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

- 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

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

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

- 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.

GF type Long stroke model with high rigidity frame

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

B type Timing belt drive model

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

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<table>
<thead>
<tr>
<th>Maximum speed (mm/sec)</th>
<th>Stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>2500</td>
</tr>
</tbody>
</table>
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.

**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.

**Note 2.** Except for F8 series/F10/B10.

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**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.

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**POINT 2**

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

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.

---

**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>Free slider is added. Various applications, such as rigidity increase or use of two heads are supported.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wide slider</td>
<td>To increase the slider rigidity, the standard slider is processed to the wide slider.</td>
</tr>
<tr>
<td>Specified stroke</td>
<td>A stroke smaller than the minimum stroke may be supported. For details, please consult YAMAHA.</td>
</tr>
<tr>
<td>Lead beyond catalog</td>
<td>The lead may be changed to that not stated in the catalog. For details, please consult YAMAHA.</td>
</tr>
<tr>
<td>Origin non-motor</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>
</tr>
</tbody>
</table>

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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Cost reduction by high durability

Maintenance control cost is reduced

Product service life

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[Table of Horizontal installation, Wall installation, and Vertical installation with dimensions and weights]

**Note.** Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.
<table>
<thead>
<tr>
<th>Type</th>
<th>Size (mm)</th>
<th>Model</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Stroke (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T type</strong></td>
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<tr>
<td>Frame-less structure model</td>
<td>W45 × H53</td>
<td>T4L/T4LH</td>
<td>12</td>
<td>4.5</td>
<td>1.2</td>
<td>720</td>
<td>50 to 400</td>
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<td>6</td>
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<td>2.4</td>
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<td>2</td>
<td>6</td>
<td>7.2</td>
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<td></td>
<td>W55 × H52</td>
<td>T5L/T5LH</td>
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<td>3</td>
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<td>W94 × H98</td>
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<td>2400</td>
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<td>W202 × H120</td>
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<td>1200</td>
<td>1150 to 2050</td>
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<td>20</td>
<td>45</td>
<td>-</td>
<td>1200</td>
<td>750 to 2000</td>
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<td>20</td>
<td>90</td>
<td>-</td>
<td>1200</td>
<td>850 to 2500</td>
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<td><strong>GF type</strong></td>
<td>W145 × H120</td>
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<td>-</td>
<td>1200</td>
<td>500 to 2000</td>
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<td></td>
<td></td>
<td>N15D (Double-carrier)</td>
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<td>250 to 1750</td>
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<tr>
<td></td>
<td>W180 × H115</td>
<td>N18 (Single-carrier)</td>
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<td>-</td>
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<td>N18D (Double-carrier)</td>
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<td><strong>B type</strong></td>
<td>W100 × H81</td>
<td>B10</td>
<td>Belt drive</td>
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<td>-</td>
<td>1875</td>
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<td>20</td>
<td>-</td>
<td>1875</td>
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<td>W146 × H94</td>
<td>B14 (Standard)</td>
<td>Belt drive</td>
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<td>1875</td>
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<td>14H (High thrust)</td>
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<td><strong>R type</strong></td>
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<td>0.12 kgm²</td>
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<td>R10</td>
<td>0.36 kgm²</td>
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<td></td>
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<td>R20</td>
<td>1.83 kgm²</td>
<td>-</td>
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</table>

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

MLTX Note 1
- 1st unit Note 2 - 2nd unit Note 2 - 3rd unit Note 2 -

MLTX 1st unit robot type 2nd unit robot type 3rd unit robot type

MLTX 1st unit robot type 2nd unit robot type 3rd unit robot type

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

Type | Model | Lead (mm) | Stroke (mm) |
--- | --- | --- | --- |
T type Frame-less structure model | T4L/T4LH | 6 | 50 to 400 |
| T5L/T5LH | 8 | 50 to 800 |
| T6L | 12 | 50 to 800 |
| T9 | 20 | 150 to 1050 |
| T9H (High thrust) | 30 | 150 to 1050 |
| F8 | 20 | 150 to 800 |
| F8L | 30 | 150 to 1050 |
| F8LH | 40 | 150 to 1050 |
| F10 | 50 | 150 to 1050 |
| F10H (High thrust) | 60 | 150 to 1050 |
| F14 | 70 | 150 to 1050 |
| F14H (High thrust) | 80 | 150 to 1050 |
| T12L | 90 | 1100 to 2050 |
| T12LH | 110 | 1100 to 2050 |
| T17 | 120 | 200 to 1450 |
| F20 | 40 | 200 to 1250 |
| F20N | 20 | 1150 to 2050 |

F type Model with high rigidity frame |

Type | Model | Lead (mm) | Stroke (mm) |
--- | --- | --- | --- |
T type Frame-less structure model | G15 | 12 | 50 to 1050 |
| G17XL | 12 | 500 to 2500 |
| N type Nut rotation type model | N15 (Single-carrier) | 20 | 1000 to 2000 |
| N15D (Double-carrier) | 20 | 250 to 1750 |
| N18 (Single-carrier) | 50 | 500 to 2500 |
| N18D (Double-carrier) | 50 | 500 to 2500 |
| B type Timing belt drive model | B10 | Belt drive | 150 to 2550 |
| B14 (Standard) | Belt drive | 150 to 3050 |
| B14H (High thrust) | Belt drive |

R type Rotation axis model | R5 | | |
| R10 |
| R20 |

Multi-PHASER

Type | Model | Carrier | Stroke (mm)
--- | --- | --- | --- |
C type Clean room model | C4L | 12 | 50 to 400 |
| C4LH | 6 | 2 |
| C5L | 20 | 50 to 800 |
| C5LH | 12 | 6 |
| C8L | 20 | 150 to 1050 |
| C8LH | 12 | 6 |
| C8LH | 10 | 5 |
| C8LH | 5 |
| C8LH | 5 |
| C10 | 20 | 150 to 1050 |
| C10 | 10 | 5 |
| C10 | 5 |
| C14 | 20 | 150 to 1050 |
| C14 | 10 | 5 |
| C14 | 5 |
| C17L | 50 | 1150 to 2050 |
| C20 | 20 | 250 to 1250 |
| C20 | 10 |

MF type Flat type with core Linear motor specifications |

Type | Model | Carrier | Stroke (mm)
--- | --- | --- | --- |
MF7 | Single | 100 to 4000 |
| MF7D | Double | 100 to 3800 |
| MF15 | Single | 300 to 4000 |
| MF15D | Double | 100 to 3800 |
| MF20 | Single | 200 to 1000 |
| MF20D | Double | 100 to 3800 |
| MF30 | Single | 100 to 1250 |
| MF30D | Double | 100 to 3750 |
| MF75 | Single | 1000 to 4000 |
| MF75D | Double | 680 to 3680 |

MR type Shaft type Linear motor specifications |

Type | Model | Carrier | Stroke (mm)
--- | --- | --- | --- |
MR12 | Single | 50 to 1050 |
| MR12D | Double | 50 to 1050 |
## 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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RCX221</td>
<td>RCX222</td>
<td>RCX240/RCX240S</td>
</tr>
<tr>
<td>Appearance</td>
<td>P526</td>
<td>P526</td>
<td>P534</td>
</tr>
<tr>
<td>Position detection</td>
<td>Incremental</td>
<td>Absolute</td>
<td>Incremental/Absolute</td>
</tr>
<tr>
<td>Control model</td>
<td>FLIP-X and PHASER</td>
<td>FLIP-X</td>
<td>FLIP-X and PHASER can be mixed.</td>
</tr>
<tr>
<td>Maximum number of programs</td>
<td>100 programs</td>
<td>100 programs</td>
<td>100 programs</td>
</tr>
<tr>
<td>Maximum number of points</td>
<td>10,000 points</td>
<td>10,000 points</td>
<td>30,000 points</td>
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<tr>
<td>Number of input/output points</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</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>
</tr>
<tr>
<td>Expansion</td>
<td>General-purpose input 24 points/ general-purpose output 16 points</td>
<td>General-purpose input 24 points/ general-purpose output 16 points</td>
<td>General-purpose input 24 points/ general-purpose output 16 points</td>
</tr>
<tr>
<td>Network option</td>
<td>CC-Link, DeviceNet™, Ethernet, PROFIBUS</td>
<td>CC-Link, DeviceNet™, EtherNet/IP™, Ethernet, PROFIBUS</td>
<td>CC-Link, DeviceNet™, EtherNet/IP™, Ethernet, PROFIBUS, PROFINET</td>
</tr>
</tbody>
</table>
Examples of multi-robot ordering methods

Separate single axes

<Example> F14H and F10 are installed separately.

<table>
<thead>
<tr>
<th>Example</th>
<th>Actual Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLTX - F14H - 20</td>
<td>1st unit</td>
</tr>
<tr>
<td>- F10 - 20</td>
<td>2nd unit</td>
</tr>
<tr>
<td>- 5K-RCX222-N - N1</td>
<td>Controller</td>
</tr>
</tbody>
</table>

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.)

<table>
<thead>
<tr>
<th>Example</th>
<th>Actual Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLTX - T6 - 6</td>
<td>300</td>
</tr>
<tr>
<td>- C6 - 6</td>
<td>300</td>
</tr>
<tr>
<td>- C4H - 6</td>
<td>BK</td>
</tr>
<tr>
<td>- 3K-RCX240S-N</td>
<td>BB</td>
</tr>
</tbody>
</table>

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.

Double-carrier/dual drive (2-axis simultaneous control)

Example of 8-axis control

<Example> Two double-carriers of the MF30 are arranged in parallel and two MF20 installed on the top are moved by the dual-drive. T6 is attached to each tip of the MF20 and the robots are controlled using two controllers.

<table>
<thead>
<tr>
<th>Example</th>
<th>Actual Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLTX - MF300 - H - L</td>
<td>950</td>
</tr>
<tr>
<td>- MF300 - H</td>
<td>1350</td>
</tr>
<tr>
<td>- T6 - 6</td>
<td>BK</td>
</tr>
<tr>
<td>- MF20</td>
<td>H</td>
</tr>
<tr>
<td>- T6 - 6</td>
<td>BK</td>
</tr>
<tr>
<td>- 3K-RCX240-R</td>
<td>N</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Example</th>
<th>Actual Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLTX - C17L - 50</td>
<td>1st unit</td>
</tr>
<tr>
<td>- C14H - 20</td>
<td>2nd unit</td>
</tr>
<tr>
<td>- C14H - 10</td>
<td>BK</td>
</tr>
<tr>
<td>- 3K-RCX240-R</td>
<td>N</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Example</th>
<th>Actual Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLTX - MF20AD</td>
<td>W</td>
</tr>
<tr>
<td>- T6 - 12</td>
<td>BK</td>
</tr>
<tr>
<td>- T6 - 12</td>
<td>BK</td>
</tr>
<tr>
<td>- 3K-RCX240S-N</td>
<td>BB</td>
</tr>
</tbody>
</table>

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.

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.
**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.

**CAUTION**

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.

**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[^1][^2], 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.)
# SINGLE-AXIS ROBOTS

## FLIP-X SERIES

The FLIP-X series includes a variety of single-axis robots, each designed for specific applications. This section provides an overview of the different models available, their specifications, and ordering methods.

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---

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## FLIP-X SPECIFICATION SHEET

<table>
<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>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vertical</td>
<td>Top-speed 50 100 150 200 250 300</td>
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<td></td>
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<td>250</td>
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</tr>
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<td></td>
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</tr>
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<tr>
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<td></td>
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<td>700</td>
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<td>850</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<td>1140 1170 1200 1230 1260 1290 1320 1350 1380 1380 1410 1440 1470</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1000</td>
<td>1140 1170 1200 1230 1260 1290 1320 1350 1380 1380 1410 1440 1470</td>
</tr>
</tbody>
</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 installation ambient temperature**: 0 to 45 °C
<table>
<thead>
<tr>
<th>Type</th>
<th>Motor</th>
<th>Reduction</th>
<th>Speed</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLIP-X</td>
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<td>1100</td>
<td>1150</td>
<td>1200</td>
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<td>1250</td>
<td>1300</td>
<td>1350</td>
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<tr>
<td></td>
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<td>1500 to 1600</td>
<td>1650</td>
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<td>2300</td>
<td>2400 to 2500</td>
<td>2550</td>
<td>2650 to 3050</td>
</tr>
</tbody>
</table>

**Detailed info**

- Articulated robots
- TRANSERVO
- FLIP-X
- XY-X
- PHASER
- YK-X
- YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Linear conveyor modules

---

*Note: Detailed information can be found on pages P.180 to P.197.*

---

*Example page numbers:* P.176, P.177, P.178, P.179, P.186, P.188.
### Mechanical section

#### F type (Except F8 / F8L / F8LH)

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead designation</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL0</td>
<td>10mm</td>
<td>FL0</td>
<td>3.5m</td>
</tr>
<tr>
<td>FL1</td>
<td>20mm</td>
<td>FL1</td>
<td>5m</td>
</tr>
<tr>
<td>FL2</td>
<td>30mm</td>
<td>FL2</td>
<td>7m</td>
</tr>
<tr>
<td>FL3</td>
<td>40mm</td>
<td>FL3</td>
<td>10m</td>
</tr>
<tr>
<td>FL4</td>
<td>50mm</td>
<td>FL4</td>
<td>12m</td>
</tr>
<tr>
<td>FL5</td>
<td>60mm</td>
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<td>15m</td>
</tr>
<tr>
<td>FL6</td>
<td>70mm</td>
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<td>20m</td>
</tr>
<tr>
<td>FL7</td>
<td>80mm</td>
<td>FL7</td>
<td>30m</td>
</tr>
</tbody>
</table>

#### F type (Double carriage)

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead designation</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL0</td>
<td>10mm</td>
<td>FL0</td>
<td>3.5m</td>
</tr>
<tr>
<td>FL1</td>
<td>20mm</td>
<td>FL1</td>
<td>5m</td>
</tr>
<tr>
<td>FL2</td>
<td>30mm</td>
<td>FL2</td>
<td>7m</td>
</tr>
<tr>
<td>FL3</td>
<td>40mm</td>
<td>FL3</td>
<td>10m</td>
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<tr>
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<td>12m</td>
</tr>
<tr>
<td>FL5</td>
<td>60mm</td>
<td>FL5</td>
<td>15m</td>
</tr>
<tr>
<td>FL6</td>
<td>70mm</td>
<td>FL6</td>
<td>20m</td>
</tr>
<tr>
<td>FL7</td>
<td>80mm</td>
<td>FL7</td>
<td>30m</td>
</tr>
</tbody>
</table>

### Controller section

#### Controller > SR1-X

- Usable for CE
- Regenerative unit
- I/O selection
- Battery

---

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**

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

This page describes using the ordering form for mechanical components.

To find detailed controller information see the controller page.

---

**Mechanical section**

#### T type / F type (F8 / F8L / F8LH)

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead designation</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL0</td>
<td>10mm</td>
<td>FL0</td>
<td>3.5m</td>
</tr>
<tr>
<td>FL1</td>
<td>20mm</td>
<td>FL1</td>
<td>5m</td>
</tr>
<tr>
<td>FL2</td>
<td>30mm</td>
<td>FL2</td>
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<tr>
<td>FL3</td>
<td>40mm</td>
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<tr>
<td>FL5</td>
<td>60mm</td>
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<td>15m</td>
</tr>
<tr>
<td>FL6</td>
<td>70mm</td>
<td>FL6</td>
<td>20m</td>
</tr>
<tr>
<td>FL7</td>
<td>80mm</td>
<td>FL7</td>
<td>30m</td>
</tr>
</tbody>
</table>

#### N type (Single carriage)

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead designation</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL0</td>
<td>10mm</td>
<td>FL0</td>
<td>3.5m</td>
</tr>
<tr>
<td>FL1</td>
<td>20mm</td>
<td>FL1</td>
<td>5m</td>
</tr>
<tr>
<td>FL2</td>
<td>30mm</td>
<td>FL2</td>
<td>7m</td>
</tr>
<tr>
<td>FL3</td>
<td>40mm</td>
<td>FL3</td>
<td>10m</td>
</tr>
<tr>
<td>FL4</td>
<td>50mm</td>
<td>FL4</td>
<td>12m</td>
</tr>
<tr>
<td>FL5</td>
<td>60mm</td>
<td>FL5</td>
<td>15m</td>
</tr>
<tr>
<td>FL6</td>
<td>70mm</td>
<td>FL6</td>
<td>20m</td>
</tr>
<tr>
<td>FL7</td>
<td>80mm</td>
<td>FL7</td>
<td>30m</td>
</tr>
</tbody>
</table>

#### B type

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead designation</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL0</td>
<td>10mm</td>
<td>FL0</td>
<td>3.5m</td>
</tr>
<tr>
<td>FL1</td>
<td>20mm</td>
<td>FL1</td>
<td>5m</td>
</tr>
<tr>
<td>FL2</td>
<td>30mm</td>
<td>FL2</td>
<td>7m</td>
</tr>
<tr>
<td>FL3</td>
<td>40mm</td>
<td>FL3</td>
<td>10m</td>
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<tr>
<td>FL4</td>
<td>50mm</td>
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<td>12m</td>
</tr>
<tr>
<td>FL5</td>
<td>60mm</td>
<td>FL5</td>
<td>15m</td>
</tr>
<tr>
<td>FL6</td>
<td>70mm</td>
<td>FL6</td>
<td>20m</td>
</tr>
<tr>
<td>FL7</td>
<td>80mm</td>
<td>FL7</td>
<td>30m</td>
</tr>
</tbody>
</table>

---

**Controller section**

- SR1-X
- TS-X
- RDV-X
- 240V

---

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## Robot ordering method terminology

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

### Select the cable carrier size for the customer wiring.

#### Cable carrier specification

<table>
<thead>
<tr>
<th>S type</th>
<th>Standard cable carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>145</td>
<td>61</td>
</tr>
<tr>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M type</th>
<th>Optional cable carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>57</td>
<td>35</td>
</tr>
<tr>
<td>145</td>
<td>61</td>
</tr>
</tbody>
</table>

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

### Select what direction to install the motor.

- **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.
- **Stroke**: Select the stroke for the robot movement range.

### Cable length

- **Select the robot cable length to use for connecting the robot to the controller.**  
  - 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)
### Ordering method

#### T4L

<table>
<thead>
<tr>
<th>Model</th>
<th>Load designation</th>
<th>Grade</th>
<th>Origin position change</th>
<th>Grease type</th>
<th>Stroke</th>
<th>Cable length (mm)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>12mm</td>
<td>6</td>
<td>Non-motor side</td>
<td>C: Clean</td>
<td>200</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>YK</td>
<td>12mm</td>
<td>6</td>
<td>Non-motor side</td>
<td>C: Clean</td>
<td>200</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>XY</td>
<td>12mm</td>
<td>6</td>
<td>Non-motor side</td>
<td>C: Clean</td>
<td>200</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>SCARA</td>
<td>5mm</td>
<td>6</td>
<td>Non-motor side</td>
<td>C: Clean</td>
<td>200</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>YP</td>
<td>12mm</td>
<td>6</td>
<td>Non-motor side</td>
<td>C: Clean</td>
<td>200</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>YCLEAN</td>
<td>12mm</td>
<td>6</td>
<td>Non-motor side</td>
<td>C: Clean</td>
<td>200</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>CONTROLLER</td>
<td>INFORMATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LCM100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

- **AC servo motor output (W):** 30
- **Repeatability (mm):** ±0.02
- **Deceleration mechanism:** Ball screw (Class 10)
- **Ball screw lead (mm):** 12, 6, 2 (Type T, B/R, GF)
- **Maximum speed (mm/sec):** 720, 360, 120
- **Maximum Horizontal payload (kg):** 4.5, 6, 7.2
- **Rated thrust (N):** 50 to 400 (50mm pitch)
- **Overall dimensions (mm):** Stroke=198
- **Maximum dimensions of cross section of main unit (mm):** Width: 500, Depth: 238
- **Linear guide type:** 2 rows of gothic arch grooves × 1 rail
- **Position detector:** Resolvers
- **Resolution (Pulse/rotation):** 16384

#### Note

1. The robot cable is standard cable (1L/3L/5L/10L), but can be changed to flexible cable. See P.596 for details on robot cable.
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)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2kg</td>
<td>433</td>
<td>87</td>
</tr>
<tr>
<td>4.5kg</td>
<td>223</td>
<td>33</td>
</tr>
<tr>
<td>6kg</td>
<td>340</td>
<td>62</td>
</tr>
<tr>
<td>8kg</td>
<td>458</td>
<td>84</td>
</tr>
<tr>
<td>10kg</td>
<td>575</td>
<td>106</td>
</tr>
</tbody>
</table>

#### Vertical installation (Unit: mm)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2kg</td>
<td>149</td>
<td>54</td>
</tr>
<tr>
<td>4.5kg</td>
<td>70</td>
<td>148</td>
</tr>
<tr>
<td>6kg</td>
<td>107</td>
<td>24</td>
</tr>
<tr>
<td>8kg</td>
<td>135</td>
<td>40</td>
</tr>
<tr>
<td>10kg</td>
<td>163</td>
<td>56</td>
</tr>
</tbody>
</table>

### Static loading moment

<table>
<thead>
<tr>
<th>Left</th>
<th>Remote command</th>
<th>Programming</th>
<th>Pulse train control</th>
</tr>
</thead>
<tbody>
<tr>
<td>MY</td>
<td>15</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>MP</td>
<td>3</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>MR</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### Controller

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

### T4L

- **Approx. 250 (Motor cable length):** 125.5+/-3
- **When origin is on motor side:** 125.5+/-3 (Note 1)
- **Effective stroke:** 87.5
- **Installation hole:** Y (See cross-section B-B)
- **Cross-section B-B:**
  - L: 120.5+/-3 (with brakes)
  - L: 120.5+/-3 (with brakes)
  - L: 120.5+/-3 (with brakes)
  - L: 120.5+/-3 (with brakes)

### ERCD

- **Controller operation:**
  - Remote command / Programming / Pulse train control / DO joint trace / Remote command / Operation using RS-232C communication

### Note

1. Stop positions are determined by the mechanical stoppers at both ends.
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.
4. The under-head length of the hex socket-head bolt (M4x0.7) to be used for the installation work is 12mm or less.
5. External view of T4LH is identical to T4L.
**Ordering method**

<table>
<thead>
<tr>
<th>T4LH</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Pixel</td>
<td>Resolution</td>
<td>(mm/rotation)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>10384</td>
<td></td>
</tr>
<tr>
<td>AC servo motor output (W)</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability (mm)</td>
<td>+/-0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deceleration mechanism</td>
<td>Ball screw Ø8 (Class C10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ball screw lead (mm)</td>
<td>6</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Maximum speed (mm/sec)</td>
<td>720</td>
<td>360</td>
<td>120</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>4.5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td>32</td>
<td>54</td>
<td>153</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>50 to 400 (50mm pitch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>Stroke=198</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical</td>
<td>Stroke=236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear guide type</td>
<td>2mm of ball+linear grooves x 1rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear guide type</td>
<td>Resolvers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>10384</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1. Positioning repeatability in one direction.
Note 2. Position detectors (resolvers) are common to incremental and absolute specifications.
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.

**Specifications**

- **Motor Power-supply voltage / Driver: Power capacity**
  - 05: 100W  or less
  - 2: AC200V 05 : 100W  or less
  - 56: With battery

**Controller**

- **Operation method**
  - SR1-X05: Programming / I/O point trace / Remote command / Operation using RS-232C communication
  - TS-X05: I/O point trace / Remote command
  - RDV-X05: Pulse train control

**Static loading moment**

- **Controller**
  - SR1-X05: Programming / I/O point trace / Remote command / Operation using RS-232C communication
  - TS-X05: I/O point trace / Remote command
  - RDV-X05: Pulse train control

**Allowable overhang Note**

- Distance from center of slider stop to center of gravity of object being carried at a guide service life of 10,000 km.
- Service life is calculated for 300mm stroke models.

**Effective stroke**

- **Effective stroke**
  - 50: 248
  - 100: 296
  - 150: 348
  - 200: 398
  - 250: 448
  - 300: 498
  - 350: 548
  - 400: 598

- **Weight (kg)**
  - Lead 1: 4.5
  - Lead 2: 6
  - Lead 3: 8
  - Lead 6: 10
  - Lead 12: 12
### Specifications

- **Model**: T5L<br>  - **High lead**: Lead 20<br>  - **Controller**: 24V<br>  - **Origin on the non-motor side is selectable**

### Ordering method

- **Model**: T5L<br>  - **Lead designation**: 20mm<br>  - **Repeatability**<br>  - **Deceleration mechanism**: Ball screw<br>  - **Ball screw lead**: 20, 12, 6<br>  - **Maximum speed**<br>  - **Horizontal**: 600, 400, 200, 100, 50, 25, 12, 6<br>  - **Vertical**: 300, 200, 100, 50, 25, 12, 6<br>  - **Maximum load (kg)**<br>  - **Horizontal**: 1.2, 2.4<br>  - **Vertical**: 3, 5, 9<br>  - **Rated current (N)**: 19, 32, 64<br>  - **Stroke (mm)**: 50 to 800 (50mm pitch)<br>  - **Maximum dimensions of cross section of main unit (mm)**: W55×H52<br>  - **Cable length (m)**: Standard: 2.5 / Option: 1.5, 10<br>  - **Linear guide type**: Standard: CB / Option: BA<br>  - **Position detector**: Resolvers

### Allowed overhang

- **Horizontal installation**<br>  - **Effective stroke**: 74.5±3<br>  - **Maximum speed**: 74±2 (Note 1)<br>  - **When origin is on motor side**: 74±3 (Note 1)<br>  - **Effective stroke**: 127±3<br>  - **When origin is on non-motor side**: 127±3 (Note 1)<br>  - **Cross-section B-B**<br>  - **Weight (kg)**: 1.7, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10.0

### Static loading moment

- **Controller operation method**: ERCD
  - **Motor: 24V**
  - **Position detector**: Resolvers
  - **Operation**: Pulse train control / Programming / DO point trace / Operation

### Note

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 under-head length of the hex socket-head bolt (M4×0.7) to be used for the installation work is 15mm or less.

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 at the left.

Note 6. External view of T5L 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.

Note 4. Select this selection when using the gateway function. For details, see P.62

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 below.

Note 6. External view of T5LH is identical to T5L.
**Ordering method**

- **T6L**
  - Lead: 20mm
  - Origin on the non-motor side is selectable
  - Controller: 100V / 200V

**Specifications**

- **AC servo motor output (W)**: 60
- **Repeatability (µm)**: ±0.002
- **Deceleration mechanism**
  - Ball screw: Φ12 (Class C10)
- **Ball screw lead (mm)**: 20, 12
- **Maximum speed (mm/sec) Vertical**: 800, 400
- **Maximum payload (kg) Vertical**: 170
- **Rated thrust (N)**: 51, 85
- **Stroke (mm)**: 50 to 800 (50mm pitch)
- **Overall length (mm)**: 92.5 +/−2 (Note 1)
- **Maximum dimensions of cross section of motor body (mm)**: W65 × H56
- **Cable length (m)**: Approx. 250 (Motor cable length)
- **Linear guide type**: 127.5 +/−2 (with brakes) (Note 1)
- **Resolution (Pulse/rotation)**: 15684

**Allowable overhang**

- **Horizontal installation (Unit: mm)**
  - A: 2kg 319 184 234
  - B: 6kg 25 37 77
  - C: 10kg 64 55
- **Wall installation (Unit: mm)**
  - A: 2kg 234 152 265
  - B: 6kg 114 13 75
  - C: 10kg 30 0 42
- **Vertical installation (Unit: mm)**
  - A: 2kg 54 60 75
  - B: 6kg 73 74
  - C: 10kg 23 26

**Static loading moment**

- **MY**: 35, 40, 50
- **Controller**
  - SR1-X
  - TS-X
  - RDV-X

---

**Note**

1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).
2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.
3. See P.596 for details on robot cable.
4. Select this selection when using the gateway function. For details, see P.62.
5. 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 referring to the maximum speeds shown in the table at the left.
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 motor is standard cable (3L/5L/10L), but can be changed to flexible cable. See P-596 for details on robot cable.

Note 4. See P-500 for DIN rail mounting bracket.

Note 5. Select this selection when using the gateway function. For details, see P-62.

Note 7. Strokes longer than 1050mm are special order items. Please consult us for delivery time.

Note 8. 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 9. Strokes longer than 1050mm are special order items. Please consult us for delivery time.

Note 10. Lead 10·20·30:
- Origin on motor side: Lead 10
- Origin on non-motor side: Lead 20
- High lead: Lead 30

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

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.
### T9H
- **High lead: Lead 30**
- **Origin on the non-motor side is selectable: Lead 20-30**

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.

#### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
<th>1000</th>
<th>1100</th>
<th>1200</th>
<th>1300</th>
<th>1400</th>
<th>1500</th>
<th>1600</th>
<th>1700</th>
<th>1800</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>423</td>
<td>473</td>
<td>523</td>
<td>623</td>
<td>673</td>
<td>723</td>
<td>773</td>
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<td>1073</td>
<td>1123</td>
<td>1173</td>
<td>1223</td>
<td>1273</td>
<td>1323</td>
</tr>
<tr>
<td>A</td>
<td>64</td>
<td>54</td>
<td>44</td>
<td>34</td>
<td>44</td>
<td>54</td>
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<td>124</td>
<td>134</td>
<td>144</td>
<td>154</td>
<td>164</td>
<td>174</td>
</tr>
</tbody>
</table>

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

Note 2. When 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 (3/5/7/13L), but can be changed to flexible cable. See P.596 for details on robot cable.

Note 4. See P.500 for DIN rail mounting bracket.

Note 5. Select this selection when using the gateway function. For details, see P.62.

### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (mm)</td>
<td>0.01</td>
</tr>
<tr>
<td>Deceleration mechanism</td>
<td>Ball screw (class C7)</td>
</tr>
<tr>
<td>Ball screw lead (mm)</td>
<td>30</td>
</tr>
<tr>
<td>Maximum speed (mm/sec)</td>
<td>1000</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>150 to 1250 (50mm pitch)</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>202</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>Linear guide type</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolvers</td>
</tr>
</tbody>
</table>

### Allowable overhang

#### Horizontal installation

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Effective stroke (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.8</td>
<td>5.8</td>
</tr>
<tr>
<td>6.2</td>
<td>6.2</td>
</tr>
<tr>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>6.6</td>
<td>6.6</td>
</tr>
<tr>
<td>7.3</td>
<td>7.3</td>
</tr>
<tr>
<td>7.7</td>
<td>7.7</td>
</tr>
<tr>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>8.4</td>
<td>8.4</td>
</tr>
<tr>
<td>8.8</td>
<td>8.8</td>
</tr>
<tr>
<td>9.1</td>
<td>9.1</td>
</tr>
<tr>
<td>9.5</td>
<td>9.5</td>
</tr>
<tr>
<td>9.9</td>
<td>9.9</td>
</tr>
</tbody>
</table>

Note. 1.2.3.4. The speeds are determined by the mechanical stoppers at both ends.

#### Vertical installation

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Effective stroke (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kg</td>
<td>140</td>
</tr>
<tr>
<td>20kg</td>
<td>41</td>
</tr>
<tr>
<td>30kg</td>
<td>24</td>
</tr>
<tr>
<td>40kg</td>
<td>0</td>
</tr>
<tr>
<td>50kg</td>
<td>0</td>
</tr>
</tbody>
</table>

### T9H

- Approx. 250: (Motor cable length) T9H-X94: We sign is on the motor side
- Approx. 250: (Effective stroke) T9H-X94: We sign is on the motor side
- Approx. 250: (Effective stroke) T9H-X94: We sign is on the motor side
- Approx. 250: (Effective stroke) T9H-X94: We sign is on the motor side
- Approx. 250: (Effective stroke) T9H-X94: We sign is on the motor side

#### Note

- When installing the unit, washers, etc., cannot be used in the 11 counter bore hole.
- Minimum bend radius of motor cable is R5.
- Lead 20 kg: When weight of models with brake. The weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.
- Strokes longer than 1050mm are special order items. Please consult us for speed setting.

---

**Controller**

- SR1-X  
- TS-X  
- RDV-X

---

**Static loading moment**

- Note. When using the unit vertically, a regen eration unit is required.
### Ordering method

#### F8
- **Model**: SR1-X
- **Controller**: TSX
- **Driver**: RDV-X

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

#### Origin on the non-motor side is selectable
- **Controller**: SR1-X
- **Driver**: RDV-X
- **Power-supply voltage**: AC200V

#### Compact single-axis robots
- **Controller**: TRANSERVO
- **Driver**: FLIP-X

#### Linear motor single-axis robots
- **Controller**: TRANSERVO
- **Driver**: FLIP-X

#### SCARA robots
- **Controller**: TRANSERVO
- **Driver**: FLIP-X

#### Pick & place robots
- **Controller**: TRANSERVO
- **Driver**: FLIP-X

#### Linear conveyor modules
- **Controller**: TRANSERVO
- **Driver**: FLIP-X

---

### Specifications

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

#### Repeatability (mm)
- **0.02**

#### Maximum stroke (mm)
- **1200**

#### Maximum load (kg)
- **8**

#### Rated thrust (N)
- **84**

#### LCM Module
- **Usable for CE**
- **I/O selection**
- **B**

#### Lead I/O selection
- **78**

#### Regenerative unit
- **50**

#### Battery
- **100**

#### Note 2 (mm/sec)
- **205**

#### Effective stroke (mm/revolution)
- **80**

#### Power capacity
- **70**

#### Weight
- **6kg**

#### Cross-section E-E

#### Controller Operation method
- **SR1-X05**
- **RCX221/222**
- **SR1-X05**
- **RCX240/340**

#### Driver Operation method
- **TSX**
- **RVC-X205**

#### Programming / I/O point trace / Remote command / Operation using RS-232C communication

#### Controller
- **SR1-X05**
- **RCX221/222**
- **RCX240/340**

#### Driver
- **RDV-X205-RBR1**

### Allowable overhang

#### Horizontal installation

<table>
<thead>
<tr>
<th>Model</th>
<th>Width (mm)</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR1-X</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>TSX</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>RDV-X</td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

#### Vertical installation

<table>
<thead>
<tr>
<th>Model</th>
<th>Width (mm)</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR1-X</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>TSX</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>RDV-X</td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Static loading moment

<table>
<thead>
<tr>
<th>Type</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR1-X05</td>
<td>105</td>
<td>103</td>
<td>100</td>
</tr>
<tr>
<td>TSX220</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

### Controller
- **SR1-X05**
- **RCX221/222**
- **RCX240/340**

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

#### SR1-X05
- **TS-X205**
- **RDV-X205-RBR1**

### Note
- **1.** Positioning repeatability in one direction.
- **2.** When the stroke is longer than 550mm, resonances 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.** Minimum bend radius of motor cable is R50.
- **4.** When using RHS-10 knock pin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.
- **5.** 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.

---

### Diagrams

- **Cross-section E-E**
- **Grounding terminal (M)**

---

### Notes

1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).
2. The robot cable is standard cable (3L5L/10L), but can be changed to flexible cable. See P.596 for details on robot cable.
3. See P.500 for DIN rail mounting bracket.
4. Select this selection when using the gateway function. For details, see P.62.
### F8L Specifications

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

**Repeatability** (%): 0.01

**Deceleration mechanism**: Ball screw (C7)

**Ball screw lead (mm)**: 83, 20, 10, 5

**Maximum speed (mm/sec)**: 150, 100, 80, 70, 60, 50, 40, 30, 20, 15, 12, 10, 8, 5

**Stroke (mm)**: 150 to 1050 (50mm pitch)

**Overall length (mm)**: 150 to 1050 (50mm pitch)

**Rated torque (N.m)**: 78, 56, 40, 38, 35, 30, 25, 20, 15, 10, 8, 5

**Linear guide type**: W80 × H65 section of main unit (mm)

**Resolution (Pulse/rotation)**: 10: 10mm 3K/5K/10K

**Grease type**: 30K/50K/10K

**Effective stroke (mm)**: 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1050

**Weight (kg)**: 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115

**Lead (mm)**: 20, 25, 30

**Speed setting**: 85%, 75%, 65%, 55%, 45%, 40%

---

### Ordering method

**Controller**: SR1-X 518, TS-X 492, RDV-X 506

**High lead: Lead 30**

**Origin on the non-motor side is selectable**

---

### Controller Operation method

**Programmer**: SR1-X 506

**Remote command**: RCX22/122

**Communication**: RS-232C

**Remote command**: TS-X 205

**Pulse train control**: RDV-X 506

---

### Static loading moment

**Controller**: SR1-X 506

**Power capacity**: DC100V or less

**Weight**: 50kg

**Dimensions (mm)**: L: 70, 50, 40, 30, 20, 10

**Weight (kg)**: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

---

### Allowable overhang

**Horizontal installation (max. mm)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Vertical installation (max. mm)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

---

### Linear conveyor modules

**Model**: LCM100

**Static loading moment (N·m)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

---

### Ball screw

**Class**: C7

**Deceleration mechanism**: Ball screw (C7)

**Lead (mm)**: 20, 10, 5

**Stroke (mm)**: 150 to 1050 (50mm pitch)

---

### Note

1. Positioning repeatability in one direction.
2. The stroke may vary depending on the operating conditions (critical speed).
3. Position detection (position) is common to incremental and absolute specifications. If the controller has a backup function, then it will also be absolute specifications.

---

### Note 5

1. Stop positions are determined by the mechanical stops at both ends.
2. When installing the robot, do not leave washers inside the robot body.
3. When using the adapter hole to position the robot body, the knob must not protrude more than 10mm inside the robot body.

---

### Note 6

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.
## F8L High lead type: Lead 30

### Cross-section E-E

<table>
<thead>
<tr>
<th>Effective stroke</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>
<th>1050</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>450</td>
<td>500</td>
<td>550</td>
<td>600</td>
<td>650</td>
<td>700</td>
<td>750</td>
<td>800</td>
<td>850</td>
<td>900</td>
<td>950</td>
<td>1000</td>
<td>1050</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</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>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>B</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>
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<tr>
<td>C</td>
<td>8</td>
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<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
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<td>18</td>
<td>20</td>
<td>20</td>
<td>22</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>D</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>
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<td>890</td>
<td>940</td>
<td>990</td>
<td>1040</td>
<td>1090</td>
<td>1140</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>3.9</td>
<td>4.2</td>
<td>4.5</td>
<td>4.8</td>
<td>5.1</td>
<td>5.4</td>
<td>5.7</td>
<td>6.1</td>
<td>6.4</td>
<td>6.7</td>
<td>7.0</td>
<td>7.3</td>
<td>7.8</td>
<td>8.2</td>
<td>8.6</td>
<td>9.0</td>
<td>9.5</td>
<td>10.0</td>
<td>10.5</td>
</tr>
<tr>
<td>Minimum speed (mm/sec)</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>900</td>
<td>1000</td>
<td>1100</td>
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<td>1500</td>
<td>1600</td>
<td>1700</td>
<td>1800</td>
<td>1900</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Speed setting</td>
<td>–</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
</tr>
</tbody>
</table>

Note 1. 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.

### Note 1
- Stop positions are determined by the mechanical stoppers at both ends.
- When installing the robot, do not use washers inside the robot body.
- Minimum bend radius of motor cable is R50.
- When using this ϕ10 knock-pin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor</th>
<th>Controller</th>
<th>Linear unit</th>
<th>Linear conveyor modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>F8LH</td>
<td></td>
<td>SR1-X</td>
<td>RDV-X</td>
<td>LCM100</td>
</tr>
</tbody>
</table>

**Note 1.** The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.596 for details on robot cable.

**Note 2.** See P.500 for DIN rail mounting bracket.

**Note 3.** Select this selection when using the gantry function. For details, see P.62.

### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (mm)</td>
<td>0.01</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>150 to 1050 (50mm pitch)</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>Horizontal: 368</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>Vertical: 80</td>
</tr>
<tr>
<td>Rated current (A)</td>
<td>Horizontal: 8.4</td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard: 3.5 / Optional: 5.10</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>4 rows of circular arc grooves × 1 rail</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolvers</td>
</tr>
<tr>
<td>Resolution (Pulse/revolution)</td>
<td>16384</td>
</tr>
</tbody>
</table>

**Note 1.** Positioning repeatability is 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.

### Allowable overhang

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

#### Wall installation (Unit: mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kg</td>
<td>147</td>
<td>215</td>
<td>515</td>
</tr>
<tr>
<td>20kg</td>
<td>53</td>
<td>97</td>
<td>295</td>
</tr>
<tr>
<td>30kg</td>
<td>96</td>
<td>112</td>
<td>305</td>
</tr>
<tr>
<td>60kg</td>
<td>96</td>
<td>112</td>
<td>305</td>
</tr>
</tbody>
</table>

### Static loading moment

<table>
<thead>
<tr>
<th>Controller</th>
<th>SR1-X05</th>
<th>TS-X210</th>
<th>RDV-X205</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation method</td>
<td>Programming / I/O point trace / Remote command using RS-232C communication</td>
<td>Programming / I/O point trace / Remote command using RS-232C communication</td>
<td>Pulse train control</td>
</tr>
</tbody>
</table>

**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 50R.

**Note 4.** When using this Ø10 knockpin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.

---

**F8LH**

- **Origin on the non-motor side is selectable**

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

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

Note 3. The robot cable is standard cable (SL/SL/SL/SL) but can be changed to flexible cable. See P.596 for details on robot cable.

Note 4. See P.500 for DIN rail mounting bracket.

Note 5. Select this selection when using the gateway function. For details, see P.62.

**F10**

- **High lead: Lead 30**

- **Origin on the non-motor side is selectable: Lead 10-20-30**

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.

### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F10</td>
<td>10</td>
<td>Single-axis robots</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Single-axis robots</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Single-axis robots</td>
</tr>
</tbody>
</table>

### Specifications

- **AC servo motor output (W):** 100
- **Repeatability:** (mm)
  - Horizontal: 0.01
  - Vertical: 0.005

### Allowable overhang Note

- **Effective stroke**:
  - A: 20 mm, 50 mm, 100 mm, 200 mm
  - B: 30 mm, 50 mm, 100 mm, 200 mm
  - C: 20 mm

### Static loading moment

- **Controller Operation method**:
  - TS-X: Series 205-05 / Remote command

- **Effective stroke**:
  - When origin is on motor side
    - A: 150 mm, 200 mm, 350 mm, 500 mm
    - B: 150 mm, 200 mm, 350 mm, 500 mm
    - C: 150 mm

- **Weight (kg)**:
  - A: 4 kg, 6 kg, 8 kg, 10 kg
  - B: 4 kg, 6 kg, 8 kg, 10 kg
  - C: 4 kg, 6 kg, 8 kg, 10 kg

- **Maximum speed (mm/sec)**:
  - Lead 30:
    - 1800
  - Lead 20:
    - 1200
  - Lead 10:
    - 600
  - Lead 5:
    - 300

- **Cable length (m)**:
  - A: 30 m, 20 m, 10 m, 5 m
  - B: 30 m, 20 m, 10 m, 5 m
  - C: 30 m, 20 m, 10 m, 5 m

Note 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.

Note 10. Strokes longer than 1050mm are special order items. Please consult us for speed setting.
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 robot cable is standard cable (3L:SL/10L), but can be changed to flexible cable. See P.596 for details on robot cable.

Note 4. See P.500 for DIN rail mounting bracket.

Note 5. Select this selection when using the gateway function. For details, see P.62.

### Specifications

- **AC servo motor output (W)**: 200
- **Repeatability (mm)**: ±0.01
- **Deceleration (mm/s²)**: Ball screw: Class C7
- **Ball screw lead (mm)**: 30 20 10 5
- **Maximum speed (mm/min)**: 150 300 600 1000
- **Maximum payload (kg)**: 25 40 60 100
- **Rated Thrust (N)**: 113 190 348 683
- **Stroke (mm)**: 150 to 1000
- **Overall length (mm)**: Vertical 748 891 1031 1174
- **Position detector (Resolution)**: Resolvers

### Allowable overhang

#### Horizontal installation

<table>
<thead>
<tr>
<th>Overhang</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>A+B+C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>120</td>
<td>360</td>
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<tr>
<td>50</td>
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<td>30</td>
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<td>165</td>
<td>495</td>
</tr>
</tbody>
</table>

#### Wall installation

<table>
<thead>
<tr>
<th>Overhang</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>A+B+C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>360</td>
</tr>
<tr>
<td>50</td>
<td>205</td>
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</tr>
<tr>
<td>30</td>
<td>165</td>
<td>165</td>
<td>165</td>
<td>495</td>
</tr>
</tbody>
</table>

### Static loading moment

<table>
<thead>
<tr>
<th>Model</th>
<th>MR</th>
<th>MP</th>
<th>MY</th>
</tr>
</thead>
<tbody>
<tr>
<td>348</td>
<td>348</td>
<td>160</td>
<td></td>
</tr>
</tbody>
</table>

### Controller

- **SR1-X**
  - X10: 10mm U:100mm Lead 30: 200W
  - Remote command / Operation using RS-232C

- **TS-X**
  - X10: 10mm U:100mm Lead 30: 200W

- **RDV-X**
  - X10: 10mm U:100mm Lead 30: 200W
**F10H**  High lead type: Lead 30

**Effective stroke**

| L | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| A | 50 | 50 | 100 | 100 | 150 | 150 | 200 | 200 | 250 | 250 | 300 | 300 | 350 | 350 | 400 | 400 | 450 | 450 |
| M | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 |
| N | 8 | 8 | 8 | 8 | 8 | 8 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 14 | 14 | 14 | 14 |
| K | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |

**Maximum speed** (mm/sec)

| Lead 30 | 150 | 1800 | 1380 | 1220 | 1060 | 900 | 720 | 630 |
| Lead 20 | 1200 | 1440 | 1200 | 1060 | 900 | 720 | 630 |
| Lead 10 | 800 | 1800 | 1560 | 1320 | 1080 | 900 | 720 |
| Lead 5  | 500 | 2400 | 2160 | 1920 | 1680 |

**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.

---

**Controller Information**

<table>
<thead>
<tr>
<th>SR1-X</th>
<th>TS-X</th>
<th>RDV-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>518</td>
<td>492</td>
<td>506</td>
</tr>
</tbody>
</table>

---

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

Note 2. The high lead cable is standard cable (3L/5L/10L), but can be changed to flexible cable. Please P.566 for details on robot cable. Note 3. See P.500 for DIN rail mounting bracket. Note 4. Select this selection when using the gateway function. For details, see P.62.

### Specifications

- **AC servo motor output (W):** 100
- **Repeatability (mm):** 0.01
- **Deceleration ratio:** 1000 to 100
- **Electrical (V):** 200
- **Maximum Stroke:** 16384
- **Position detector:** Resolvers
- **Resistors:** 85+/-3 (Note 3): When origin is on non-motor side
- **Usable for CE:** I/O selection
- **I/O point trace:** A
- **Battery:** 2
- **Cable entry:** B
- **Grease type:** 85+/-3 (Note 3): When origin is on non-motor side
- **Origin position change:** No entry: Standard
- **Non-motor side:** None
- **Ball screw (Class):** C7
- **Load allowance (N):** 50
- **FRP:** 1215
- **Maximum load (kg):** 15
- **Payload (kg):** 4
- **Rated thrust (N):** 100
- **Maximum Stroke:** 1250
- **Overall length (mm):** 995
- **Horizontal installation (mm):** 50
- **Vertical installation (mm):** 50
- **Horizontal installation (mm):** 50
- **Vertical installation (mm):** 50
- **Maximum dimensions of cross section of main unit (mm):** 175 x 175
- **Linear guide type:** Standard
- **Position detector:** Resolvers
- **Position selection:** Absolute
- **Cable entry:** B
- **Cable selection:** A
- **Maximum speed (mm/sec):** 1000
- **Speed setting:** 80%
- **payload (kg):** 50

---

### Static loading moment

- **Controller:** SR1-X 518
- **Motor:** TS-X 492
- **Driver:** RDV-X 506

---

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

---

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

**Note 2:** 170+ when the high lead specification (Lead 30) is used.

**Note 3:** Minimum bend radius of motor cable is 20mm. Use M6 x 1.0 hex socket bolt with length (under head) of 20mm or more.

**Note 4:** 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 5:** Weight of models with no brake. The weight of brake-attached models is 0.7 kg heavier than the models with no brake shown in the table.

**Note 6:** Weight of models with no brake. The weight of brake-attached models is 0.7 kg heavier than the models with no brake shown in the table.

**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:** Minimum bend radius of motor cable is 20mm. Use M6 x 1.0 hex socket bolt with length (under head) of 20mm or more.

---

**Note:** Distances from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.
### Ordering method

**F14H**

- **Model**: Articulated robots
- **Origin on the non-motor side is selectable**: Lead 10-20-30

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 robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.56 for details on robot cable.

Note 4. See P.500 for DIN rail mounting bracket.

Note 5. Select this selection when using the gateway function. For details, see P.62.

### Specifications

- **AC servo motor output (W)**: 200
- **Repeatability (mm)**: 0.1
- **Deceleration time (sec)**: 20
- **Ball screw (lead mm)**: 30
- **Maximum speed (mm/sec)**: 1500
- **Maximum load (kg)**: Vertical 100 Horizontal 60
- **Rated thrust (N)**: 113
- **Linear guide type**: Standard 2.5-600 3.1-863
- **Position detector**: Resolvers
- **Resolution (Pulse/rotation)**: 1224

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 operating 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 specifications (Lead 30). (Special order items)

Note 4. Positional selection (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**

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead 10</th>
<th>Lead 20</th>
<th>Lead 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kg</td>
<td>1522</td>
<td>1637</td>
<td>1763</td>
</tr>
<tr>
<td>25kg</td>
<td>1647</td>
<td>1818</td>
<td>2000</td>
</tr>
<tr>
<td>50kg</td>
<td>2000</td>
<td>2360</td>
<td>2600</td>
</tr>
</tbody>
</table>

**Wall installation**

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead 10</th>
<th>Lead 20</th>
<th>Lead 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kg</td>
<td>1164</td>
<td>1296</td>
<td>1430</td>
</tr>
<tr>
<td>25kg</td>
<td>1375</td>
<td>1555</td>
<td>1755</td>
</tr>
<tr>
<td>50kg</td>
<td>1750</td>
<td>2000</td>
<td>2300</td>
</tr>
</tbody>
</table>

### Static loading moment

**Controller**

- **SR1-X10**: 100W
- **TS-X10**: 100W
- **RDV-X**: 100W

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

### Controller (Operation method)

- **Programming / 10 point trace / Remote command**
- **RS-232C communication**
- **EtherCAT**
- **PROFINET**
- **CC-Link**
- **No I/O board**

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

### Effective stroke

- **Effective stroke (mm/sec)**: 150 200 250 300 350 400 450 500 550 600 650 700
- **Linear motor spec**: 3-1000

### Weight (kg)

- **Weight (kg)**: 20 25 30 35 40 45 50 55 60 65 70

### Note

- **Note 1**: C-M5 x 0.8 Depth 7
- **Note 2**: A-M5 x 1.0 Depth10
- **Note 3**: Note 32.5 +/-1 when the high lead specification (Lead 30) is used.
- **Note 4**: Minimum bend radius of motor cable is R50.
- **Note 5**: Weight of models with no brake. The weight of brake-attached models is 1.2 kg heavier than the models with no brake shown in the table.
- **Note 6**: Weight of models with no brake. The weight of brake-attached models is 0.7 kg heavier than the models with no brake shown in the table.
- **Note 7**: Weight of models with no brake. The weight of brake-attached models is 0.7 kg heavier than the models with no brake shown in the table.
- **Note 8**: Strokes longer than 1050mm are special order items. Please contact us for pricing information.
### Ordering method

**GF14XL**

- **Model:** S  H - 20
- **Position:** 200
- **Tolerance:** +/-0.01
- **Frame:** Standard (T type)
- **Graze:** Standard (3.5 mm)
- **Cable length:** 500 mm
- **Lead:** Resolvers
- **Positioning:** 20
- **Resolution:** 20 800

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

**Specifications**

- **AC servo motor output (W):** 200
- **Rated speed:** 170
- **Rated current:** 120
- **Maximum dimensions of cross section of main unit (mm):** W140×H91.5
- **Maximum dimensions (mm):** Standard: 3.5 / Option: 5,10
- **Linear guide type:** 4 rows of circular arc grooves x 2 rail
- **Position detector:** Resolvers

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

- **Direction of robot cable extraction**

**Allowable overhang**

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

**Static loading moment**

**Controller**

- **Model:** SR-X10
- **Function:** Remote command
- **Communication:** RS-232C

**Details of B**

**Details of D**

**Graph:**

- **GF14XL**
- **SR-X10**
- **TS-X**
- **RDV-X**
- **RBR1**

**Note:** Various specifications can be selected.

**Note:** Various specifications can be selected.

**Note:** Various specifications can be selected.

**Note:** Various specifications can be selected.
Note. Upper robot cable (U) on models equipped with brake is a special order item, so please consult our sales office or sales representative for assistance. (External dimensions: overall length + 20 mm)

### Ordering method

- **Model**: F17
- **Lead**: 40mm
- **Deceleration mechanism**: Ball screw (Class 7)
- **Maximum speed**: 2400 (1000/1200/1600)
- **Rated thrust (N)**: 169
- **Stroke (mm)**: 200 to 1450 (1000/1200/1600 mm/finish)
- **Rated linear guide type**: Linear motor (180mm/250mm/360mm)
- **Position detection**: Resolvers

#### Specifications

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability</td>
<td>(mm)</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>Vertical</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>7</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>Horizontal</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>Vertical</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolvers</td>
</tr>
</tbody>
</table>

#### Allowable overhang

- **Horizontal installation**: (Unit: mm) Wall installation 620 Vertical installation 1410
- **Vertical installation**: (Unit: mm) Wall installation 620 Vertical installation 1410

#### Static loading moment

- **Effective stroke**: 200 250 300 350 400 450 500 550 600 700 750 800 900 1000 1050 1100 1150 1200 1250
- **Maximum speed**: Lead 20: 1000/1200 mm/sec
- **Weight (kg)**: 14.5
- **Maximum speed**: 1000/1200 mm/sec
F17 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.

Effective stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>L</th>
<th>M</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>50</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
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<td>200</td>
<td>300</td>
</tr>
<tr>
<td>300</td>
<td>150</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>400</td>
<td>200</td>
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<td>600</td>
</tr>
<tr>
<td>500</td>
<td>300</td>
<td>500</td>
<td>750</td>
</tr>
<tr>
<td>600</td>
<td>400</td>
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</tr>
<tr>
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<td>1800</td>
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<td>1950</td>
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<td>1400</td>
<td>2100</td>
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<td>1500</td>
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</tr>
<tr>
<td>1600</td>
<td>1400</td>
<td>1600</td>
<td>2400</td>
</tr>
</tbody>
</table>

Effective stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>Effective stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>120</td>
</tr>
<tr>
<td>200</td>
<td>160</td>
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<tr>
<td>1500</td>
<td>960</td>
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<tr>
<td>1600</td>
<td>1020</td>
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</table>

Maximum speed

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>Maximum speed (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
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</tr>
<tr>
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<td>700</td>
<td>840</td>
</tr>
<tr>
<td>800</td>
<td>720</td>
</tr>
</tbody>
</table>

Note 1. 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.
Note. Upper robot cable (U) on models equipped with brakes is a special-order item. Please consult our sales office or sales representative for assistance. (External dimensions: overall length + 20 mm)

Note 1. Upper robot cable (U) on models equipped with brakes is a special-order item. It can be changed to flexible cable. See P.569 for details on robot cable.

Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.569 for details on robot cable.

Note 3. Acceleration/deceleration is different depending on the Positioner or Controller or Driver.

Note 4. Select this selection when using the gateway function. For details, see P.62.

Note 5. When the stroke is longer than 1200mm, 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 shown in the above table as a guide.
### Specifications

- **AC servo motor output (W):** 400
- **Repeatability (mm):** +/-0.01
- **Deceleration mechanism:** Ball screw 620 (Class C7)
- **Ball screw lead (mm):** 20
- **Maximum speed (mm/sec):** 1200
- **Maximum payload (kg):** 90
- **Rated thrust (N):** 339
- **Stroke (mm):** 850 to 2500 (50mm pitch)
- **Overall length (mm):** Stroke + 630
- **Maximum dimensions of cross section of main unit (mm):** W168×H105.5
- **Cable length (m):** Standard: 5.5 (Option: 8, 10)
- **Linear guide type:** 4 rows of circular arc grooves × 2 rail
- **Position detector:** Resolvers
- **Resolution:** 20480

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

**Note: 2. To operate the unit at a speed exceeding 750 mm/sec. (Max. speed), a regeneration 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.**

### Allowable overhang

**Horizontal installation:**

- **Effective stroke:** 420.5+3
- **When origin is on motor side:** 265+1

**When origin is on non-motor side:**

- **Effective stroke:** 265.5+3
- **When origin is on motor side:** 182
- **When origin is on non-motor side:** 182

### Controller

- **Ordering method:**
  - **Controller Drive:** Power capacity
    - **TSX:** 220
    - **RDV-X:** 20
    - **SR1-X:** 2

- **I/O selection:**
  - **Controller Driver:** Power capacity
    - **TSX:** 220
    - **RDV-X:** 20
    - **SR1-X:** 2

- **I/O selection:**
  - **Controller Driver:** Power capacity
    - **SR1-X:** 2
    - **TSX:** 220
    - **RDV-X:** 20

- **Note:** To operate the unit at a speed exceeding 750 mm/sec. (Max. speed), a regeneration unit is required.
### Ordering method

**F20**

- **Request:**
  - Linear guide type: 4L/5L/10L
  - Cable entry: right
  - Grease type: Standard
  - Stroke: Linear motor

- **Options:**
  - T6/20: 600W or less
  - RBR1 (Horizontal)
  - RBR2 (Vertical)
  - TS-X220 (Motor cable length)

### Specifications

- **AC servo motor output (W):** 600, 1200, 2000, 4000, 6000, 8000, 10000, 12500
- **Positioning repeatability:** ±0.01, ±0.1, ±0.5 mm
- **Ball screw lead (mm):** 20, 25, 30, 40, 50, 60, 80, 100, 125, 150, 200
- **Linear guide type:** 2L/3L/5L/10L
- **Linear guide resolution:** 10, 20, 50, 100, 500, 1000, 5000, 10000

### Allowable overhang

- **Horizontal installation**
- **Wall installation**
- **Vertical installation**

### Controller

- **Controller:** SR-X1-518, TS-X492, RDV-X506
- **I/O selection:** C: Common I/O, P: PNP I/O
- **Cable entry:** Right
- **Grease type:** Standard
- **Stroke:** Linear motor

Note: See P.500 for DIN rail mounting bracket.

### Static loading moment

- **Note:**
  - When origin is on motor side
  - When origin is on non-motor side

### Note:

1. Positioning repeatability in one direction.
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, the lead of the screw is specified on the product catalog.
3. To operate the unit at a speed exceeding 1,000 mm/sec. a regeneration unit RG1 is required.
4. Longer than 1250mm stroke can be handled by the high load specification (Lead 20), only, by common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

---

**Note:**

1. Minimum bend radius of motor cable is R50.
2. When positioning the robot, do not use washers inside the robot body.
3. Minimum bend radius of motor cable is R50.
4. When using the gateway function, see P.62.
5. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.
6. When using a regeneration unit, see P.596 for details on robot cable.
7. To operate the unit at a speed exceeding 1,000 mm/sec., a regeneration unit RG1 is required.

---

**Note:**

1. To operate the unit at a speed exceeding 1,000 mm/sec. a regeneration unit RG1 is required.
2. When origin is on motor side
3. When origin is on non-motor side
## F20 High lead type: Lead 40

**Approx. 250 (Motor cable length) 270+5: When origin is on motor side**

### Effective stroke

<table>
<thead>
<tr>
<th>Effective stroke</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>
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<tr>
<td><strong>L</strong></td>
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<tr>
<td><strong>Weight (kg)</strong></td>
<td>21.2</td>
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<td><strong>Maximum speed (mm/sec)</strong></td>
<td>2400</td>
<td>1920</td>
<td>1680</td>
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<td>1200</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td><strong>Lead 40</strong></td>
<td>80%</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>35%</td>
<td>30%</td>
<td>25%</td>
<td>20%</td>
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<td>10%</td>
<td>5%</td>
<td>3%</td>
<td>2%</td>
<td>1%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

**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 50mm.

**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.

**Note 5.** Longer than 1250mm stroke can be handled by the high lead specification (Lead 40) only.

---

Controller: SR1-X > 518 | TS-X > 492 | RDV-X > 506

---

[Diagram and Table]
F20N

### Ordering method

**F20N - 20**

- **Model**: ART/TRANSERVO/FLIP-X
- **Communications**:
  - RS-232C
  - RS-422A/485
  - RS-485
  - CANopen
  - CAN
  - PROFINET
  - PROFINET IO
  - OPC-UA
  - Modbus

**Specifications**

<table>
<thead>
<tr>
<th>AC servo motor output (W)</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability (mm)</td>
<td>+/-0.04</td>
</tr>
<tr>
<td>Deceleration mechanism</td>
<td>Ball screw (Class C10)</td>
</tr>
<tr>
<td>Ball screw lead (mm)</td>
<td>20</td>
</tr>
<tr>
<td>Maximum speed (mm/sec)</td>
<td>1000 (1200 mm/sec)</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>89</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td>339</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>1150 to 2050 (100mm pitch)</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>2420</td>
</tr>
<tr>
<td>Maximum dimensions of cross section of main unit (mm)</td>
<td>W202 × H120</td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard: 3.5</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>4 rows of circular arc grooves + 2 rail</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolvers</td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>16384</td>
</tr>
</tbody>
</table>

Note 1. Positioning repeatability in one direction.
Note 2. Positioning accuracy is realized by using the SR1-X, TS-X at maximum speeds exceeding 1000mm/sec. If using the RDV-X, then the regenerative unit RBR1 is required regardless of the installation conditions.
Note 3. Position detectors (sensors) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

**Allowable overhang**

- **Horizontal installation**
  - **20kg**: 2337 (53.2) mm
  - **40kg**: 2795 (54.1) mm
  - **60kg**: 2443 (55.3) mm
  - **80kg**: 2193 (54.1) mm

Note. 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

- **MY**: 1196 (Unit: N·m)
- **MP**: 1199 (Unit: N·m)
- **MR**: 1052 (Unit: N·m)

**Controller**

- **SR1-X (20)**
  - **Power supply voltage**: 24VDC
  - **Power capacity**: 339 W

**SCARA Robots**

- **Cartesian**: 1000 (Unit: W·m²)
- **Linear motor**: 105 (Unit: N·m)

**Linear conveyor modules**

- **LCM100**: 1000 (Unit: W·m²)

---

**F20N**

219+3: When origin is on L side
(216) When origin is on R side

Effective stroke 1150 1250 1350 1450 1550 1650 1750 1850 1950 2050

A 180 200 220 240 260 280 300 320 340 360
B 160 180 200 220 240 260 280 300 320 340
C 140 160 180 200 220 240 260 280 300 320
D 120 140 160 180 200 220 240 260 280 300

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
Note 2. The shaded position indicates the user cable extraction port.
Note 3. When installing the robot, do not use washers inside the robot body.
Note 4. The origin is set on the left (L) side at shipping.
### Ordering method

| N15 | 20 |

- **Model**: N15
- **Controller**: SR1-X
- **I/O point trace**: RCX221/222
- **Remote command**: SR1-X20-R
- **Programming**: SR1-X20-R
- **I/O board**: None
- **Controller Operation method**: Remote command

### 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 (θ5) (Class C7)</td>
</tr>
<tr>
<td>Ball screw lead (mm)</td>
<td>20</td>
</tr>
<tr>
<td>Maximum speed (mm/sec)</td>
<td>1200</td>
</tr>
<tr>
<td>Rated thrust (N)</td>
<td>339</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>500 to 2000 (100mm pitch)</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>W145 × H120</td>
</tr>
<tr>
<td>Maximum dimensions of cross section of main unit (mm)</td>
<td>16384</td>
</tr>
<tr>
<td>Linear guide type</td>
<td>4 rows of circular arc grooves × 2 rail</td>
</tr>
<tr>
<td>Position detector</td>
<td>Resolver (Note 2)</td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>16384</td>
</tr>
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</table>

### Allowable overhang

#### Horizontal installation

<table>
<thead>
<tr>
<th>Horizontal installation (Unit: mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>10kg</td>
</tr>
<tr>
<td>20kg</td>
</tr>
<tr>
<td>30kg</td>
</tr>
<tr>
<td>40kg</td>
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</table>

#### Wall installation

<table>
<thead>
<tr>
<th>Wall installation (Unit: mm)</th>
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</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>10kg</td>
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<tr>
<td>20kg</td>
</tr>
<tr>
<td>30kg</td>
</tr>
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<td>40kg</td>
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### Static loading moment

<table>
<thead>
<tr>
<th>Controller</th>
<th>Operation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR1-X20-R</td>
<td>Programming / I/O point trace / Remote command / Operation using RS-232C communication</td>
</tr>
<tr>
<td>RCX240/340</td>
<td>RCX221/222</td>
</tr>
<tr>
<td>TW-X20-R</td>
<td>Remote command</td>
</tr>
</tbody>
</table>

### Static loading moment

- **Controller**: SR1-X20-R
- **Operation method**: Programming / I/O point trace / Remote command / Operation using RS-232C communication
- **TW-X20-R**: Pulse train control

### Cable carrier for users

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

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

- **Effective stroke**: 165+3 mm
- **Origin position**: L-side origin position (Note 6)
- **Effective stroke (mm)**:
  - L: 830
  - A: 15
  - B: 10
  - C: 11
  - D: 115
  - E: 10
  - F: 8
  - G: 820
- **Weight (kg)**: 19

### Footnotes

1. To find information on cable carrier extraction directions see P.175.
2. The robot cable is standard cable (2L4.7/10L), but can be changed to flexible cable. See P.596 for details on robot cable.
3. See P.500 for DIN rail mounting bracket.
4. Select this selection when using the gateway function. For details, see P.62.

### Diagram

- **Cross-section of cable carrier**: Details of section J
- **Effective stroke**: 165+3 mm
- **Weight (kg)**: 19

Note 1: Stop positions are determined by the mechanical stoppers at both ends.
Note 2: When using φ7 holes for installation, do not use in weather, spring washers, etc. in the main unit.
Note 3: When shipped from the factory, the horizontal model has the origin on the right side and the wall model has the origin on the left side. (This diagram shows the machine whose cable carrier taken out from right.)
Note 4: If the model is a standard cable carrier specification, it is not possible to pass 3 or more φ6 = 4 urethane hoses.
Note 5: When using a #8 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: 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 8: 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.
N15: Horizontal installation / Optional Cable carrier specification

- Cross-section H-H
- View K
- Use M6×1.0 hex socket head bolt with length (under head) of 20mm or more.

N15: Wall installation / Standard Cable carrier specification

- Cross-section H-H
- Use M6×1.0 hex socket head bolt with length (under head) of 20mm or more.

N15: Wall installation / Optional Cable carrier specification

- Cross-section H-H
- View K
- Use M6×1.0 hex socket head bolt with length (under head) of 20mm or more.
### Ordering method

**N15D - 20**

<table>
<thead>
<tr>
<th>Model</th>
<th>Use destination</th>
<th>Installation direction</th>
<th>H: Horizontal installation</th>
<th>V: Vertical installation</th>
<th>M: Optional Cable carrier</th>
</tr>
</thead>
</table>

### Specifications

- **AC servo motor output (W):** 400
- **Repeatability (mm)**: +/-0.01
- **Ball screw lead (mm):** 20
- **Maximum speed (mm/sec):** 1200
- **Maximum payload (kg):** 50
- **Rated thrust (N):** 339
- **Stroke (mm):** 250 to 1750 (100mm pitch)
- **Overall length (mm):** Stroke+333
- **Maximum dimensions of cross section of main unit (mm):** W145 × H120
- **Cable length (m):** Standard: 3.5 / Option: 5,10
- **Linear guide type:** 4 rows of circular arc grooves × 2 rail
- **Position detector:** Resolvers
- **Resolution (Pulse/Rotation):** 16384

Note 1. Positioning repeatability is 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:** When using 67 holes for installation, do not use a washer, spring washer, etc. in the main unit.
- **Cross-section H4:**

**Wall installation**

- **Note:** When using SR1-X, STS-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.
- **Cross-section H8:**

### Cable carrier for users

- **S type:** Standard cable carrier
- **Note:** Cannot pass more than 3 urethane air hoses (Φ6 x 4).
- **M type:** Space for optional cable carrier

### Static loading moment

**Controller**

- **RCX222HP-R:** Programming / I/O point trace / Remote command / Operation using RS-232C communication
- **SR1-X20-AB:** I/O point trace / Remote command
- **RDV-X20-AB:** Pulse train control

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

- **Effective stroke:**
  - L: 250
  - S: 350
  - M: 450
  - S: 550
  - M: 650
  - S: 750
  - M: 850
  - S: 950
  - M: 1050
  - S: 1150
  - M: 1250
  - S: 1350
  - M: 1450
  - S: 1550
  - M: 1650
  - S: 1750

- **Weight (kg):**
  - L: 24
  - S: 28
  - M: 32
  - S: 36
  - M: 40
  - S: 44
  - M: 46

**Note:**

1. Position of table carriage when searched to the origin.
2. Stop positions are determined by the mechanical stoppers at both ends.
3. When using 67 holes for installation, do not use a washer, spring washer, etc. in the main unit.
4. If the controller is a standard cable carrier specification, it is not possible to pass 3 or more urethane air hoses.

---

**Controller**

- **RCX222HP-R:** Programming / I/O point trace / Remote command / Operation using RS-232C communication
- **SR1-X20-AB:** I/O point trace / Remote command
- **RDV-X20-AB:** Pulse train control

**Note:** 2 units are required when using SR1-X, TS-X or RDV-X.
N15D: Horizontal installation / Optional Cable carrier specification

N15D: Wall installation / Standard Cable carrier specification

N15D: Wall installation / Optional Cable carrier specification
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Model no.</th>
<th>Controller</th>
<th>Driver</th>
<th>Power</th>
<th>Option</th>
<th>Regenerative unit</th>
<th>Battery</th>
<th>Power</th>
<th>I/O selection</th>
<th>I/O selection</th>
<th>I/O selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>N18</td>
<td>SR1-X20-R</td>
<td>TS-X20-R</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
</tr>
<tr>
<td>220</td>
<td>RDB-X20-R</td>
<td>SR1-X20-R</td>
<td>TS-X20-R</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
<td>RCX221/222</td>
<td>RCX222/222</td>
</tr>
</tbody>
</table>

### Specifications

- **AC servo motor output (W)**: 400
- **Repeatability (mm)**: +/-0.01
- **Deceleration mechanism**: Ball screw Q20 (Class C7)
- **Ball screw lead (mm)**: 20
- **Maximum speed (mm/sec)**: 1200
- **Maximum payload (kg)**: 80
- **Rated thrust (N)**: 339
- **Stroke (mm)**: 500 to 2500 (150mm pitch)
- **Overall length (mm)**: Stroke=362
- **Stroke**: 2000
- **Linear guide type**: 4 rows of circular air grooves + 2 air
- **Position detector**: Resolvers

### Note

1. Repeatability for single oscillation.
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.

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

- **Effective stroke**: 500 to 6000
- **Use M8 × 1.25 hex socket head bolt with length=20mm or more
- **Weight (kg)**: 30 to 113

### Horizontal installation

<table>
<thead>
<tr>
<th>Graph</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Graph" /></td>
<td>Effective stroke</td>
</tr>
</tbody>
</table>

### Wall installation

<table>
<thead>
<tr>
<th>Graph</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2" alt="Graph" /></td>
<td>Effective stroke</td>
</tr>
</tbody>
</table>

### Note

1. Stop positions are determined by the mechanical stoppers at both ends.
2. When using 60 holes for installation, do not use a washer, spring washer, etc. in the main unit.
3. When shipped from the factory, the horizontal model has the origin on the right side and the wall model has the origin on the left side. (This diagram shows the machine whose cable carrier taken out from right.)
4. If the model is a standard cable carrier specification, it is not possible to pass 3 or more φ4 urethane hoses.
5. When using a φ10H7 hole, make sure that the pin does not go into deeper than shown in the drawing.
6. Contact us for vertical installation.
7. For the robot with more than 2,100 stroke, a roller is installed to prevent the cable carrier hanging.
8. Weight of models with no brake. The weight of brake-attached models is 1 kg heavier than the models with no brake shown in the table.
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.
### Specifications

- **AC servo motor output (W)**: 400
- **Repeatability** (mm): +0.01
- **Deceleration mechanism**: Ball screw Q20 (Class C7)
- **Ball screw lead (mm)**: 20
- **Maximum speed** (mm/sec): 1200
- **Maximum payload (kg)**: 80
- **Rated thrust (N)**: 50
- **Stroke (mm)**: 250 to 2250 (100 pitch)
- **Overall length (mm)**: Stroke+362
- **Maximum dimensions of cross section of main unit (mm)**: W180 × H115
- **Cable length (m)**: Overall length+332
- **Linear guide type**: 4 rows of circular arc grooves × 2 rail
- **Rated thrust (N)**: 206
- **External dimensions (mm)**: W180 × H115 × D115
- **Position detector**: Resolver
- **Resolution/Pulse (radian)**: 16384

### Controller

- **Controller Operation method**: Remote command using RS-232C
- **I/O selection**: 10L: 10m SR1-X (2 units)  Note 2 DN: DeviceNet TM P1: OP.DIO24/17
- **I/O selection**: EN: Ethernet  Note 3 EN: Ethernet  Note 3
- **I/O selection**: CC: CC-Link
- **I/O selection**: BA: CANopen
- **I/O selection**: RG2

### Static loading moment

- **Note 1**: Positioning repeatability is common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.
- **Note 2**: 2 units are required when using SR1-X, TS-X or RDV-X.
- **Note 3**: When using a 10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.
- **Note 4**: For the robot with more than 2,050 stroke, a roller to prevent the cable carrier from hanging is provided.
- **Note 5**: Depending on the speed and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

### Cable carrier for users

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

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

- **Effective stroke**:
  - 250: 500
  - 350: 650
  - 450: 750
  - 550: 850
  - 650: 950
  - 750: 1050
  - 850: 1150
  - 950: 1250
  - 1050: 1350
  - 1150: 1450
  - 1250: 1550
  - 1350: 1650
  - 1450: 1750
  - 1550: 1850
  - 1650: 1950
  - 1750: 2050
  - 1850: 2150
  - 1950: 2250
  - 2050: 2350
  - 2150: 2450
  - 2250: 2550

- **Weight (kg)**:
  - 25: 37
  - 35: 47
  - 45: 57
  - 55: 67
  - 65: 77
  - 75: 87
  - 85: 97
  - 95: 107
  - 105: 117
  - 115: 127
  - 125: 137
  - 135: 147
  - 145: 157
  - 155: 167
  - 165: 177
  - 175: 187
  - 185: 197
  - 195: 207
  - 205: 217
  - 215: 227
  - 225: 237
  - 235: 247
  - 245: 257
  - 255: 267
The image contains a page from a technical document about robotic systems. It includes sections on ordering methods, specifications, and motor installations. The text is in Japanese, but some key information can be translated as follows:

**Ordering method**

- B10
- Model: Motor installation direction
  - T type: Motor rightward, horizontal position
  - R type: Motor rightward, horizontal position
- Note 1: The robot cable is standard cable (3L5L/10L), but can be changed to flexible cable.
- See P.596 for details on robot cable.
- Note 2: See P.500 for DIN rail mounting bracket.
- Note 3: Select this selection when using the gateway function. For details, see P.62.

**Specifications**

- **Motor installation**
  - The line-up consisting of six models of different motor installation position as follows.

**B10 R type (Motor rightward, horizontal position)**

- Effective stroke: 150 to 2500 (100mm pitch)
- Stroke: 3 kg to 10 kg
- Motor: 3 phase 4 wire
- Motor speed: 50 mm/sec
- Motor Current: 3A
- Motor voltage: 200V

**Allowable overhang**

- Horizontal installation (max 3) mm
  - 3 kg: 1800
  - 5 kg: 1574
  - 10 kg: 1171
- Wall installation (max 3) mm
  - 3 kg: 1144
  - 5 kg: 724
  - 10 kg: 414

**Static loading moment**

- Controller
- Operation method
- SR1-X05
- REX221/222
- REX240/340
- RCX200

- SRV-X105
- I/O point trace
- SRV-X205-R
- Pulse train control

**Note:**
- The robot cable is standard cable (3L5L/10L), but can be changed to flexible cable.
- See P.596 for details on robot cable.
- Note 2: See P.500 for DIN rail mounting bracket.
- Note 3: Select this selection when using the gateway function. For details, see P.62.
**Articulated robots**

**YA**

**Compact single-axis robots**

**TRANSERVO**

**Single-axis robots**

**FLIP-X**

**Linear motor single-axis robots**

**PHASER**

**Cartesian robots**

**XY-X**

**SCARA robots**

**YK-X**

**Pick & place robots**

**YP-X**

**CLEAN CONTROLLER INFORMATION**

**Linear conveyor modules**

**LCM100**

---

**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.)

**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.)

**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.)
# Ordering method

**B14**

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor installation direction</th>
<th>Motor installation position</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA</td>
<td>L type (Leftward at upper position)</td>
<td></td>
</tr>
<tr>
<td>TRANSERVO</td>
<td>Compact single-axis robot</td>
<td></td>
</tr>
<tr>
<td>FLIP-X</td>
<td>Linear motor single-axis robot</td>
<td></td>
</tr>
<tr>
<td>XY-X</td>
<td>SCARA robot</td>
<td></td>
</tr>
<tr>
<td>YK-X</td>
<td>Pick &amp; place robot</td>
<td></td>
</tr>
<tr>
<td>YCLEAN</td>
<td>Linear conveyor module</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.596 for details on robot cable.

Note 2: See P.500 for DIN rail mounting bracket.

Note 3: Select this selection when using the gateway function. For details, see P.62.

### Specifications

- **Motor type**
  - T type: Articulated robots
  - F type: Cartesian robots
  - N type: Single-axis robots
  - GF type: Linear motor single-axis robots

- **RBR1**
  - I/O selection
  - 70.5
  - Cable length: None
  - Note 1: Stroke
  - 2-128
  - 1.5

- **YK-X**
  - I/O selection
  - 100
  - Option: Regenerative unit
  - Usable for CE: C
  - Standard: 3.5 / Option: 5,10
  - Stroke: 150 to 3050 (100 mm pitch)
  - Maximum payload (kg): 5kg
  - Belt (mm): Equivalent to lead 25mm
  - Repeatability: +/-0.02
  - Note 2: Position detectors (resolvers) are common to incremental and absolute specifications.
  - Effective stroke:
    - 150: 100
    - 200: 150
    - 250: 200
    - 300: 250
    - 350: 300
    - 400: 350
    - 450: 400
    - 500: 500
    - 550: 550
    - 600: 600
    - 650: 650
    - 700: 700
    - 750: 750
    - 800: 800
    - 850: 850
    - 900: 900
    - 950: 950
    - 1000: 1000
    - 1050: 1050
    - 1100: 1100
    - 1150: 1150
    - 1200: 1200
    - 1250: 1250
    - 1300: 1300
    - 1350: 1350
    - 1400: 1400
    - 1450: 1450
    - 1500: 1500
    - 1550: 1550
    - 1600: 1600
    - 1650: 1650
    - 1700: 1700
    - 1750: 1750
    - 1800: 1800
    - 1850: 1850
    - 1900: 1900
    - 1950: 1950
    - 2000: 2000
    - 2050: 2050
    - 2100: 2100
    - 2150: 2150
    - 2200: 2200
    - 2250: 2250
    - 2300: 2300
    - 2350: 2350
    - 2400: 2400
    - 2450: 2450
    - 2500: 2500
    - 2550: 2550
    - 2600: 2600
    - 2650: 2650
    - 2700: 2700
    - 2750: 2750
    - 2800: 2800
    - 2850: 2850
    - 2900: 2900
    - 2950: 2950
    - 3000: 3000
    - 3050: 3050
  - Weight (kg):
    - 2.8
    - 10.5
    - 12.5
    - 14.3
    - 16.0
    - 17.7
    - 19.5
    - 21.2
    - 22.9
    - 24.7
    - 26.4

- **TSX**
  - Controller
  - Driver: Power supply voltage
  - Driver: Power capacity
  - MR

- **RDV-X**
  - Driver: Power supply voltage
  - Driver: Power capacity

- **RBR1**
  - Regenerative unit

### Allowable overhang

- **Horizontal installation (Type A)**
  - A: 5kg
  - B: 10kg
  - C: 20kg

- **Wall installation (Type B)**
  - A: 5kg
  - B: 10kg
  - C: 20kg

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

### 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

- **U type**
  - Leftward at upper position

- **E type**
  - Rightward at upper position

- **CD type**
  - Leftward at lower position

- **ED type**
  - Rightward at lower position

### Static loading moment

- **MY**
  - 226

- **MP**
  - 227

- **MR**
  - 199

### Controller

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

- **TS-X**
  - I/O point trace / Remote command

- **RDV-X**
  - RBR1

Detail of section G

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.)
.articulated robots

compact single-axis robots

TRANSERVO

single-axis robots

FLIP-X

linear motor single-axis robots

PHASER

cartesian robots

XY-X

SCARA robots

YK-X

pick & place robots

YP-X

clean controller information

linear conveyor modules

LCM100

---

B14 RU type (Motor rightward, upper position)

Grounding terminal

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.)
### Ordering method

**B14H**

- **AC servo motor output (W)**: 200
- **Repeatability** (mm): ±0.04
- **Speed (mm/sec)**: 1250 (1875)*
- **Maximum load (kg)**: 30
- **Stroke (mm)**: 150 to 3050 (100mm pitch)
- **Position detector**:
  - **Resolvers**: (Note 2)
  - **Absolute specifications**: (Note 3)

### Motor specifications

- **Linear guide type**:
  - **Section of main unit (mm)**: Maximum dimensions of cross section of main unit (mm)
  - **Overall length (mm)**: W146 × H84
- **Motor installation**:
  - **Motor installation position**: The line-up consisting of six models of different motor installation position as follows.

### Motor installation

- **Horizontal installation**
  - **Effective stroke**: 150 to 3050 (100mm pitch)
  - **Maximum speed**: 200
  - **Position detector**:
    - **Resolvers**: 153
  - **Rated output**: 145 (Note 1)

### Static loading moment

- **Controller**
  - **Operation method**: Programming / I/O point & Trace / Remote command / Operation using RS-232C communication
- **Rated output**: 150 (Note 1)

---

*Note 1: The robot cable is standard cable (3LS/L51/10L), but can be changed to flexible cable.*  
*Note 2: See P.596 for details on robot cable.*  
*Note 3: Select this selection when using the gateway function. For details, see P.62.*
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.)

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.)

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.)
### Ordering method

**R5**
- Model: Cable entry location: Cable length
- R5-5L/10L: From the side
- R5-3L: To the front
- R5-10L: Flexible cable

**Note 1:** The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.596 for details on robot cable.
**Note 2:** See P.500 for DIN rail mounting bracket.
**Note 3:** Select this selection when using the gateway function. For details, see P.62.

### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC servo motor output (W)</td>
<td>50</td>
</tr>
<tr>
<td>Repeatability (°)</td>
<td>+/-0.0083</td>
</tr>
<tr>
<td>Maximum speed (°/sec)</td>
<td>360</td>
</tr>
<tr>
<td>Maximum allowable moment inertia (kg·m²)</td>
<td>0.12 (1.2)</td>
</tr>
<tr>
<td>Rated torque (Nm/kgf)</td>
<td>5.29 (0.54)</td>
</tr>
<tr>
<td>Speed reduction ratio</td>
<td>150</td>
</tr>
<tr>
<td>Rotation range (°)</td>
<td>360</td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard: 3.5 / Option: 5, 10</td>
</tr>
<tr>
<td>Speed reducer type</td>
<td>Harmonic drive</td>
</tr>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>16384</td>
</tr>
</tbody>
</table>

**Position detector:** Resolvers

### 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 (kg·m²)</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 0.48kg·cm². Enter the above mass parameter value for the controller, and optimum acceleration is automatically set based on this value.

### Controller

- **SR1-X 05**
  - Controller: Programming / Remote command / Operation using RS-232C communication
  - Driver: Power-supply voltage / I/O point trace / Remote command / Operation using RS-232C communication

- **TS-X No entry: None NP: NPN B: With battery**
  - Driver: Power capacity / 100V/100W or less / With LCD / PNP
  - I/O selection: DeviceNet / EtherNet/IP / PROFINET / No I/O board

- **RDV-X 205 - RBR1**
  - Driver: Power capacity / 100W or less

**Note:** For calculation (equation) of the inertia moment, please refer to P.613.

---

**R5**

**Weight (kg):** 3.0

**Note 1:** The cable extraction port can be changed.
R10

Ordering method

R10

Controller

SR1-X 05

Controller

SR1-X05

Driver

Power-supply voltage

Driver: Power capacity

Usable for CE

I/O selection

Battery

TS-X 05

Driver

Power-supply voltage

Driver: Power capacity

Driver Operation method

SR1-X05

RCX221/222

RCX240/340

Programming / I/O point trace / Remote command / Operation using RS-232C communication

RDV-X 2 05

Driver

Power-supply voltage

Driver: Power capacity

Regenerative unit

Note: See P.506 for details on robot cable. See P.62 for details on gateway function.
### Specifications

- **AC servo motor output (W):** 200
- **Repeatability (°):** ±0.0083
- **Maximum speed (°/sec):** 360
- **Maximum allowable moment inertia (kgf·cm²):** 1.83 [18.7]
- **Rated torque (Nm):** 21.46 [2.19]
- **Speed reduction ratio:** 1/50
- **Rotation range (°):** 360
- **Cable length (m):** Standard: 3.5 / Option: 5, 10
- **Position detector:** Harmonic drive
- **Resolution (Pulse/rotation):** 16384

### Note

1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.556 for details on robot cable.
2. See P.500 for DIN rail mounting bracket.
3. Select this selection when using the gateway function. For details, see P.62.

### Maximum allowable moment inertia

<table>
<thead>
<tr>
<th>Load (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>J (kgf·cm²)</td>
<td>0.93</td>
<td>1.8</td>
<td>2.8</td>
<td>3.7</td>
<td>4.6</td>
<td>5.6</td>
<td>6.5</td>
<td>7.4</td>
<td>8.4</td>
<td>9.3</td>
</tr>
</tbody>
</table>

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.

### Controller

- **SR1-X-10:**
  - Driver: Power capacity
  - Usable for CE: Yes
  - I/O selection: Digital

- **TS-X-110:**
  - Driver: Power capacity
  - Usable for CE: Yes
  - I/O selection: Digital

- **RDV-X-210:**
  - Driver: Power capacity
  - Usable for CE: Yes
  - I/O selection: Digital

### Ordering method

- **Model:** R20
- **Controller:** SR1-X-10, TS-X-110, RDV-X-210

### Note 1

The cable extraction port can be changed.

### Diagram

[Diagram of R20 robot]

- **Weight (kg):** 5.5
  - Note 1. The cable extraction port can be changed.