this selection when using the gateway function. For details, see P.60.
5. When using a #10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.
6. Contact us for vertical installation.
**Ordering method**

**N15D**  - 20

**Model**  N15D  - 20

**Use environment**

- Linear motor
- Single-axis robots
- TRANSERVO
- FLIP-X
- Linear motor
- Single-axis robots
- XY-X
- SCARA robots
- YK-X
- Pick & place robots
- YP-X

**Controller**

- CLEAN CONTROLLER INFORMATION
- Linear conveyor modules
- LCM100

**Specifications**

- AC servo motor output (W)
- Repeatability (mm)
- Ball screw lead (mm)
- Maximum speed (mm/sec)
- Maximum payload (kg)
- Rated thrust (N)
- Stroke (mm)
- Overall length (mm)
- Maximum dimensions of cross section of main unit (mm)
- Cable length (m)
- Linear guide type
- Resolution (Pulse/rotation)
- Static loading moment
- Allowable overhang
- Controller

**Controller Operation method**

- Controller Operation method

**N15D: Horizontal installation / Standard Cable carrier specification**

- Effective stroke
- Ground terminal for user (M4)

**Static loading moment**

**Controller**

- Controller

**Note 1.** To find controller selection options for other than the RCX222HP, see the ordering method on each controller page.

**Note 2.** 2 units are required when using SR1-X, TS-X or RDV-X.

**Note 3.**  Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

**Note 4.** Only when you have selected CC, DN or PB for Input/Output selection 1, you can select EN for Input/Output selection 2.

**Note 5.** NPN and Ethernet cannot be selected when using CE marking.

**Note 6.** Stop positions are determined by the mechanical stoppers at both ends.

**Note 7.** When using a Ø10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.

**Note 8.** 2 units are required when using SR1-X, TS-X or RDV-X.

**Note 9.** Contour us for vertical installation.

**Note 10.** Weight of models with no brake. The weight of brake-equipped models is 1 kg heavier than the models with no brake shown in the table.

**Note 11.** Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.
### Ordering method

**N18-20**

- **Model**
- **Ordering method**
- **Specifications**
- **Allowable overhang**
- **Static loading moment**
- **Controller**

#### Specifications

- **AC servo motor output (W)**
- **Repeatability (mm)**
- **Deceleration mechanism**
- **Maximum speed (mm/sec)**
- **Maximum payload (kg)**
- **Rated thrust (N)**
- **Stroke (mm)**
- **Overall length (mm)**
- **Cable length (m)**
- **Linear guide type**
- **Position detector**
- **Resolution (Pulse/rotation)**

#### Cable carrier for users

- **S type**
- **M type**

#### N18: Horizontal installation / Standard Cable carrier specification

- **Effective stroke**
- **Effective stroke L**
- **Effective stroke B**
- **Effective stroke C**
- **Weight**

---

**Note 1.** To find information on cable carrier extraction directions see P.173.
**Note 2.** The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.
**Note 3.** See P.498 for DIN rail mounting bracket.
**Note 4.** Select this selection when using the gateway function. For details, see P.60.

---

**Controller**

- **SR1-X**
- **TS-X**
- **RDV-X**
N18: Horizontal installation / Optional Cable carrier specification

N18: Wall installation / Standard Cable carrier specification

N18: Wall installation / Optional Cable carrier specification
Note 1. To find controller selection options for other than the RCX222HP, see the ordering method on each controller page.
Note 2. 2 units are required when using SR1-X, TS-X or RDV-X.
Note 3. NPN and Ethernet cannot be selected when using C/I marking.
Note 4. Only when you have selected CC, DN or PB for Input/Output selection 1, you can select EN for Input/Output selection 2.
Note 5. If a flexible cable is needed for the SR1-X, TS-X, or RDV-X, then select 3K/5K/10K. On the RCX222HP, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.

### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (mm)</td>
<td>+/-0.01</td>
</tr>
<tr>
<td>Deceleration mechanism</td>
<td>Ball screw Q20 (Class C)</td>
</tr>
<tr>
<td>Maximum speed (mm/sec)</td>
<td>1200</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>80</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td>339</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>250 to 2250 (100 pitch)</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>Stroke-362</td>
</tr>
<tr>
<td>Maximum dimensions of cross section of main unit (mm)</td>
<td>W180 × H115</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>4 rows of circular arc grooves × 2 rail</td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>16384</td>
</tr>
</tbody>
</table>

Note 1: Positioning repeatability in one direction.
Note 2: The maximum speed may not be reached when the moving distance is short.
Note 3: Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

### Allowable overhang

#### Horizontal installation

Note 1: Positioning overhang in one direction.
Note 2: The maximum speed may not be reached when the moving distance is short.
Note 3: Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

### Controller

<table>
<thead>
<tr>
<th>Controller</th>
<th>Operation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCX222HP-R</td>
<td>Programming / I/O point trace / Remote command / Operation using RS-232C communication</td>
</tr>
<tr>
<td>SR1-X20-R</td>
<td>I/O point trace / Remote command</td>
</tr>
<tr>
<td>TDV-X20-R</td>
<td>Pulse train control</td>
</tr>
</tbody>
</table>

Note 1: 2 units are required when using SR1-X, TS-X or RDV-X.

### N18D: Horizontal installation / Standard Cable carrier specification

<table>
<thead>
<tr>
<th>Effective stroke (mm)</th>
<th>250</th>
<th>350</th>
<th>450</th>
<th>550</th>
<th>650</th>
<th>750</th>
<th>850</th>
<th>950</th>
<th>1050</th>
<th>1150</th>
<th>1250</th>
<th>1350</th>
<th>1450</th>
<th>1550</th>
<th>1650</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>862</td>
<td>962</td>
<td>1062</td>
<td>1162</td>
<td>1262</td>
<td>1362</td>
<td>1462</td>
<td>1562</td>
<td>1662</td>
<td>1762</td>
<td>1862</td>
<td>1962</td>
<td>2062</td>
<td>2162</td>
<td>2262</td>
</tr>
<tr>
<td>A</td>
<td>131</td>
<td>131</td>
<td>131</td>
<td>131</td>
<td>131</td>
<td>131</td>
<td>131</td>
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<td>131</td>
<td>131</td>
<td>131</td>
<td>131</td>
<td>131</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
<td>30</td>
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<td>D</td>
<td>650</td>
<td>750</td>
<td>850</td>
<td>950</td>
<td>1050</td>
<td>1150</td>
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<td>1350</td>
<td>1450</td>
<td>1550</td>
<td>1650</td>
<td>1750</td>
<td>1850</td>
<td>1950</td>
<td>2050</td>
</tr>
</tbody>
</table>

Note 5: When using a Ø10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.
Note 6: Contact us for vertical installation.
Note 7: For the robot with more than 2,050 stroke, a holder to prevent the cable carrier from hanging is provided.
Note 8: Weight of models with no brake. The weight of brake-attached models is 1 kg heavier than the models with no brake attached in the table.
Note 9: Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.
N18D: Horizontal installation / Optional Cable carrier specification

N18D: Wall installation / Standard Cable carrier specification

N18D: Wall installation / Optional Cable carrier specification
Ordering method

- **Model**: Motor installation direction
- **AC servo motor output (W)**: 100
- **Repeatability (mm)**: ±0.04
- **Maximum speed (mm/sec)**: 1875
- **Maximum payload (kg)**: 10
- **Overall dimension (mm)**: Stroke+397.5
- **Linear guide type**:
  - **Standard**: 3L
  - **Option**: 5L
- **Position detector**: Resolver
- **Resolution (Pulse/rotation)**: 16384

Specifications

- **AC Servo Motor Output**: 100W
- **Repeatability**: ±0.04mm
- **Maximum Speed**: 1875mm/sec
- **Maximum Payload**: 10kg
- **Overall Dimension**: Stroke+397.5mm
- **Linear Guide Type**: Standard: 3L, Option: 5L
- **Position Detector**: Resolver
- **Resolution (Pulse/Rotation)**: 16384

Motor installation

- **Type**: Leftward at horizontal position
- **RU Type**: Rightward at upper position
- **LU Type**: Leftward at upper position
- **RUU Type**: Rightward at upper position
- **L Type**: Leftward at lower position
- **RU Type**: Rightward at lower position

Allowable overhang

- **Horizontal Installation**: (mm)
  - A: 1800
  - B: 1392
  - C: 1084

- **Wall Installation**: (mm)
  - A: 1144
  - B: 1005
  - C: 734

Static loading moment

- **Controller**: SR1-X
- **Operation Method**: Programming / I/O port trace / Remote command / Operation using RS-232C communication

B10 R type (Motor rightward, horizontal position)

- **Effective Stroke**: 150 to 2550mm (100mm pitch)
- **Positioner**: Standard: 3L, Option: 5L
- **Driver**: Power-supply voltage: DC 100V or less
- **Controller**: SR1-X, RDV-X

Note 1: Stop positions are determined by the mechanical stoppers at both ends.

Note 2: Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the forward direction.)
B10 RU type (Motor rightward, upper position)

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

Grounding terminal

B10 RD type (Motor rightward, lower position)

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the upward direction.)

Grounding terminal

B10 LU type (Motor leftward, upper position)

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

Grounding terminal

Controller SR1-X 516 TS-X 490 RDV-X 504
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor installation direction</th>
<th>Option</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Motor installation direction</th>
<th>Option</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Motor installation direction</th>
<th>Option</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>B14</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### Specifications

- **AC servo motor output (W)**: 100
- **Repeatability** (mm): +/-0.04
- **Maximum speed (mm/sec)**: 1875
- **Maximum payload (kg)**: 20
- **Overall length**: 150 to 350 (100mm pitch)
- **Motor installation**: 
  - Standard: T type, F type, N type, B type, GF type
  - Option: 83, 6, 8, 8, 8, 10, 10, 10, 10, 12, 12, 12, 12, 14, 14, 14, 14, 16, 16, 16, 16, 18, 18, 18, 18, 20, 20, 20, 20, 22

#### Motor installation

The line-up consisting of six models of different motor installation positions as follows.

- **L type**: Leftward at horizontal position
- **R type**: Rightward at horizontal position
- **UL type**: Leftward at upper position
- **UR type**: Rightward at upper position
- **LD type**: Leftward at lower position
- **RD type**: Rightward at lower position

#### Allowable overhang

- **Horizontal installation** (unit: mm)
  - Stroke 240
    - A: 297.5
    - B: 225
    - C: 150
  - Effective stroke: (128)
    - 10.5
  - Effective stroke: (240)
    - 20.5

- **Wall installation** (unit: mm)
  - Stroke: 6M x 1.0 Depth10
    - A: 134
    - B: 105
    - C: 76

#### Static loading moment

- **(unit: N·m)**
  - MY: 226
  - MP: 227
  - MR: 199

#### Controller

- **Controller**: SR1-X
- **Operation method**: Programming / IO point trace / Remote command / Operation using RS-232C communication
- **Controller**: TS-X
  - TS-X015: 100V/100W or less
  - TS-X205: 200V/100W or less
- **Controller**: RDV-X
  - RDV-X05: Pulse train control
  - RDV-X105: 100V/100W or less

Note 1. The robot cable is standard cable (3L, 5L, 10L), but can be changed to flexible cable. See P.594 for details on robot cable.

Note 2. See P.498 for DIN rail mounting bracket.

Note 3. Select this selection when using the gateway function. For details, see P.60.
**B14 RU type (Motor rightward, upper position)**

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

**B14 RD type (Motor rightward, lower position)**

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the upward direction.)

**B14 LU type (Motor leftward, upper position)**

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

---

**Notes:**

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)
### Ordering method

**B14H**

- Motor installation direction
  - 1: Motor rightward, horizontal position
  - 2: Motor leftward, horizontal position
  - 3: Motor rightward, upper position
  - 4: Motor leftward, upper position

- Option
  - 05: Driver
  - 10: Regenerative unit
  - 2: Power-supply voltage

- Controller
  - SR1-X 05
  - TS-X 10
  - RDV-X 2
  - RBR1

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.

Note 2. See P.498 for DIN rail mounting bracket.

### Specifications

- **AC servo motor output (W)**: 200
- **Repeatability (mm)**: \( \pm 0.04 \)
- **Maximum speed (mm/sec)**: 1250 (1875 **Note**)
- **Maximum load (kg)**: 10
- **Motor installation direction**
  - Stroke: 150 to 250 (0mm pitch)
  - Overall length: 475.5
  - Cross-sectional area: W146 × H94

### Motor installation

- The line-up consists of six models of different motor installation positions as follows:

#### B14H

- **R type (Motor rightward, horizontal position)**

### Allowable overhang

**Note**

This figure shows the forward direction. (This figure shows the forward direction.)

### Static loading moment

**Note**

- See P.59 for details on robot cable.
- See P.498 for DIN rail mounting bracket.
- Select this selection when using the gateway function. For details, see P.60.
B14H RU type (Motor rightward, upper position)

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

Grounding terminal

B14H RD type (Motor rightward, lower position)

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the upward direction.)

Grounding terminal

B14H LU type (Motor leftward, upper position)

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

Grounding terminal

Controller SR1-X ▶ 516 TS-X ▶ 490 RDV-X ▶ 504
**Ordering method**

<table>
<thead>
<tr>
<th>Model</th>
<th>Cable entry location</th>
<th>Cable length</th>
<th>Cable type</th>
</tr>
</thead>
<tbody>
<tr>
<td>R5</td>
<td>From the side</td>
<td>3.5m</td>
<td>Flexible</td>
</tr>
</tbody>
</table>

**Specifications**

- AC servo motor output (W) 50
- Repeatability (°) +/-0.0083
- Maximum speed (°/sec) 360
- Maximum allowable moment inertia (kgfm²) 0.12 (1.2)
- Rated torque (Nm) 5.29 (0.54)
- Speed reduction ratio 150
- Rotation range (°) 360
- Cable length (m) Standard: 3.5 / Option: 5,10
- Speed reducer type Harmonic drive
- Position detector Resolvers
- Resolution (Pulse/rotation) 16384

**Maximum allowable moment inertia**

<table>
<thead>
<tr>
<th>Payload parameters W (kg)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum allowable moment inertia J (kgfm²)</td>
<td>0.12</td>
<td>0.24</td>
<td>0.36</td>
<td>0.48</td>
<td>0.60</td>
<td>0.72</td>
<td>0.84</td>
<td>0.96</td>
<td>1.08</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Note: When the weight of a tool or workpiece attached to the shaft R5 is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. For example, enter 4kg if W is 3kg and J is 0.48kgfm² cm². Enter the above mass parameter value for the controller, and optimum acceleration is automatically set based on this value.

**Controller**

- Controller SR1-X 05
- Driver: Power capacity
- Usable for CE
- I/O selection
- Battery regenerative unit
- Grounding terminal (M4)

**R5**

- Weight (kg) 3.0

Note 1: The cable extraction port can be changed.
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Cable entry location</th>
<th>Cable entry location</th>
<th>Cable entry location</th>
<th>Cable entry location</th>
</tr>
</thead>
<tbody>
<tr>
<td>R10</td>
<td>Cable entry location</td>
<td>Cable entry location</td>
<td>Cable entry location</td>
<td>Cable entry location</td>
</tr>
</tbody>
</table>

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.594 for details on robot cable.

Note 2. See P.498 for DIN rail mounting bracket. Note 3. Select this selection when using the gateway function. For details, see P.60.

### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (*)</td>
<td>+/-0.0083</td>
</tr>
<tr>
<td>Maximum speed (°/sec)</td>
<td>350</td>
</tr>
<tr>
<td>Maximum allowable moment inertia (kgm² [kgfcm²])</td>
<td>0.36 [3.71]</td>
</tr>
<tr>
<td>Rated torque (Nm[kgf/m])</td>
<td>10.78 [1.10]</td>
</tr>
<tr>
<td>Speed reduction ratio</td>
<td>1/50</td>
</tr>
<tr>
<td>Rotation range (*)</td>
<td>360</td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard: 3.5 / Optional: 5.10</td>
</tr>
<tr>
<td>Speed reducer type</td>
<td>Harmonic drive</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolvers</td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>16384</td>
</tr>
</tbody>
</table>

### Maximum allowable moment inertia

<table>
<thead>
<tr>
<th>Payload parameters W (kg)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum allowable moment inertia J (kgfcm²)</td>
<td>0.25</td>
<td>0.49</td>
<td>0.74</td>
<td>0.99</td>
<td>1.24</td>
<td>1.48</td>
<td>1.73</td>
<td>1.98</td>
<td>2.23</td>
<td>2.47</td>
</tr>
<tr>
<td>Payload parameters W (kg)</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum allowable moment inertia J (kgfcm²)</td>
<td>2.72</td>
<td>3.97</td>
<td>3.22</td>
<td>4.46</td>
<td>5.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. When the weight of a tool or workpiece attached to the shaft (R10) is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. (For example, enter 4kg if W is 3kg and J is 0.99kgf cm sec².) Enter the above mass parameter value for the controller, and optimum acceleration is automatically set based on this value.

Note. For calculation (equation) of the inertia moment, please refer to P.611.

### Controller

<table>
<thead>
<tr>
<th>Controller</th>
<th>Driver</th>
<th>Power-supply voltage</th>
<th>Power capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR1-X 05</td>
<td>Driver</td>
<td>Power-supply voltage</td>
<td>Power capacity</td>
</tr>
<tr>
<td>TS-X 105</td>
<td>Driver</td>
<td>Power-supply voltage</td>
<td>Power capacity</td>
</tr>
<tr>
<td>RDV-X 205</td>
<td>Driver</td>
<td>Power-supply voltage</td>
<td>Power capacity</td>
</tr>
</tbody>
</table>

Note 1. The cable extraction port can be changed.
**Articulated robots**

- **YA**
- **Compact single-axis robots**
  - **TRANSERVO**
  - **FLIP-X**
- **Linear motor single-axis robots**
  - **PHASER**
- **Cartesian robots**
  - **XY-X**
  - **SCARA**
  - **YK-X**
- **Pick & place robots**
  - **YP-X**

**TRANSMER**

**Controller**

- **SR1-X**
  - Controller: Programmed
  - Operation method: Using RS-232C communication
- **TS-X**
  - Controller: Programmed
  - Operation method: Using RS-232C communication
- **RDV-X**
  - Controller: Programmed
  - Operation method: Using RS-232C communication

**Specifications**

- **AC servo motor output (W)**: 200
- **Repeatability (°)**: ±0.0083
- **Maximum speed (°/sec)**: 360
- **Maximum allowable moment inertia (kgfcm²)**: 1.63 (18.7)
- **Rated torque (Nm(kgfcm))**: 21.49 (2.19)
- **Speed reduction ratio**: 1/50
- **Rotation range (°)**: 360
- **Cable length (m)**: Standard: 3.5 / Option: 5, 10
- **Resolution (Pulse/rotation)**: 16384

**Maximum allowable moment inertia**

- **Payload parameters W (kg)**: 1 2 3 4 5 6 7 8 9 10
- **Maximum allowable moment inertia J (kgfcm²)**: 0.93 1.8 2.8 3.7 4.6 5.6 6.5 7.4 8.4 9.3

Note: When the weight of a tool or workpiece attached to the shaft R20 is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. (For example, enter 4kg if W is 3kg and J is 3.7kgf cm sec².) Enter the above mass parameter value for the controller, and optimum acceleration is automatically set based on this value.

**Note:** For calculation (equation) of the inertia moment, please refer to P.611.

**Ordering method**

**R20**

- **Model**: Cable entry location
  - S: From the side
  - L: From the bottom
  - K: From the top
  - R: From the side
- **Cable length**: 1.5m (Flexible cable)

**TSX**

- **Positioner**: ILX
- **Controller**: Power-supply voltage
  - Power capacity: 220V or less

**SR1-X**

- **Controller**: Power-supply voltage
  - Power capacity: 220V or less

**RDV-X**

- **Controller**: Power-supply voltage
  - Power capacity: 220V or less

**Controller**

- **SR1-X**: Programming / I/O point trace / Remote command / Operation using RS-232C communication
- **TS-X**: Programming / I/O point trace / Remote command / Operation using RS-232C communication
- **RDV-X**: Programming / I/O point trace / Remote command / Operation using RS-232C communication

**Note:** For calculation (equation) of the inertia moment, please refer to P.611.

**Specifications**

- **AC servo motor output (W)**: 200
- **Repeatability (°)**: ±0.0083
- **Maximum speed (°/sec)**: 360
- **Maximum allowable moment inertia (kgfcm²)**: 1.63 (18.7)
- **Rated torque (Nm(kgfcm))**: 21.49 (2.19)
- **Speed reduction ratio**: 1/50
- **Rotation range (°)**: 360
- **Cable length (m)**: Standard: 3.5 / Option: 5, 10
- **Resolution (Pulse/rotation)**: 16384

**Maximum allowable moment inertia**

- **Payload parameters W (kg)**: 1 2 3 4 5 6 7 8 9 10
- **Maximum allowable moment inertia J (kgfcm²)**: 0.93 1.8 2.8 3.7 4.6 5.6 6.5 7.4 8.4 9.3

**Note:** The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.594 for details on robot cable.

**Note 2:** See P.498 for DIN rail mounting bracket.

**Note 3:** Select this selection when using the gateway function. For details, see P.60.

**Specifications**

- **Weight (kg)**: 5.5

**Note 1:** The cable extraction port can be changed.