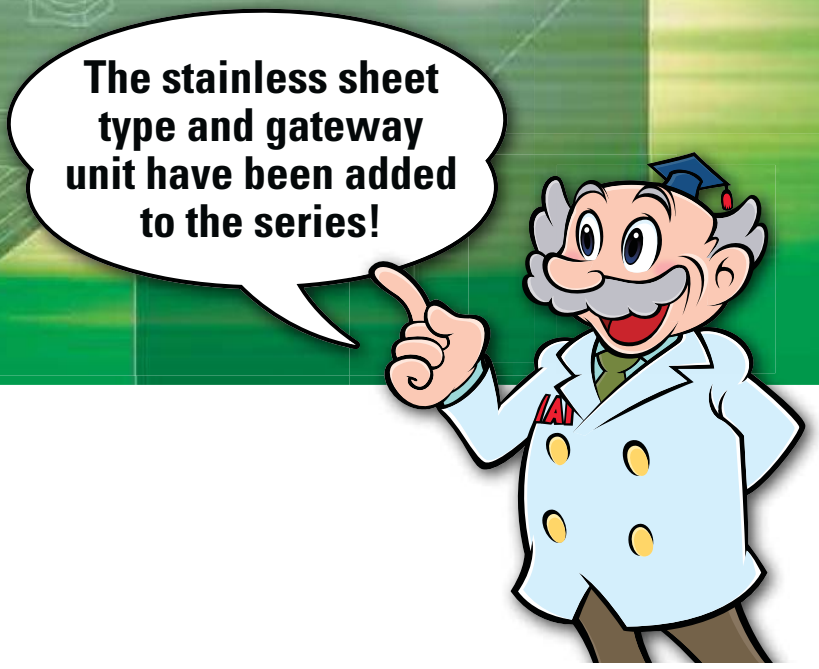
IAI
Quality and Innovation

## ROBO Cylinder® with Built-in Controller

# ERC3 series

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Controller-integrated Actuator

# Features of ERC3

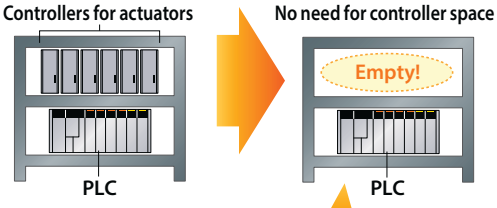
## 1. Space-saving and wire-saving, because no space is needed to install a controller

Conventional system

ERC3 series


All you need is the actuator, because a controller is built in.

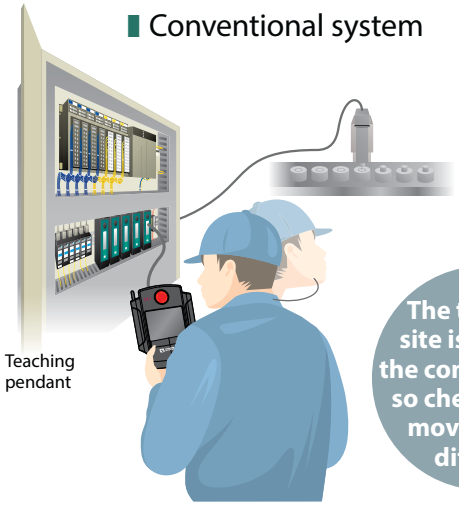
**The space-saving design lets you effectively utilize your facility.**




No space is needed to install controllers, so the control panel can be made smaller.

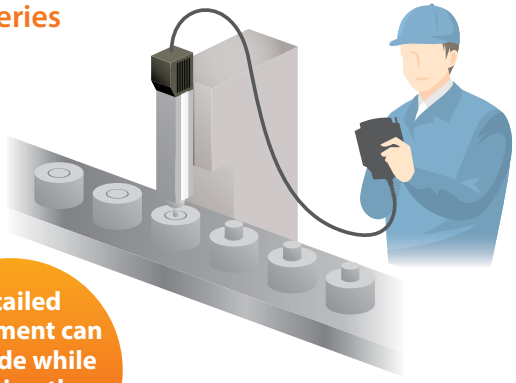
## 2. Since a controller is built into the actuator, teaching can be performed near the actuator.

Conventional system



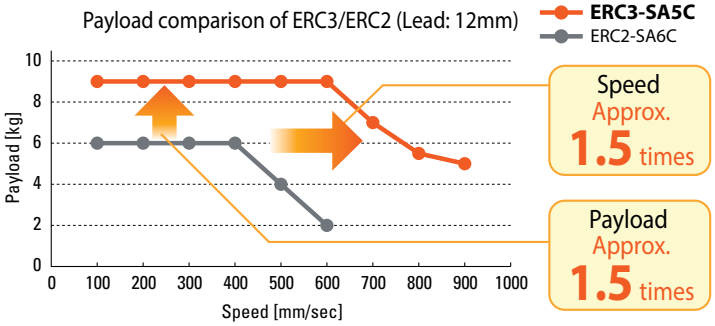

The teaching site is far from the control panel, so checking the movement is difficult.

ERC3 series

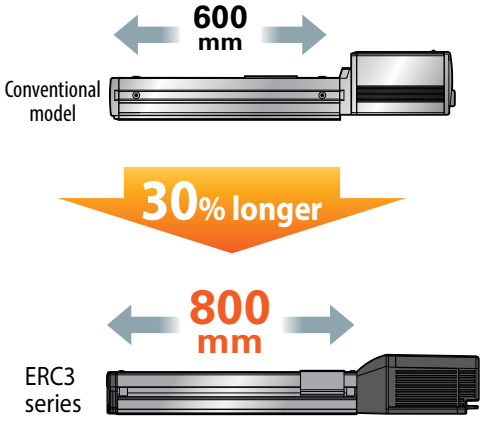


Detailed adjustment can be made while checking the movement close by.

## 3. The high-output driver boosts the payload to approx. 1.5 times and maximum speed also to 1.5 times compared to a conventional model




## 4. The maximum standard stroke has been extended.




The ERC3 is a ROBO Cylinder comprising a built-in controller and actuator.
Two types of controllers are available for the ERC3: "CON" type and "MEC" type.
Specify an appropriate type in your order.

| | |
|---|---|
| **CON type** | Use this type if you use motorized cylinder applications frequently.<br>• 16 positioning points under the standard specification, extendable up to 512 points when the PIO converter (optional) is used<br>• Connectable to major field networks using the gateway unit (optional) |
| **MEC type** | Use this type if the actuator only needs to move through 2 or 3 points, just like an air cylinder.<br>• Operable only with the Quick Teach (optional) without a power-supply unit or PLC |

Refer to P. 5 for details. →

## Quick Teach RCM-PST

Connect the Quick Teach, and you can perform teaching or trial operation with the ERC3 without supplying power.


Quick Teach

Refer to P. 7 to 9, 51 and 52.

## PIO converter RCB-CV

Connect the PIO converter to increase the number of positioning points to 512 or use the ERC3 as a simple absolute unit.

PIO converter

Refer to P. 45 to 47.

## Gateway unit RCM-EGW

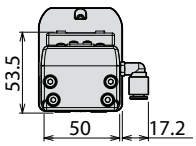
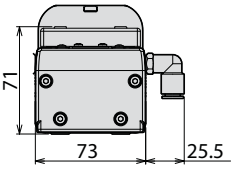
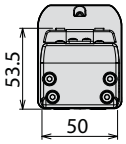
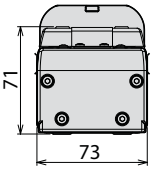
This unit lets you connect the ERC3 to a CC-Link, DeviceNet or other field network.

Gateway unit

Refer to P. 48 to 50.

# Actuator Product Lineup

**The product lineup of the controller-integrated actuator series ERC3 is shown below.**

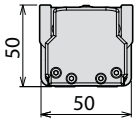
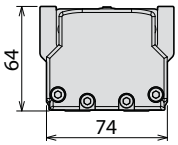
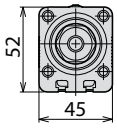
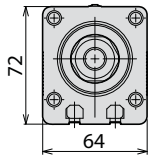
| | | Cleanroom type [ERC3CR] | | Simple, dustproof type (stainless sheet type) [ERC3D] | |
|---|---|---|---|---|---|
| Type | | Slider type | | | |
| | | SA5C | SA7C | SA5C | SA7C |
| External view | |  |  |  |  |
| Section view (mm) | |   |   |   |   |
| Stroke (mm) | | 50~800 | | 50~800 | |
| Ball screw lead (mm) | | 3 / 6 / 12 / 20 / 4 / 8 / 16 / 24 | | 3 / 6 / 12 / 20 / 4 / 8 / 16 / 24 | |
| Maximum speed*1 (mm/s) | | 225 / 450 / 900 / 1120 / 210 / 490 / 980 / 1200 | | 225 / 450 / 900 / 1120 / 210 / 490 / 980 / 1200 | |
| Maximum payload*2 (kg) | Horizontal | 20 / 18 / 9 / 6.5 / 45 / 40 / 35 / 17 | | 20 / 18 / 9 / 6.5 / 45 / 40 / 35 / 17 | |
| | Vertical | 12 / 6 / 2.5 / 1 / 22 / 14 / 6 / 3 | | 12 / 6 / 2.5 / 1 / 22 / 14 / 6 / 3 | |
| Page | | P.15 | P.17 | P.19 | P.21 |

(Notes) The above values are all based on operating each unit at an acceleration/deceleration of 0.3 G with the high-output setting enabled.

*1 The maximum speed may not be reached when the stroke is shorter. Also note that the longer the stroke, the lower the maximum speed becomes in order to avoid reaching a dangerous speed. For details, refer to the specification page of each model.

*2 The maximum payload is based on operation at the rated acceleration. The higher the acceleration, the lower the maximum payload becomes. For details, refer to the table of payloads by acceleration on P.32.

# Standard type [ERC3]

| Type | | Slider type | | | | | | | | Rod type | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SA5C | | | | SA7C | | | | RA4C | | | | RA6C | | | |
| External view | |  | | | |  | | | |  | | | |  | | | |
| Section view (mm) | |   | | | |   | | | |   | | | |   | | | |
| Stroke (mm) | | 50~800 | | | | | | | | 50~300 | | | | | | | |
| Ball screw lead (mm) | | 3 | 6 | 12 | 20 | 4 | 8 | 16 | 24 | 3 | 6 | 12 | 20 | 4 | 8 | 16 | 24 |
| Maximum speed*1 (mm/s) | | 225 | 450 | 900 | 1120 | 210 | 490 | 980 | 1200 | 225 | 450 | 700 | 800 | 210 | 420 | 700 | 800 |
| Maximum payload*2 (kg) | Horizontal | 20 | 18 | 9 | 6.5 | 45 | 40 | 35 | 17 | 40 | 40 | 25 | 6 | 70 | 55 | 40 | 13 |
| | Vertical | 12 | 6 | 2.5 | 1 | 22 | 14 | 6 | 3 | 18 | 12 | 4.5 | 1.5 | 25 | 17.5 | 8 | 3 |
| Page | | P.23 | | | | P.25 | | | | P.27 | | | | P.29 | | | |

(Notes) The above values are all based on operating each unit at an acceleration/deceleration of 0.3 G with the high-output setting enabled.

*1 The maximum speed may not be reached when the stroke is shorter. Also note that the longer the stroke, the lower the maximum speed becomes in order to avoid reaching a dangerous speed. For details, refer to the specification page of each model.

*2 The maximum payload is based on operation at the rated acceleration. The higher the acceleration, the lower the maximum payload becomes. For details, refer to the table of payloads by acceleration on P.32.

# How to Select Your Controller

The lineup of ERC3 built-in controllers is shown below.

## ●Controller Types

| | |
|---|---|
| **CON type** | • Up to 16 positioning points |
| **MEC type** | • 2 or 3 positioning points (Same controls possible with an air cylinder can be achieved.)<br>• Quick Teach supported |

## ●Operation Modes

| | |
|---|---|
| **Positioner mode** | Normal operation (Move the actuator by specifying position numbers through a PLC, etc.) |
| **Pulse-train control mode** | Move the actuator using pulse signals from a host controller. |

## ●I/O Types

| | | |
|---|---|---|
| **PIO type** | NPN | NPN specification (Standard) |
| | PNP | PNP specification |
| **SIO type** | • Can increase the number of positioning points to a maximum of 512 using the PIO converter, or can use the ERC3 as a simple absolute unit<br>• Can access field networks using the gateway unit | |

## ●Types of ERC3 and Supported Tools

| Controller type | Operation mode | I/O type | | Model number (I/O type) | Teaching pendant | | | PC software | | | PIO converter | Gateway unit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CON -PTA | Quick Teach RCM-PST | SEP -PT | RCM-101 -MW | RCM-101 -USB | MEC PC software | | | |
| **CON type** | Positioner mode | PIO | NPN | NP | ○ | △ *1 | — | ○ | ○ | — | — | — | Basic type (Refer to the page on the right.) |
| | | | PNP | PN | ○ | △ *1 | — | ○ | ○ | — | — | — | Overseas specification |
| | | SIO | | SE | ○ | △ | — | ○ | ○ | — | ○ | ○ | When the PIO converter or gateway unit is used (At least one is required.) |
| | Pulse-train control mode | NPN | | PLN | ○ | △ *1 | — | ○ | ○ | — | — | — | When pulse-train control is used |
| | | PNP | | PLP | ○ | △ *1 | — | ○ | ○ | — | — | — | |
| **MEC type** | Positioner mode | SIO | | SE | ○ | ○ | ○ | — | — | ○ | — | — | Basic type when the Quick Teach is used (Refer to the page on the right.) |

○: All functions are supported, △: Limited functions are supported (Effective functions: Home return, Servo ON/OFF, JOG+, JOG-, Stop (Press and hold to reset the alarm))

*1 The SIO communication cable (for Quick Teach) (CB-PST-SIO050) must be purchased separately.

(Note) The PIO converter and gateway unit cannot be used at the same time.

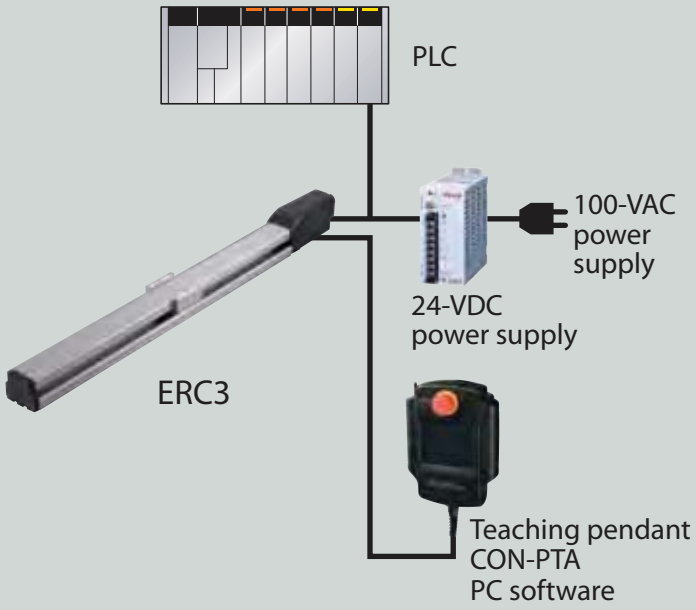
The basic types of ERC3 built-in controllers are listed below.
Select one of the following types for any standard application.

## ① Basic type

ERC3

| | |
|---|---|
| **Controller type** | CON type (Up to 16 positioning points) |
| **Operation mode** | Positioner mode |
| **I/O type** | PIO type |

### System configuration



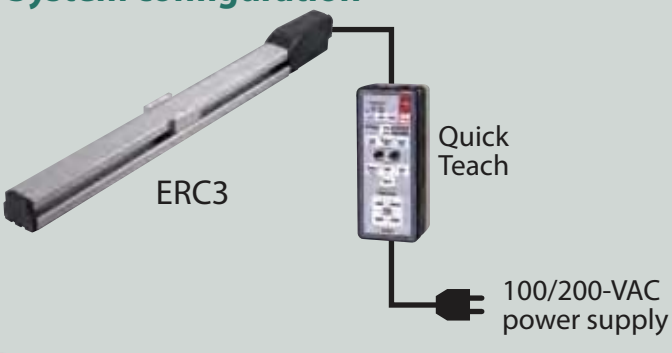

## ② Basic type when the Quick Teach is used

ERC3

Quick Teach (Refer to P. 7 and 51.)

| | |
|---|---|
| **Controller type** | MEC type (2 or 3 positioning points) |
| **Operation mode** | Positioner mode |
| **I/O type** | SIO type |

### System configuration



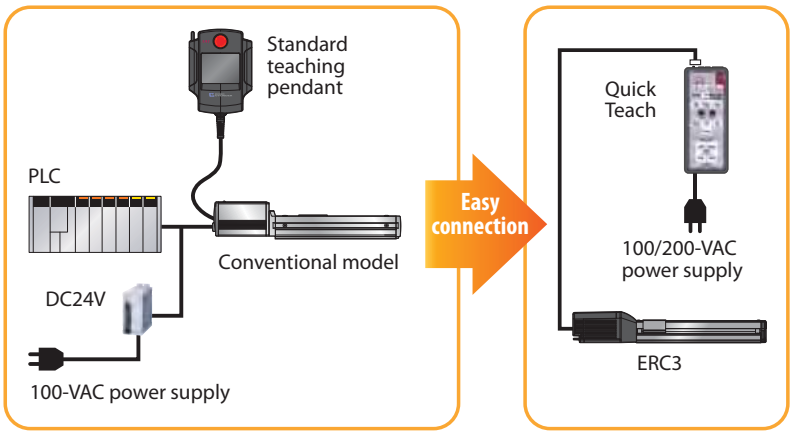
# Quick Teach →P.51

## Features

### 1 The ERC3 can be operated without a separate 24-V power supply.

The Quick Teach lets you operate your actuator with ease simply by operating the buttons and dials on the operation panel without having to supply a separate 24V power supply or send signals from a PLC. With the Quick Teach, you can change the number of stop positions (between 2 and 3), change the stop position, speed and acceleration, or perform trial operation (forward/reverse, continuous operation).

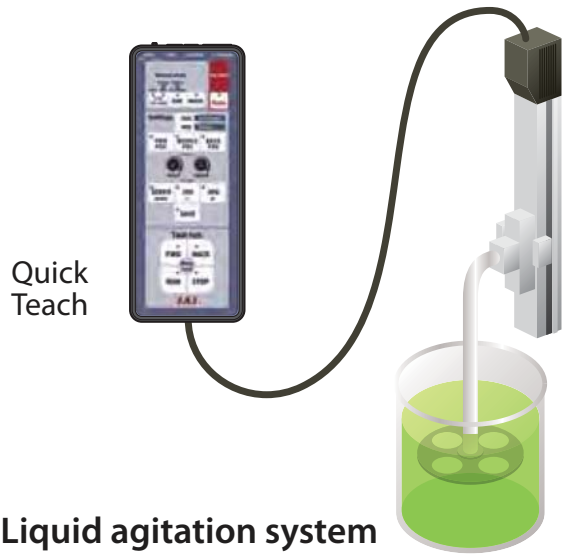
* The above functions are enabled when the ERC3 controller is of the "MEC" type. Only JOG operation can be performed when the controller is of the "CON" type.




### 2 The acceleration/speed can be changed.

### 3 JOG operation is supported and positions can be set (the stop positions can be changed).

### 4 The actuator can be operated without a PLC, which means that a simple system can be made at low cost.




**Liquid agitation system**

The system for agitating chemical solutions and other liquids uses an ERC3 and the Quick Teach. The system can be operated and a desired run-out or speed set without using a PLC.

# Explanation of the Operation Panel

**HOME** button

When the actuator is started, home return is performed first to confirm the coordinate position of 0mm.

**MANUAL** button

Press this button (and hold it for at least 1 second) to set the acceleration/speed or perform a test run.

**AUTO** button

Pressing this button disables the operation and all inputs from the operation panel buttons. It also enables PIO commands to the ERC3.

**STOP POS NUM** button

Press this button (and hold it for at least 1 second) to switch the number of positions between 2 and 3.

**TEACH MODE** button

Use this button to switch between modes 1 and 2 below:
1. Acceleration/speed
2. Acceleration/speed/position


## Acceleration/Deceleration and Speed Settings

Use buttons in this area to set how you want the actuator to move.

**FWD POS** / **MIDDLE POS** / **BACK POS** buttons

Switch to a desired movement (among the following types):
**FWD POS**: The actuator moves toward the end position.
**BACK POS**: The actuator moves toward the home position.
**MIDDLE POS**: The actuator moves toward the middle position.

**ACCEL** / **SPEED** knobs

You can turn these knobs to change the actuator speed and acceleration within a range of 1% to 100% of the maximum speed and rated acceleration/deceleration, respectively.

* The minimum speed may not be 1% of the maximum speed. For the minimum speed, refer to the operation manual.

**SERVO ON/OFF** button

Use this button to turn on/off the motor power.

**JOG-** / **JOG+** buttons

Use these buttons to jog the actuator in the negative and positive directions.

**SAVE** button

Pressing this button saves the speed, acceleration and position adjusted above.

## Test run

Use buttons in this area to actually move the actuator and check the saved operation.

**FWD** button

In a 2-position travel, the actuator moves from the BACK position to the FWD position.
In a 3-position travel, the actuator moves from the BACK position to the middle position, then to the FWD position.

**BACK** button

The actuator returns to the home position.

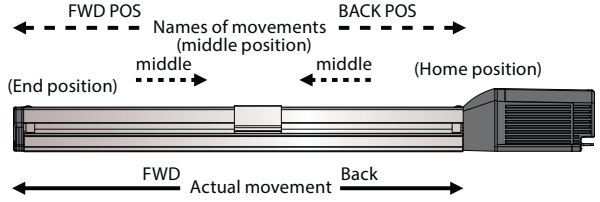
**RUN** button

In a 2-position travel, the actuator moves back and forth between the FWD and BACK positions.
In a 3-position travel, the actuator repeats its movement from the BACK position, middle position, FWD position, then BACK position.

**STOP** button

Stops the above operation.


## Explanation of Terms

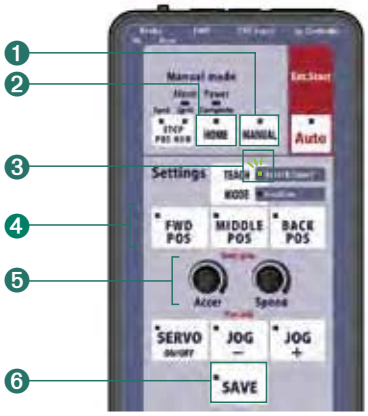


# Quick Teach →P.51

## Operation Method

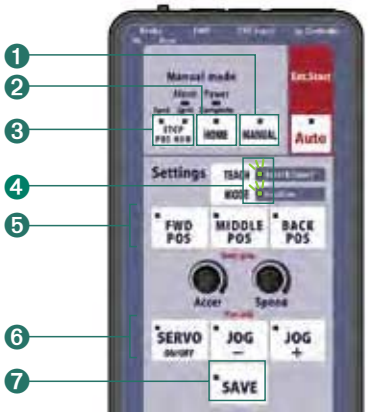
### Changing the acceleration/speed

1. Press and hold the **MANUAL** button.
2. Press the **HOME** button.
3. Confirm that the **Accel & Speed** LED is lit.
4. Press the button corresponding to the stop position (**FWD POS/MIDDLE POS/BACK POS**) where you want to change the acceleration/speed.
   * The **MIDDLE POS** button is available when the actuator is stopping at three positions.
5. Turn the **Accel/Speed** knobs.
   * You can use the knobs to change the acceleration and speed within a range of 1% to 100% of the rated acceleration/deceleration and maximum speed, respectively. The minimum speed may not be 1% of the maximum speed, depending on the actuator. Refer to the operation manual for the minimum speed.
6. Press the **SAVE** button.



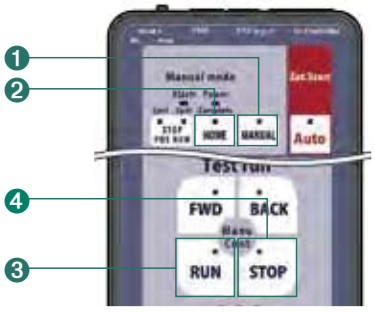

### Changing the position

1. Press and hold the **MANUAL** button.
2. Press the **HOME** button.
3. Press the **STOP POS NUM** button and determine the number of stop positions.
4. Press the **TEACH MODE**. (Both the Accel & Speed LED and Position LED should illuminate.)
5. Press the button corresponding to the stop position (**FWD POS/MIDDLE POS/BACK POS**) where you want to change the position.
   * The **MIDDLE POS** button is available when the actuator is stopping at three positions.
6. Move the actuator to a desired position.
   * You can jog the actuator or turn off the servo and move the actuator by hand.
7. Press the **SAVE** button.
   * Exercise caution because the conditions of the **Accel/Speed** knobs will also be saved together with the position.




### Performing test run (continuous operation)

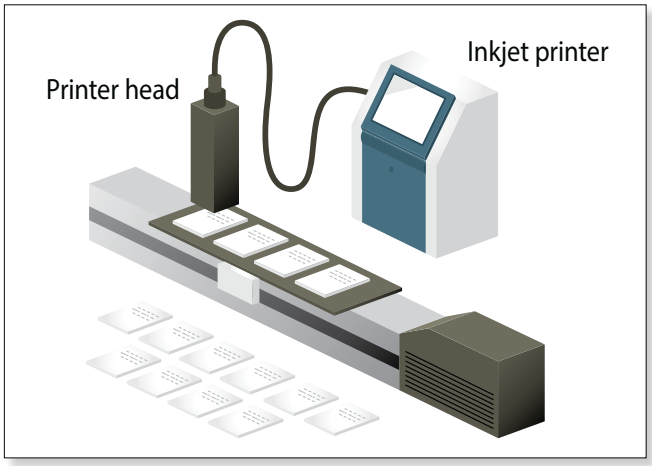
1. Press and hold the **MANUAL** button.
2. Press the **HOME** button.
3. Press the **RUN** button.
   * The actuator will move back and forth between the "forward position and back position" if it has been set to stop at two positions.
   The actuator will move repeatedly in the sequence of "forward position → middle position → back position → forward position" if it has been set to stop at three positions.
4. Press the **STOP** button to stop the operation.



# Application Examples ERC3

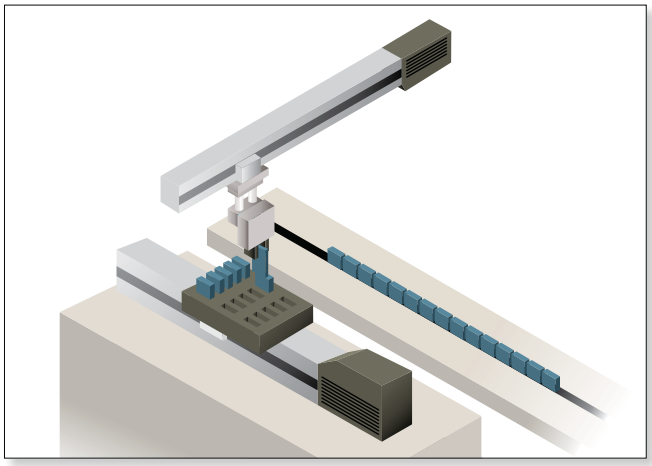
## Slider type

### Inkjet printer system




This system prints on components using an inkjet printer. The ERC3 is used to move components. Since the ERC3 can operate at a constant speed, stable printing quality can be achieved.

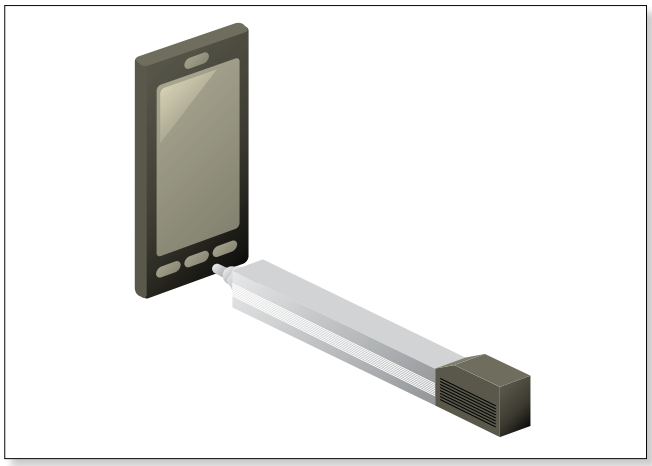
### Component palletizing system



This ERC3-based system palletizes automobile components. Two axes are arranged separately to pick components and place them onto the pallet. The takt time can be reduced by performing approach and return at high speed and placement at low speed.

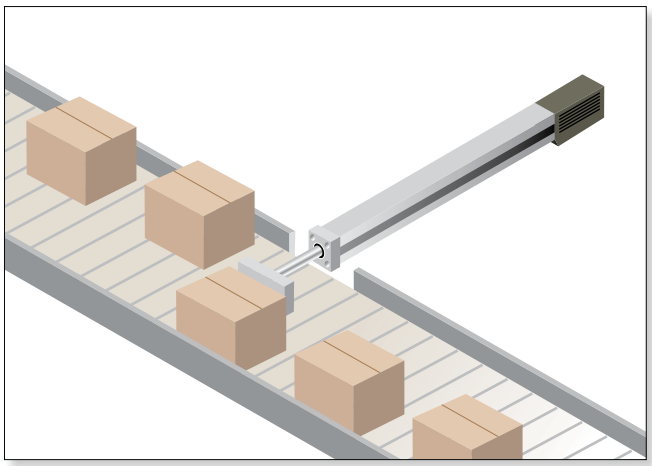
## Rod type

### Product life testing system



This ERC3-based system conducts life testing on electronic equipment. The push speed and force can be changed according to the product.

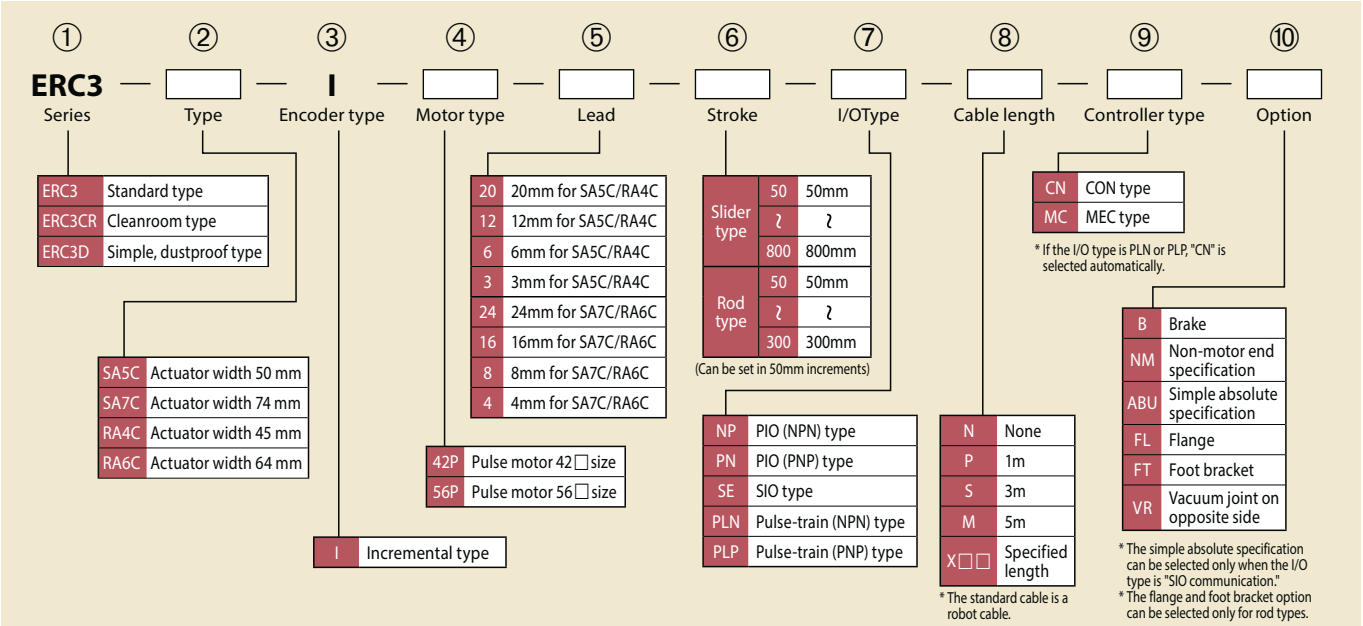
### Work part alignment system



Cardboard boxes transported on the conveyor are pushed to one side and aligned.

## Explanation of the Model Specification Items

The model number consists of the items specified below.
For the description of each item, refer to the applicable explanation provided below. Since the available selections (for lead, stroke, etc.) vary depending on the type, check the details on the page where each type is explained.




### Explanation of items

| | |
|---|---|
| **①Series** | Name of each series. |
| **②Type** | The ERC3 series consists of the following four types of actuators.<br>Type: SA5C — Actuator width: 50mm<br>SA7C — 74mm<br>RA4C — 45mm<br>RA6C — 64mm |
| **③Encoder type** | Encoder equipped in the actuator.<br>I: Incremental type — Since the slider's position data is lost once the power is turned off, home return must be performed every time the power is turned on. |
| **④Motor type** | Wattage of the motor installed in the actuator.<br>Since the ERC3 series is driven by a pulse motor, the motor size (42P = 42 frame size motor) is indicated instead of the wattage. |
| **⑤Lead** | Lead of the ball screw (distance travelled by the slider as the ball screw makes one rotation). |
| **⑥Stroke** | Stroke (range of operation) of the actuator (unit: mm). |
| **⑦I/OType** | Type of connectable controllers. With the ERC3 series having a built-in controller, the I/O (input/output signal) type is indicated. |
| **⑧Cable length** | Length of the cable that connects the ERC3 series with the host system and options. |
| **⑨Controller type** | Two types of controllers are available:<br>• CON type: At least eight positioning points (or at least 64 points when the PIO converter is used) are supported.<br>• MEC type: The actuator can be operated with ease. As for positioning, the actuator stops at two points or three positions.<br>(Note) Switching between the CON type and MEC type is not possible after the shipment. |
| **⑩Option** | Options installed on the actuator.<br>Refer to P. 12 for details.<br>*If multiple options are selected, enter them in an alphabetic order. (Example: ABU-B-NM) |

## Actuator Options

### Brake
Model number: **B**

**Applicable models** All models

**Description** A mechanism to hold the slider in place when the actuator is used vertically, so that it will not drop and damage the work part, etc., when the power or servo is turned off.

### Non-motor end specification
Model number: **NM**

**Applicable models** All models

**Description** Select this option if you want to change the home position of the actuator slider or rod from the normal position (motor side) to the front side.

### Simple absolute specification
Model number: **ABU**

**Applicable models** All models

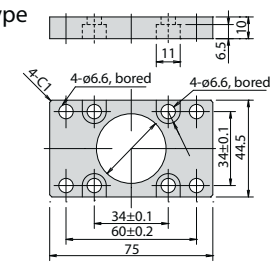
**Description** This option is used to allow the actuator to operate without returning home first when the power is turned on. It can be selected only when the I/O type is "SIO communication (SE)."
* The simple absolute battery is installed in the PIO converter (refer to P. 45), so the separately sold PIO converter of simple absolute specification is required.

### Flange
Model number: **FL**

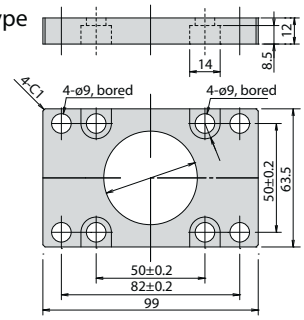
**Applicable models** ERC3-RA4C/RA6C

**Description** A bracket used to secure a rod actuator from the actuator side. The flange can be purchased separately later on.

ERC3-RA4C type




ERC3-RA6C type

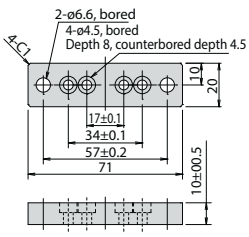



### Foot bracket
Model number: **FT**

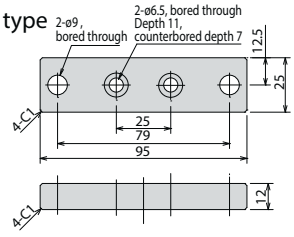
**Applicable models** ERC3-RA4C/RA6C

**Description** This bracket is used to affix the rod type with bolts from above the actuator. The bracket can be purchased separately later on.

ERC3-RA4C type




ERC3-RA6C type




### Vacuum joint on opposite side
Model number: **VR**

**Applicable models** ERC3CR-SA5C/SA7C

**Description** Under the standard specification, the vacuum joint is installed on the left side of the actuator as viewed from the motor. When this option is selected, the position of this joint is moved to the right side (opposite side).

# 1. Speed

"Speed" refers to the set speed at which to move the actuator slider (or rod).
After accelerating from the stationary state and reaching the set speed, the slider continues to move at that speed until immediately before the target position (specified position) and then decelerates to a stop.

**<Caution>**

❶ The pulse motors used in the ERC3 series change their maximum speed depending on the transported mass. When selecting your model, refer to "Correlation diagrams of speed vs. payload" (on the page featuring each model).

❷ Regardless of whether the stroke is short or long, the set speed may not be reached if the travel distance is short.

❸ The longer the stroke, the lower the maximum speed becomes in order to avoid reaching a dangerous speed.
For details, refer to the "Stroke vs. Maximum Speed" table on the page featuring each model.

❹ When calculating the travel time, consider not only the travel time at the set speed, but also the acceleration, deceleration and settling times.

# 2. Acceleration/Deceleration

"Acceleration" refers to the rate of change in speed until the stationary actuator reaches the set speed.
"Deceleration" refers to the rate of change in speed until the actuator traveling at the set speed comes to a stop.
Both are specified in "G" in programs (0.3 G = 2940 mm/sec$^2$).

**<Caution>**

❶ The greater the value of acceleration (deceleration), the faster the actuator accelerates (decelerates) and consequently the travel time becomes shorter.
Note, however, that an excessively higher acceleration (deceleration) is a cause of error and malfunction.

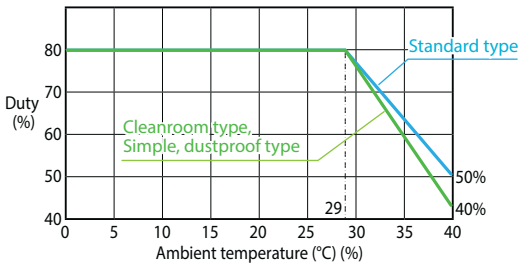
❷ The rated acceleration (deceleration) is 0.3 G.
Although the upper limit of acceleration (deceleration) is 1 G (or 0.5 G in a vertical application), increasing the value of acceleration/deceleration reduces the payload.

# 3. Duty

With the ERC3 series, the duty is limited according to the ambient temperature to prevent the motor unit from generating heat. Operate the actuator at a duty ratio not exceeding the allowable value shown in the graph below.

**<Caution>**

The duty limits shown below assume that the high-output setting of the controller is enabled. If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting.




The duration of one cycle shall be assumed as follows:

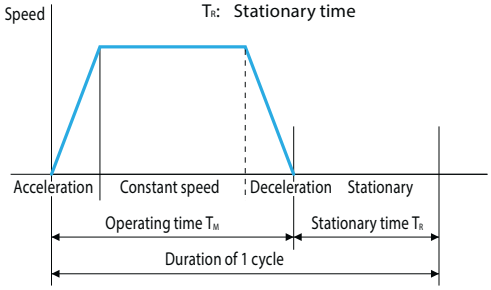
| Model | Duration of 1 cycle ($T_M + T_R$) |
|---|---|
| SA5C/RA4C | 15 minutes or less |
| SA7C/RA6C | 10 minutes or less |

Notes:
Do not operate the actuator at a duty ratio exceeding the allowable value.
If the actuator is operated at a duty ratio exceeding the allowable value, the life of the capacitor used in the controller will become shorter.

[Duty ratio]
"Duty ratio" refers to the utilization ratio indicated by a percentage of the time during which the actuator operates in one cycle.

$$D = \frac{T_M}{T_M + T_R} \times 100(\%)$$

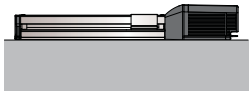
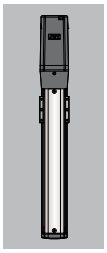
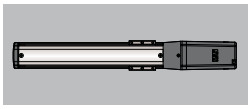
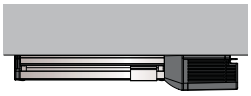
D: Duty
$T_M$: Operating time (including push-motion operation)
$T_R$: Stationary time



# 4. Installation

Refer to the table below for the installation orientation of each model.

○: Can be installed

| Installation orientation / Type | Horizontal, flat | Vertical Note 1 | Laid on side | Ceiling mount |
|---|---|---|---|---|
| |  |  |  |  |
| SA5C, SA7C | ○ | ○ | ○Note 2 | ○ |
| RA4C, RA6C | ○ | ○ | ○ | ○ |
| Slider type, standard specification (Screw cover specification) (SA5C, SA7C) | ○ | ○ | ○ | ○ |
| Slider type, standard specification (Stainless sheet specification) (SA5C, SA7C) | ○ | ○ | △ | △ |
| Slider type, cleanroom type (SA5C, SA7C) | ○ | ○ | △ | △ |
| Rod type (RA4C, RA6C) | ○ | ○ | ○ | ○ |

Note 1 When installing the actuator vertically, bring the motor to the top whenever possible. If the actuator is mounted with the motor at the bottom, problems won't occur during normal operation, but if the actuator is stopped for a prolonged period of time, grease may separate depending on the ambient environment (especially when the ambient temperature is high), in which case base oil may flow into the motor unit and could cause problems on rare occasions.

Note 2 If the actuator is installed on its side, it becomes more vulnerable to entry of foreign matters into the actuator or scattering of grease on the guide and ball screw from openings on the exposed side.

Note 3 The slider type of standard specification (stainless specification) or cleanroom type SA5C/SA7C can be installed sideways or hung from the ceiling, but the actuator must be inspected daily. This is because when the actuator is laid on its side or mounted from the ceiling, the stainless sheet may become loose or shift. If the actuator is used continuously in this condition, the stainless sheet may fracture or develop other problems. Inspect your actuator daily and if the stainless sheet is found loose or shifted, adjust the installation of the stainless sheet.

# ERC3CR-SA5C

● Cleanroom type ● Slider type
● Actuator Width 50mm

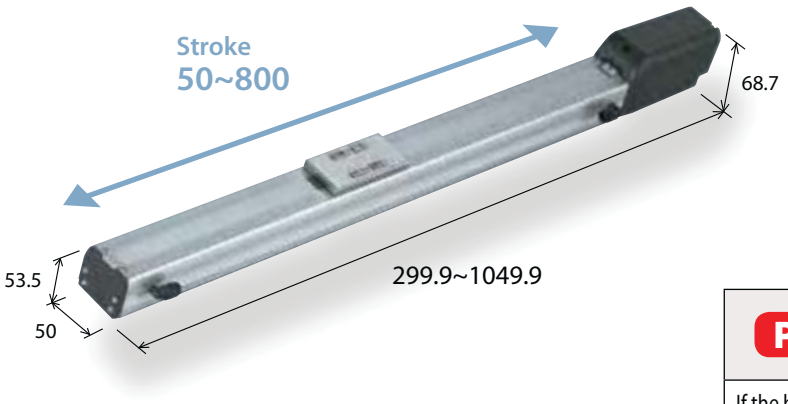
■ Model Specification Items

**ERC3CR – SA5C – I – 42P – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 42□Pulse motor | 20: 20mm<br>12: 12mm<br>6: 6mm<br>3: 3mm | 50:50mm<br>~<br>800:800mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification<br>VR: Vacuum joint on opposite side |

*Refer to P.11 for the description of items constituting the model number.

RoHS

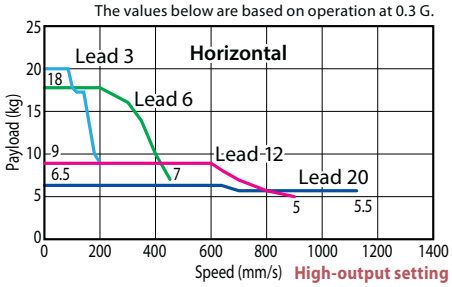



Unit: mm

## ■ Correlation diagrams of Speed and Payload

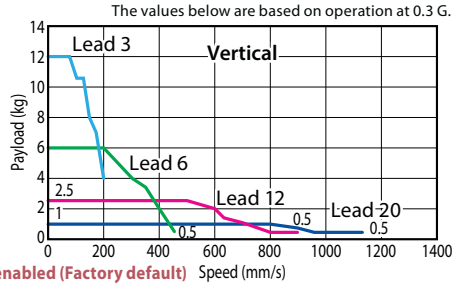
With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

The values below are based on operation at 0.3 G.




## POINT Notes on selection

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| ERC3CR-SA5C-I-42P-20-①-②-③-④ | 20 | 6.5 | 1 | 50~800 (every 50mm) |
| ERC3CR-SA5C-I-42P-12-①-②-③-④ | 12 | 9 | 2.5 | |
| ERC3CR-SA5C-I-42P-6-①-②-③-④ | 6 | 18 | 6 | |
| ERC3CR-SA5C-I-42P-3-①-②-③-④ | 3 | 20 | 12 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed/Suction Amount by Lead

| Lead \ Stroke | 50~450 (every 50mm) | 500 (mm) | 550 (mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) | Suction amount (Nl/min) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 1120 | | | 1045 | 900 | 785 | 690 | 610 | 80 |
| 12 | 900 | 795 | 665 | 570 | 490 | 425 | 375 | 330 | 50 |
| 6 | 450 | 395 | 335 | 285 | 245 | 215 | 185 | 165 | 30 |
| 3 | 225 | 195 | 165 | 140 | 120 | 105 | 90 | 80 | 15 |

The values of lead 3 apply when acceleration is at 0.1G. (Unit: mm/s)

### ①Stroke

| Stroke (mm) | Standard price | Stroke (mm) | Standard price |
|---|---|---|---|
| 50 | — | 450 | — |
| 100 | — | 500 | — |
| 150 | — | 550 | — |
| 200 | — | 600 | — |
| 250 | — | 650 | — |
| 300 | — | 700 | — |
| 350 | — | 750 | — |
| 400 | — | 800 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

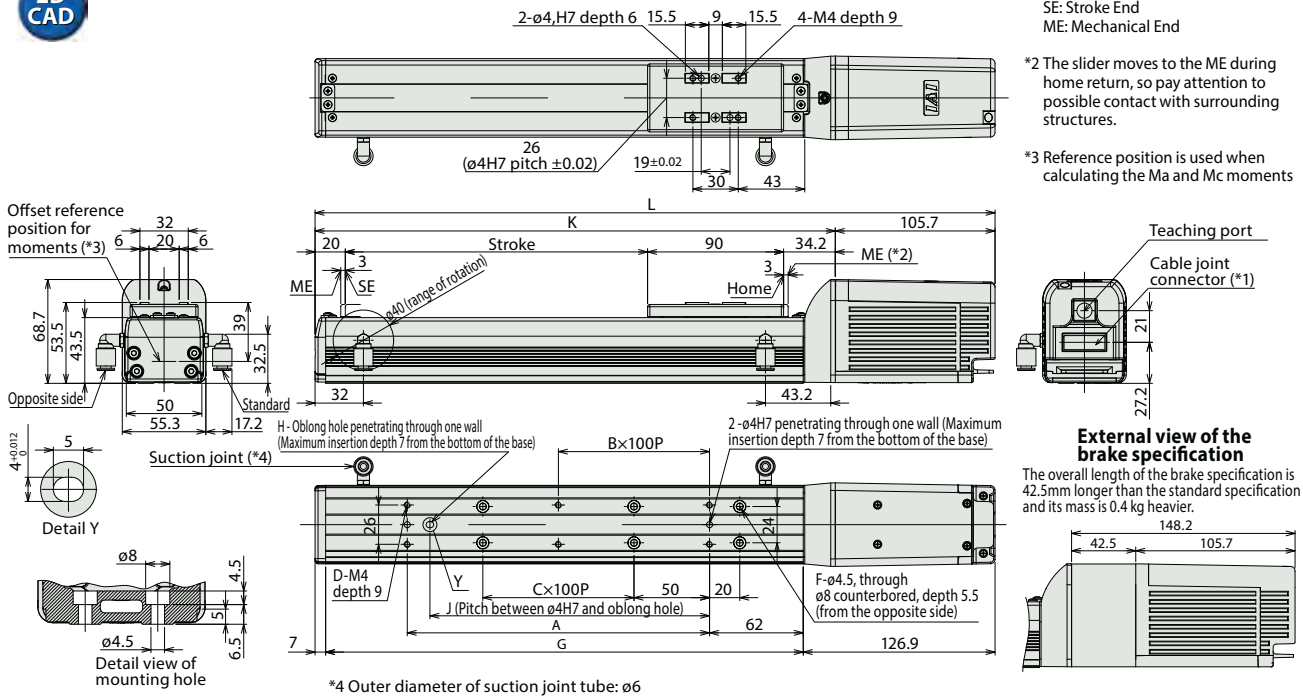
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Vacuum joint on opposite side | VR | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

2D CAD




*4 Outer diameter of suction joint tube: ø6

*1 Connect the power & I/O cable. Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

*2 The slider moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 Reference position is used when calculating the Ma and Mc moments

**External view of the brake specification**

The overall length of the brake specification is 42.5mm longer than the standard specification and its mass is 0.4 kg heavier.

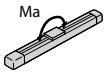


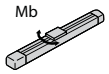

## Actuator specificaton

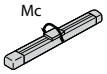
| Item | Description |
|---|---|
| Drive system | Ball screw ø10 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less |
| Static allowable load moment | Ma: 29.4 N•m, Mb: 42.0 N•m, Mc: 60.5 N•m |
| Dynamic allowable load moment (*2) | Ma: 7.1 N•m, Mb: 10.2 N•m, Mc: 14.7 N•m |
| Overhang load lengths | 150mm or less in Ma direction, 150 mm or less in Mb and Mc directions |
| Ambient operation temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 20 mm.
(*2) Based on 5,000 km of traveling life.

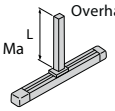
Allowable load moment directions

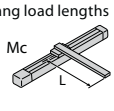



Overhang load lengths




## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 299.9 | 349.9 | 399.9 | 449.9 | 499.9 | 549.9 | 599.9 | 649.9 | 699.9 | 749.9 | 799.9 | 849.9 | 899.9 | 949.9 | 999.9 | 1049.9 |
| A | 73 | 100 | 100 | 200 | 200 | 300 | 300 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 | 800 |
| B | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| C | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 |
| D | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 |
| F | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 |
| G | 166 | 216 | 266 | 316 | 366 | 416 | 466 | 516 | 566 | 616 | 666 | 716 | 766 | 816 | 866 | 916 |
| H | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| J | 0 | 85 | 85 | 185 | 185 | 285 | 285 | 385 | 385 | 485 | 485 | 585 | 585 | 685 | 685 | 785 |
| K | 194.2 | 244.2 | 294.2 | 344.2 | 394.2 | 444.2 | 494.2 | 544.2 | 594.2 | 644.2 | 694.2 | 744.2 | 794.2 | 844.2 | 894.2 | 944.2 |
| Mass (kg) | 1.6 | 1.8 | 2.0 | 2.1 | 2.3 | 2.5 | 2.6 | 2.8 | 3.0 | 3.1 | 3.3 | 3.5 | 3.6 | 3.8 | 4.0 | 4.1 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3CR-SA5C-I-42P-☐-☐-NP-☐-☐ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3CR-SA5C-I-42P-☐-☐-PN-☐-☐ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3CR-SA5C-I-42P-☐-☐-SE-☐-☐ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3CR-SA5C-I-42P-☐-☐-PLN-☐-☐ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3CR-SA5C-I-42P-☐-☐-PLP-☐-☐ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3CR-SA7C

● Cleanroom type ● Slider type
● Actuator Width 73mm

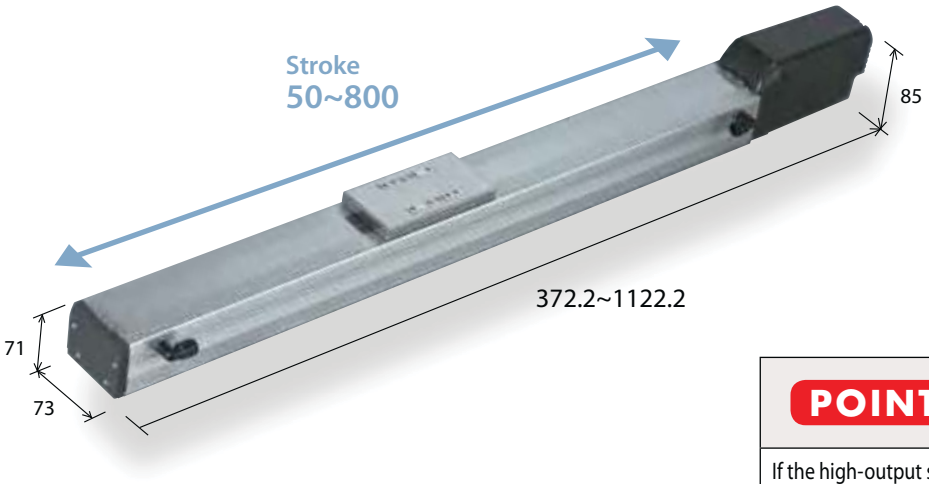
■ Model Specification Items

**ERC3CR – SA7C – I – 56P – □ – □ – □ – □ – □ – □ – □**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 56□Pulse motor | 24: 24mm<br>16: 16mm<br>8: 8mm<br>4: 4mm | 50:50mm<br>~<br>800:800mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification<br>VR: Vacuum joint on opposite side |

*Refer to P.11 for the description of items constituting the model number.

RoHS

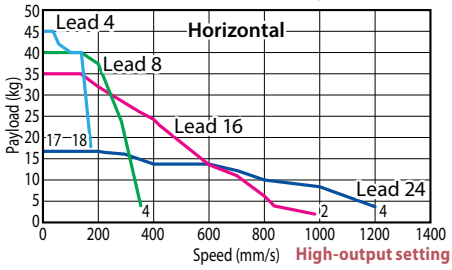



Unit: mm

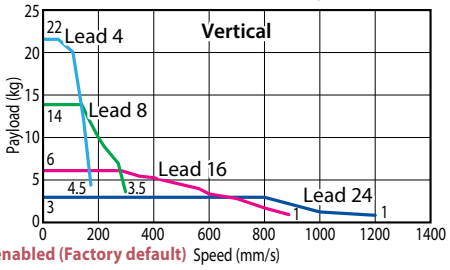
## ■ Correlation diagrams of Speed and Payload

With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

**POINT** **Notes on selection**

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| ERC3CR-SA7C-I-56P-24-①-②-③-④ | 24 | 17 | 3 | 50~800 (every 50mm) |
| ERC3CR-SA7C-I-56P-16-①-②-③-④ | 16 | 35 | 6 | |
| ERC3CR-SA7C-I-56P-8-①-②-③-④ | 8 | 40 | 14 | |
| ERC3CR-SA7C-I-56P-4-①-②-③-④ | 4 | 45 | 22 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed/Suction Amount by Lead

| Lead \ Stroke | 50~550 (every 50mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) | Suction amount (Nl/min) |
|---|---|---|---|---|---|---|---|
| 24 | 1200 | | 1155 | 1010 | 890 | 790 | 90 |
| 16 | 980 <840> | 865 <840> | 750 | 655 | 580 | 515 | 70 |
| 8 | 490 | 430 | 375 | 325 | 290 | 255 | 40 |
| 4 | 210 | | 185 | 160 | 145 | 125 | 30 |

The value inside < > indicates vertical usage.
The values of lead 8 and lead 4 apply when acceleration is at 0.1G.

(Unit: mm/s)

### ①Stroke

| Stroke (mm) | Standard price | Stroke (mm) | Standard price |
|---|---|---|---|
| 50 | — | 450 | — |
| 100 | — | 500 | — |
| 150 | — | 550 | — |
| 200 | — | 600 | — |
| 250 | — | 650 | — |
| 300 | — | 700 | — |
| 350 | — | 750 | — |
| 400 | — | 800 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

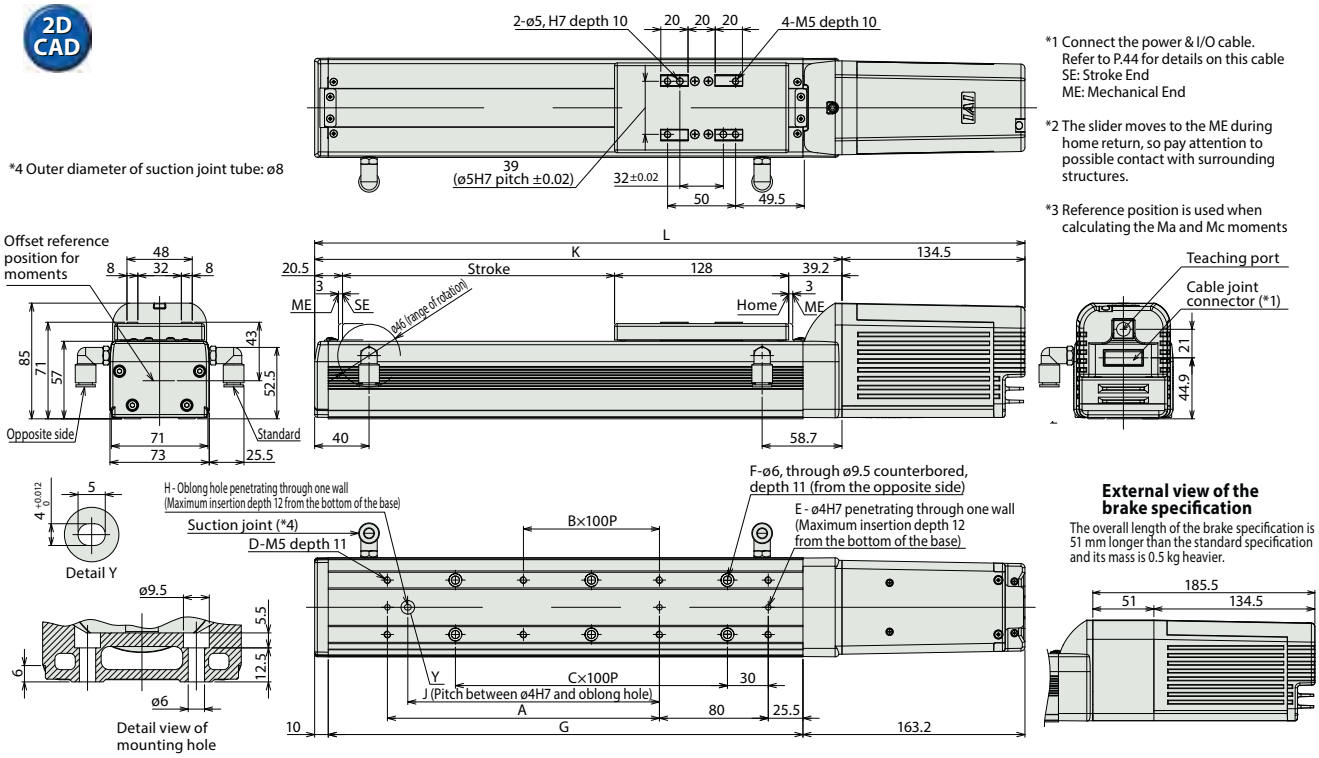
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Vacuum joint on opposite side | VR | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

CAD drawings can be downloaded from the website. **www.intelligentactuator.com**

2D CAD




*1 Connect the power & I/O cable. Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

*2 The slider moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 Reference position is used when calculating the Ma and Mc moments

**External view of the brake specification**

The overall length of the brake specification is 51 mm longer than the standard specification and its mass is 0.5 kg heavier.

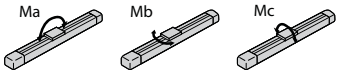



## Actuator specificaton

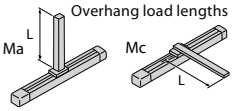
| Item | Description |
|---|---|
| Drive system | Ball screw ø12 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less |
| Static allowable load moment | Ma: 70.0 N•m, Mb: 100.0 N•m, Mc: 159.5 N•m |
| Dynamic allowable load moment (*2) | Ma: 15.0 N•m, Mb: 21.4 N•m, Mc: 34.1 N•m |
| Overhang load lengths | 150 mm or less in Ma direction, 150 mm or less in Mb and Mc directions |
| Ambient operation temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 24 mm.
(*2) Based on 5,000 km of traveling life.

Allowable load moment directions




Overhang load lengths




## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 372.2 | 422.2 | 472.2 | 522.2 | 572.2 | 622.2 | 672.2 | 722.2 | 772.2 | 822.2 | 872.2 | 922.2 | 972.2 | 1022.2 | 1072.2 | 1122.2 |
| A | 0 | 100 | 100 | 200 | 200 | 300 | 300 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 | 800 |
| B | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| C | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 8 |
| D | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 | 20 |
| E | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| F | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 |
| G | 199 | 249 | 299 | 349 | 399 | 449 | 499 | 549 | 599 | 649 | 699 | 749 | 799 | 849 | 899 | 949 |
| H | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| J | 0 | 85 | 85 | 185 | 185 | 285 | 285 | 385 | 385 | 485 | 485 | 585 | 585 | 685 | 685 | 785 |
| K | 237.7 | 287.7 | 337.7 | 387.7 | 437.7 | 487.7 | 537.7 | 587.7 | 637.7 | 687.7 | 737.7 | 787.7 | 837.7 | 887.7 | 937.7 | 987.7 |
| Mass (kg) | 3.6 | 3.9 | 4.1 | 4.4 | 4.7 | 4.9 | 5.2 | 5.5 | 5.7 | 6.0 | 6.3 | 6.5 | 6.8 | 7.1 | 7.3 | 7.6 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3CR-SA7C-I-56P-□-□-NP-□-□ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3CR-SA7C-I-56P-□-□-PN-□-□ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3CR-SA7C-I-56P-□-□-SE-□-□ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3CR-SA7C-I-56P-□-□-PLN-□-□ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3CR-SA7C-I-56P-□-□-PLP-□-□ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3D-SA5C

● Simple, dustproof type
● Slider type ● Actuator Width 50mm

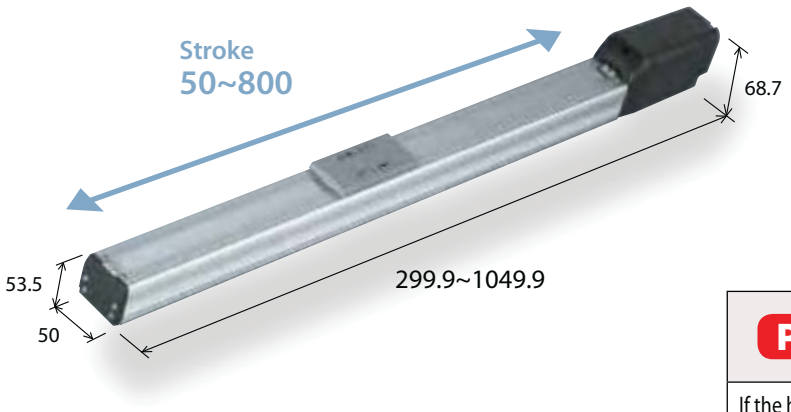
■ Model Specification Items

**ERC3D – SA5C – I – 42P – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 42□Pulse motor | 20: 20mm<br>12: 12mm<br>6: 6mm<br>3: 3mm | 50:50mm<br>~<br>800:800mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification |

*Refer to P.11 for the description of items constituting the model number.

RoHS

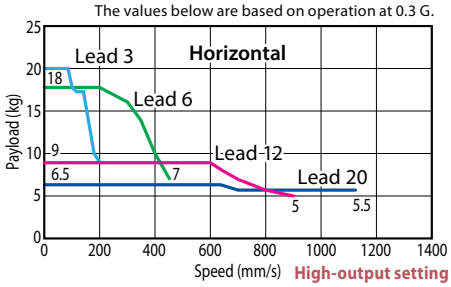



Unit: mm

## ■ Correlation diagrams of Speed and Payload

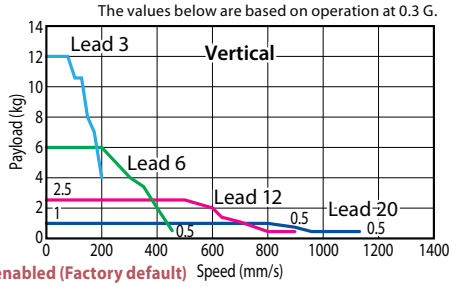
With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

The values below are based on operation at 0.3 G.




## POINT Notes on selection

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| ERC3D-SA5C-I-42P-20-①-②-③-④ | 20 | 6.5 | 1 | 50~800 (every 50mm) |
| ERC3D-SA5C-I-42P-12-①-②-③-④ | 12 | 9 | 2.5 | |
| ERC3D-SA5C-I-42P-6-①-②-③-④ | 6 | 18 | 6 | |
| ERC3D-SA5C-I-42P-3-①-②-③-④ | 3 | 20 | 12 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed by Lead

| Lead \ Stroke | 50~450 (every 50mm) | 500 (mm) | 550 (mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) |
|---|---|---|---|---|---|---|---|---|
| 20 | 1120 | | | 1045 | 900 | 785 | 690 | 610 |
| 12 | 900 | 795 | 665 | 570 | 490 | 425 | 375 | 330 |
| 6 | 450 | 395 | 335 | 285 | 245 | 215 | 185 | 165 |
| 3 | 225 | 195 | 165 | 140 | 120 | 105 | 90 | 80 |

The values of lead 3 apply when acceleration is at 0.1G. (Unit: mm/s)

### ①Stroke

| Stroke (mm) | Standard price | Stroke (mm) | Standard price |
|---|---|---|---|
| 50 | — | 450 | — |
| 100 | — | 500 | — |
| 150 | — | 550 | — |
| 200 | — | 600 | — |
| 250 | — | 650 | — |
| 300 | — | 700 | — |
| 350 | — | 750 | — |
| 400 | — | 800 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M (5m) | — | — |
| Special length | X06 (6m)~X10 (10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

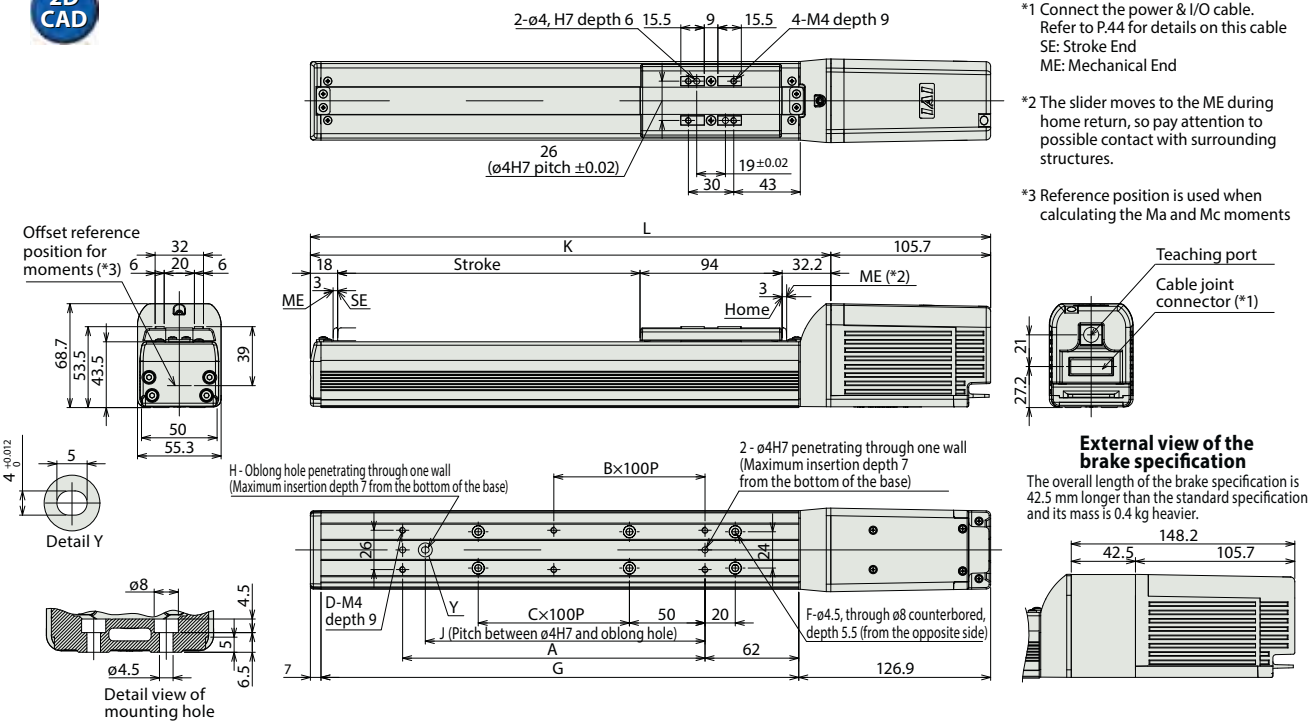
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

2D CAD




*1 Connect the power & I/O cable. Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

*2 The slider moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 Reference position is used when calculating the Ma and Mc moments

**External view of the brake specification**

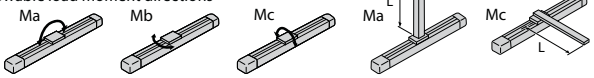
The overall length of the brake specification is 42.5 mm longer than the standard specification and its mass is 0.4 kg heavier.

## Actuator specificaton

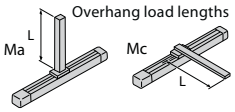
| Item | Description |
|---|---|
| Drive system | Ball screw ø10 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less |
| Static allowable load moment | Ma: 29.4 N•m, Mb: 42.0 N•m, Mc: 60.5 N•m |
| Dynamic allowable load moment (*2) | Ma: 7.1 N•m, Mb: 10.2 N•m, Mc: 14.7 N•m |
| Overhang load lengths | 150 mm or less in Ma direction, 150 mm or less in Mb and Mc directions |
| Ambient operation temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 20 mm.
(*2) Based on 5,000 km of traveling life.

Allowable load moment directions




Overhang load lengths




## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 299.9 | 349.9 | 399.9 | 449.9 | 499.9 | 549.9 | 599.9 | 649.9 | 699.9 | 749.9 | 799.9 | 849.9 | 899.9 | 949.9 | 999.9 | 1049.9 |
| A | 73 | 100 | 100 | 200 | 200 | 300 | 300 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 | 800 |
| B | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| C | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 |
| D | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 |
| F | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 |
| G | 166 | 216 | 266 | 316 | 366 | 416 | 466 | 516 | 566 | 616 | 666 | 716 | 766 | 816 | 866 | 916 |
| H | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| J | 0 | 85 | 85 | 185 | 185 | 285 | 285 | 385 | 385 | 485 | 485 | 585 | 585 | 685 | 685 | 785 |
| K | 194.2 | 244.2 | 294.2 | 344.2 | 394.2 | 444.2 | 494.2 | 544.2 | 594.2 | 644.2 | 694.2 | 744.2 | 794.2 | 844.2 | 894.2 | 944.2 |
| Mass (kg) | 1.6 | 1.8 | 2.0 | 2.1 | 2.3 | 2.5 | 2.6 | 2.8 | 3.0 | 3.1 | 3.3 | 3.5 | 3.6 | 3.8 | 4.0 | 4.1 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3D-SA5C-I-42P-□-□-NP-□-□ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3D-SA5C-I-42P-□-□-PN-□-□ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3D-SA5C-I-42P-□-□-SE-□-□ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3D-SA5C-I-42P-□-□-PLN-□-□ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3D-SA5C-I-42P-□-□-PLP-□-□ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3D-SA7C

● Simple, dustproof type
● Slider type ●Actuator Width 73mm

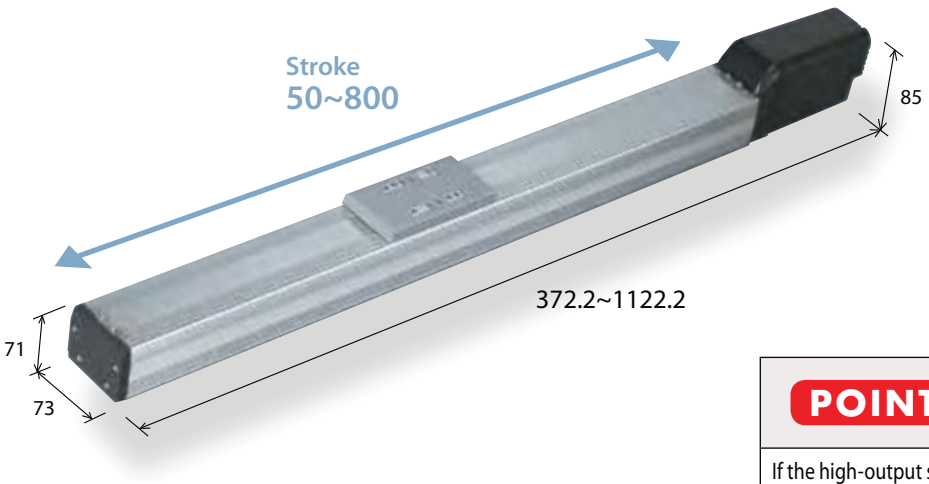
■ Model Specification Items

**ERC3D – SA7C – I – 56P – □ – □ – □ – □ – □ – □ – □**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 56□Pulse motor | 24: 24mm<br>16: 16mm<br>8: 8mm<br>4: 4hmm | 50:50mm<br>~<br>800:800mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification |

*Refer to P.11 for the description of items constituting the model number.

RoHS

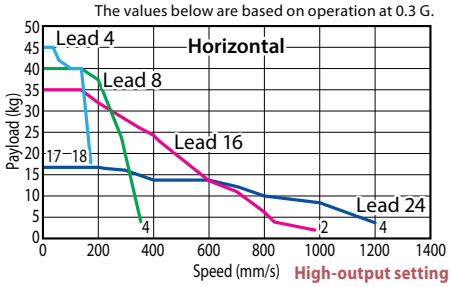



Unit: mm

## ■ Correlation diagrams of Speed and Payload

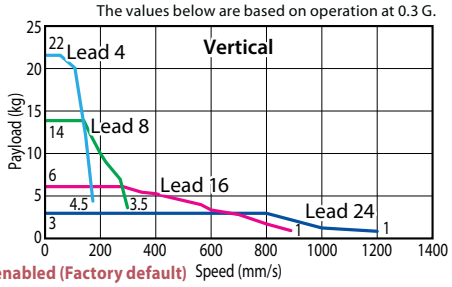
With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

The values below are based on operation at 0.3 G.




## POINT Notes on selection

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| ERC3D-SA7C-I-56P-24-①-②-③-④ | 24 | 17 | 3 | 50~800 (every 50mm) |
| ERC3D-SA7C-I-56P-16-①-②-③-④ | 16 | 35 | 6 | |
| ERC3D-SA7C-I-56P-8-①-②-③-④ | 8 | 40 | 14 | |
| ERC3D-SA7C-I-56P-4-①-②-③-④ | 4 | 45 | 22 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed by Lead

| Lead \ Stroke | 50~550 (every 50mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) |
|---|---|---|---|---|---|---|
| 24 | 1200 | | 1155 | 1010 | 890 | 790 |
| 16 | 980 <840> | 865 <840> | 750 | 655 | 580 | 515 |
| 8 | 490 | 430 | 375 | 325 | 290 | 255 |
| 4 | 210 | | 185 | 160 | 145 | 125 |

The value inside < > indicates vertical usage.
The values of lead 8 and lead 4 apply when acceleration is at 0.1G.

(Unit: mm/s)

### ①Stroke

| Stroke (mm) | Standard price | Stroke (mm) | Standard price |
|---|---|---|---|
| 50 | — | 450 | — |
| 100 | — | 500 | — |
| 150 | — | 550 | — |
| 200 | — | 600 | — |
| 250 | — | 650 | — |
| 300 | — | 700 | — |
| 350 | — | 750 | — |
| 400 | — | 800 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

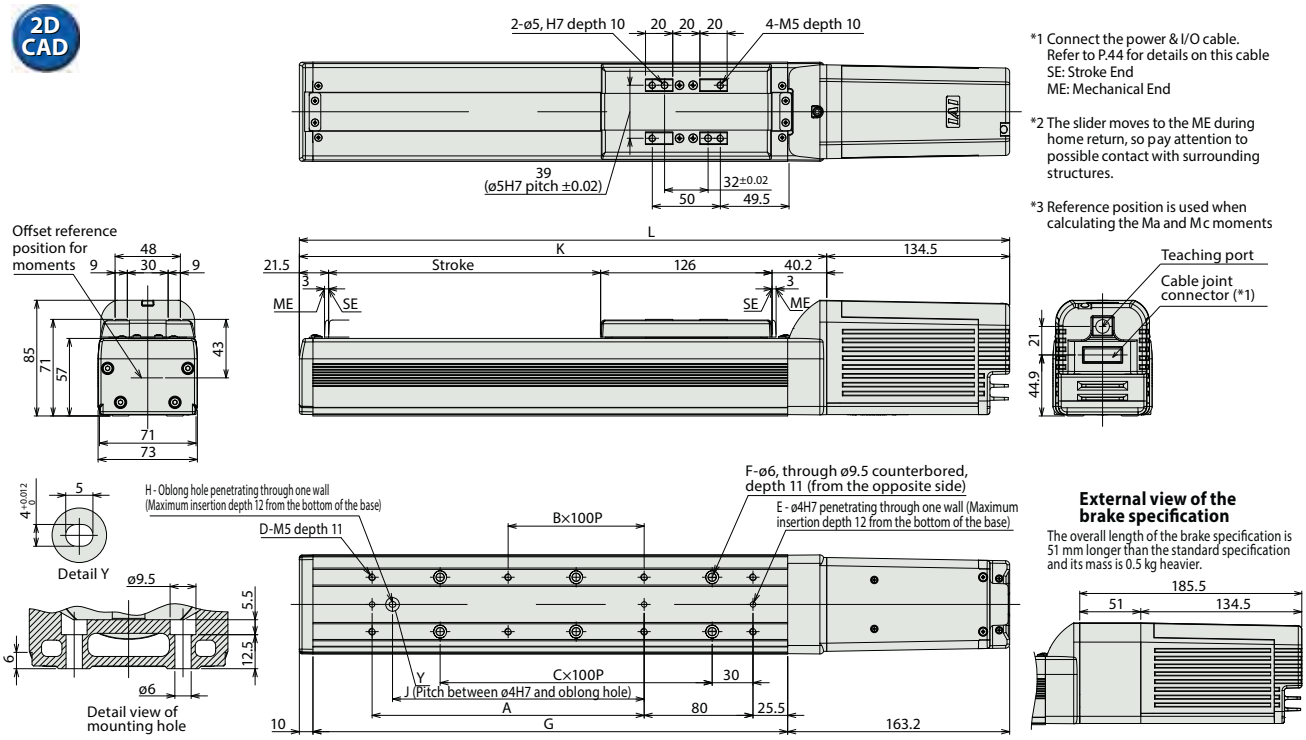
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

2D CAD




**External view of the brake specification**

The overall length of the brake specification is 51 mm longer than the standard specification and its mass is 0.5 kg heavier.

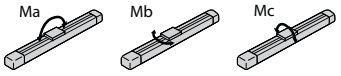



## Actuator specificaton

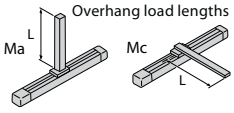
| Item | Description |
|---|---|
| Drive system | Ball screw ø12 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less |
| Static allowable load moment | Ma: 70.0 N•m, Mb: 100.0 N•m, Mc: 159.5 N•m |
| Dynamic allowable load moment (*2) | Ma: 15.0 N•m, Mb: 21.4 N•m, Mc: 34.1 N•m |
| Overhang load lengths | 150 mm or less in Ma direction, 150 mm or less in Mb and Mc directions |
| Ambient operation temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 24 mm.
(*2) Based on 5,000 km of traveling life.

Allowable load moment directions




Overhang load lengths




## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 372.2 | 422.2 | 472.2 | 522.2 | 572.2 | 622.2 | 672.2 | 722.2 | 772.2 | 822.2 | 872.2 | 922.2 | 972.2 | 1022.2 | 1072.2 | 1122.2 |
| A | 0 | 100 | 100 | 200 | 200 | 300 | 300 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 | 800 |
| B | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| C | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 8 |
| D | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 | 20 |
| E | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| F | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 |
| G | 199 | 249 | 299 | 349 | 399 | 449 | 499 | 549 | 599 | 649 | 699 | 749 | 799 | 849 | 899 | 949 |
| H | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| J | 0 | 85 | 85 | 185 | 185 | 285 | 285 | 385 | 385 | 485 | 485 | 585 | 585 | 685 | 685 | 785 |
| K | 237.7 | 287.7 | 337.7 | 387.7 | 437.7 | 487.7 | 537.7 | 587.7 | 637.7 | 687.7 | 737.7 | 787.7 | 837.7 | 887.7 | 937.7 | 987.7 |
| Mass (kg) | 3.6 | 3.9 | 4.1 | 4.4 | 4.7 | 4.9 | 5.2 | 5.5 | 5.7 | 6.0 | 6.3 | 6.5 | 6.8 | 7.1 | 7.3 | 7.6 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3D-SA7C-I-56P-□-□-NP-□-□ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3D-SA7C-I-56P-□-□-PN-□-□ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3D-SA7C-I-56P-□-□-SE-□-□ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3D-SA7C-I-56P-□-□-PLN-□-□ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3D-SA7C-I-56P-□-□-PLP-□-□ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3-SA5C

● Standard type ● Slider type
● Actuator Width 50mm

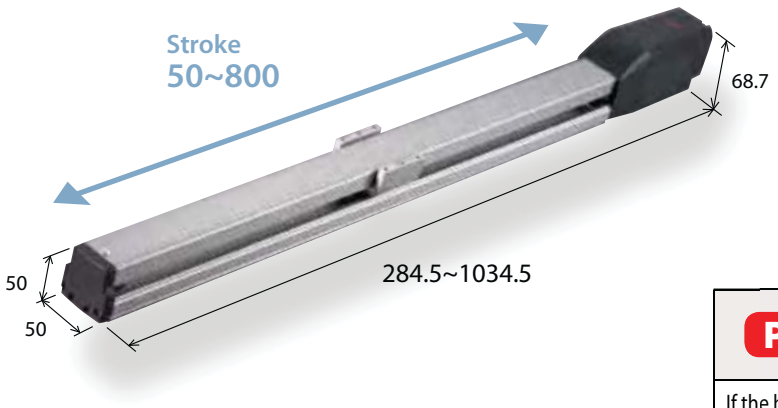
■ Model Specification Items

**ERC3 – SA5C – I – 42P – □ – □ – □ – □ – □ – □ – □**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 42□Pulse motor | 20: 20mm<br>12: 12mm<br>6: 6mm<br>3: 3mm | 50:50mm<br>〜<br>800:800mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification |

*Refer to P.11 for the description of items constituting the model number.

RoHS

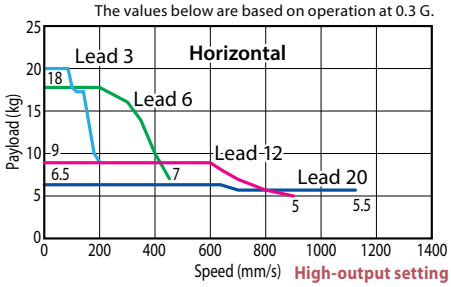



Unit: mm

## ■ Correlation diagrams of Speed and Payload

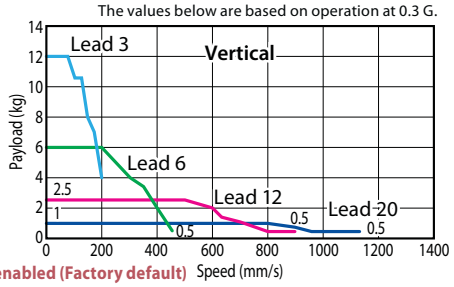
With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

The values below are based on operation at 0.3 G.




## POINT Notes on selection

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| ERC3-SA5C-I-42P-20-①-②-③-④ | 20 | 6.5 | 1 | 50~800 (every 50mm) |
| ERC3-SA5C-I-42P-12-①-②-③-④ | 12 | 9 | 2.5 | |
| ERC3-SA5C-I-42P-6-①-②-③-④ | 6 | 18 | 6 | |
| ERC3-SA5C-I-42P-3-①-②-③-④ | 3 | 20 | 12 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed by Lead

| Lead \ Stroke | 50~450 (every 50mm) | 500 (mm) | 550 (mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) |
|---|---|---|---|---|---|---|---|---|
| 20 | 1120 | | 1115 | 935 | 795 | 680 | 585 | 510 |
| 12 | 900 | 805 | 665 | 560 | 475 | 405 | 350 | 300 |
| 6 | 450 | 400 | 330 | 280 | 235 | 200 | 175 | 150 |
| 3 | 225 | 200 | 165 | 140 | 115 | 100 | 85 | 75 |

The values of lead 3 apply when acceleration is at 0.1G.

(Unit: mm/s)

### ①Stroke

| Stroke (mm) | Standard price | Stroke (mm) | Standard price |
|---|---|---|---|
| 50 | — | 450 | — |
| 100 | — | 500 | — |
| 150 | — | 550 | — |
| 200 | — | 600 | — |
| 250 | — | 650 | — |
| 300 | — | 700 | — |
| 350 | — | 750 | — |
| 400 | — | 800 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

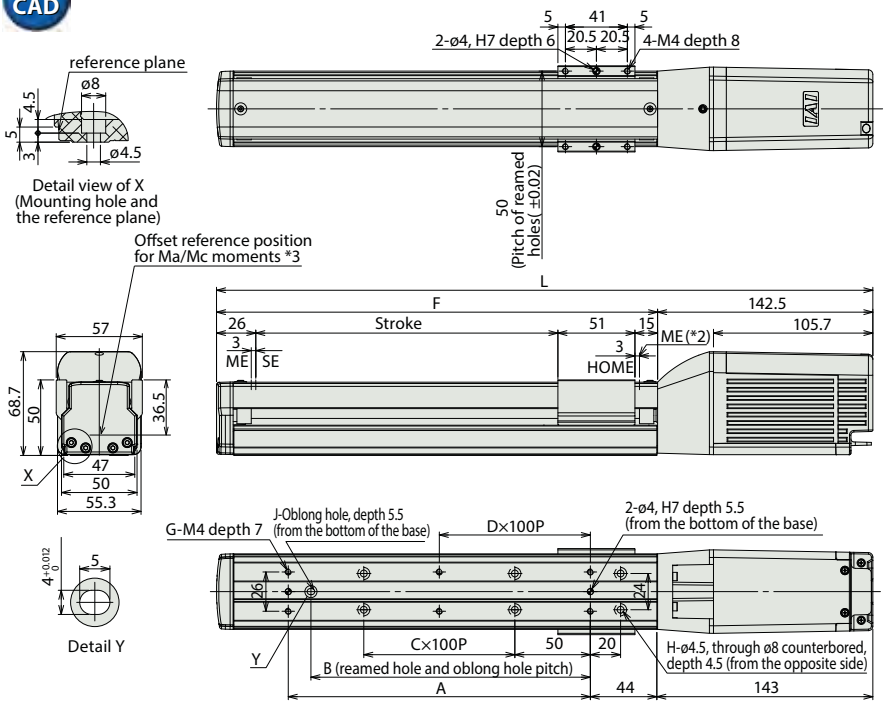
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

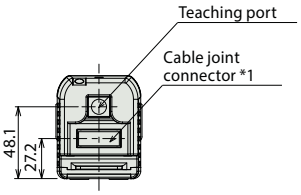
2D CAD




*1 Connect the power & I/O cable. Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

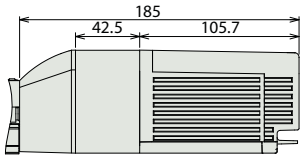
*2 The slider moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 Reference position is used when calculating the Ma and Mc moments




### External view of the brake specification

The overall length of the brake specification is 42.5 mm longer than the standard specification and its mass is 0.4 kg heavier.

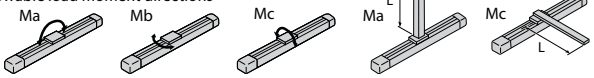



## Actuator specificaton

| Item | Description |
|---|---|
| Drive system | Ball screw ø10 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less |
| Static allowable load moment | Ma: 29.4 N•m, Mb: 42.0 N•m, Mc: 60.5 N•m |
| Dynamic allowable load moment (*2) | Ma: 7.1 N•m, Mb: 10.2 N•m, Mc: 14.7 N•m |
| Overhang load lengths | 150 mm or less in Ma direction, 150 mm or less in Mb and Mc directions |
| Ambient operation temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 20 mm.
(*2) Based on 5,000 km of traveling life.

Allowable load moment directions




## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 284.5 | 334.5 | 384.5 | 434.5 | 484.5 | 534.5 | 584.5 | 634.5 | 684.5 | 734.5 | 784.5 | 834.5 | 884.5 | 934.5 | 984.5 | 1034.5 |
| A | 73 | 100 | 100 | 200 | 200 | 300 | 300 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 | 800 |
| B | 0 | 85 | 85 | 185 | 185 | 285 | 285 | 385 | 385 | 485 | 485 | 585 | 585 | 685 | 685 | 785 |
| C | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 |
| D | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| F | 142 | 192 | 242 | 292 | 342 | 392 | 442 | 492 | 542 | 592 | 642 | 692 | 742 | 792 | 842 | 892 |
| G | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 |
| H | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 |
| J | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mass (kg) | 1.4 | 1.5 | 1.6 | 1.7 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3-SA5C-I-42P-☐-☐-NP-☐-☐ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3-SA5C-I-42P-☐-☐-PN-☐-☐ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3-SA5C-I-42P-☐-☐-SE-☐-☐ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3-SA5C-I-42P-☐-☐-PLN-☐-☐ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3-SA5C-I-42P-☐-☐-PLP-☐-☐ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3-SA7C

● Standard type ● Slider type
● Actuator Width 74mm

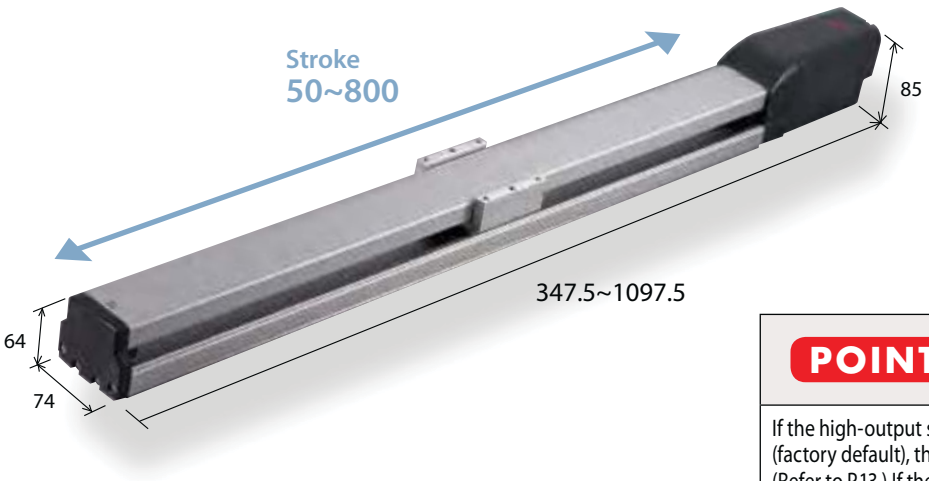
■ Model Specification Items

**ERC3 — SA7C — I — 56P — □ — □ — □ — □ — □ — □ — □**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 56□Pulse motor | 24: 24mm<br>16: 12mm<br>8: 8mm<br>4: 4mm | 50:50mm<br>~<br>800:800mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification |

*Refer to P.11 for the description of items constituting the model number.

RoHS

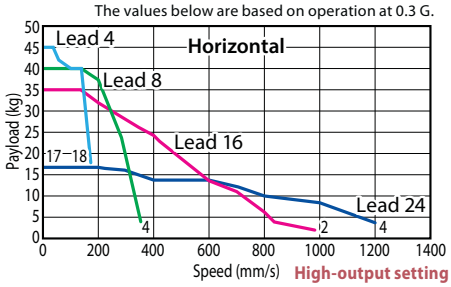



Unit: mm

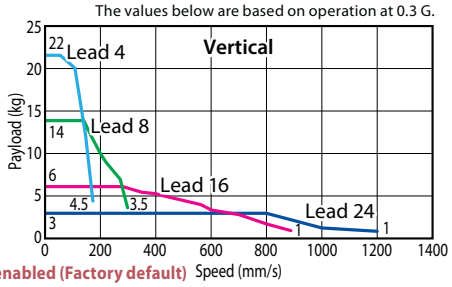
## ■ Correlation diagrams of Speed and Payload

With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

### POINT Notes on selection

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| ERC3-SA7C-I-56P-24-①-②-③-④ | 24 | 17 | 3 | 50~800 (every 50mm) |
| ERC3-SA7C-I-56P-16-①-②-③-④ | 16 | 35 | 6 | |
| ERC3-SA7C-I-56P-8-①-②-③-④ | 8 | 40 | 14 | |
| ERC3 -SA7C-I-56P-4-①-②-③-④ | 4 | 45 | 22 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed by Lead

| Lead \ Stroke | 50~550 (every 50mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) |
|---|---|---|---|---|---|---|
| 24 | 1200 | | 1130 | 975 | 850 | 745 |
| 16 | 980 <840> | 880 <840> | 750 | 645 | 565 | 495 |
| 8 | 490 | 440 | 375 | 320 | 280 | 245 |
| 4 | 210 | | 185 | 160 | 140 | 120 |

The value inside < > indicates vertical usage.
The values of lead 8 and lead 4 apply when acceleration is at 0.1G.

(Unit: mm/s)

### ①Stroke

| Stroke (mm) | Standard price | Stroke (mm) | Standard price |
|---|---|---|---|
| 50 | — | 450 | — |
| 100 | — | 500 | — |
| 150 | — | 550 | — |
| 200 | — | 600 | — |
| 250 | — | 650 | — |
| 300 | — | 700 | — |
| 350 | — | 750 | — |
| 400 | — | 800 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

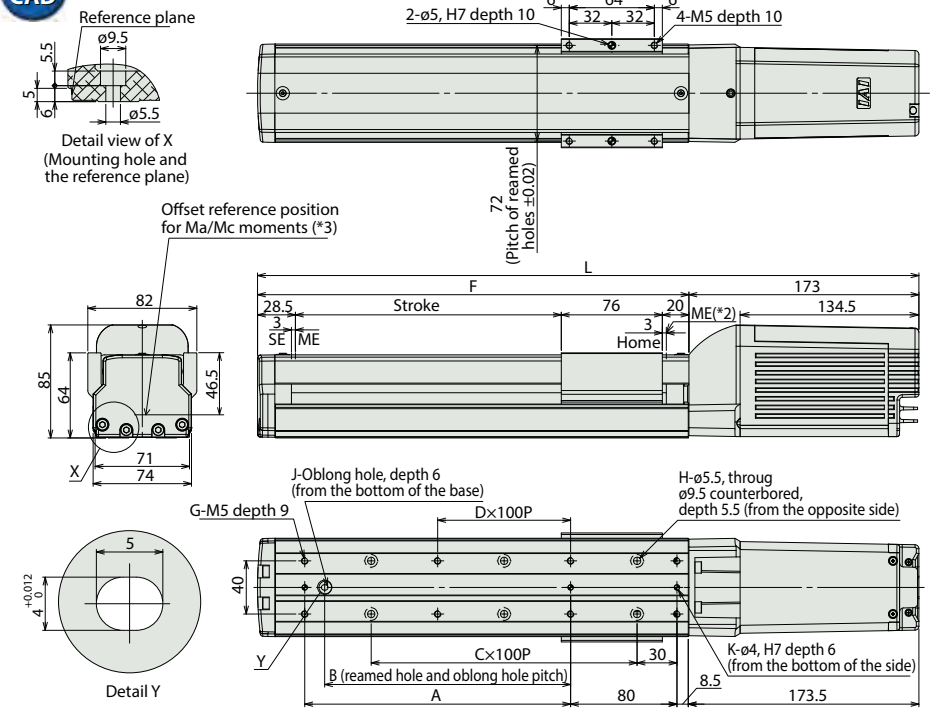
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

2D CAD



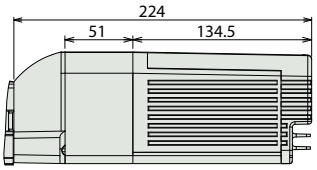

*1 Connect the power & I/O cable.
Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

*2 The slider moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 Reference position is used when calculating the Ma and Mc moments

### External view of the brake specification

The overall length of the brake specification is 51 mm longer than the standard specification and its mass is 0.5 kg heavier.

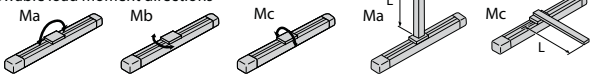



## Actuator specificaton

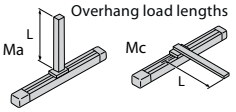
| Item | Description |
|---|---|
| Drive system | Ball screw ø12 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less |
| Static allowable load moment | Ma: 70.0 N•m, Mb: 100.0 N•m, Mc: 159.5 N•m |
| Dynamic allowable load moment (*2) | Ma: 15.0 N•m, Mb: 21.4 N•m, Mc: 34.1 N•m |
| Overhang load lengths | 150 mm or less in Ma direction, 150 mm or less in Mb and Mc directions |
| Ambient operation temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 24 mm.
(*2) Based on 5,000 km of traveling life.

Allowable load moment directions




Overhang load lengths




## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 347.5 | 397.5 | 447.5 | 497.5 | 547.5 | 597.5 | 647.5 | 697.5 | 747.5 | 797.5 | 847.5 | 897.5 | 947.5 | 997.5 | 1047.5 | 1097.5 |
| A | 0 | 100 | 100 | 200 | 200 | 300 | 300 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 | 800 |
| B | 0 | 85 | 85 | 185 | 185 | 285 | 285 | 385 | 385 | 485 | 485 | 585 | 585 | 685 | 685 | 785 |
| C | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 8 |
| D | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 |
| F | 174.5 | 224.5 | 274.5 | 324.5 | 374.5 | 424.5 | 474.5 | 524.5 | 574.5 | 624.5 | 674.5 | 724.5 | 774.5 | 824.5 | 874.5 | 924.5 |
| G | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 | 20 |
| H | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 | 16 | 18 | 18 |
| J | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| K | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mass (kg) | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | 4.3 | 4.5 | 4.7 | 4.9 | 5.1 | 5.4 | 5.6 | 5.8 | 6.0 | 6.2 | 6.5 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3-SA7C-I-56P-☐-☐-NP-☐-☐ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3-SA7C-I-56P-☐-☐-PN-☐-☐ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3-SA7C-I-56P-☐-☐-SE-☐-☐ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3-SA7C-I-56P-☐-☐-PLN-☐-☐ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3-SA7C-I-56P-☐-☐-PLP-☐-☐ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3-RA4C

● Standard type
● Rod type ● Actuator Width 45mm

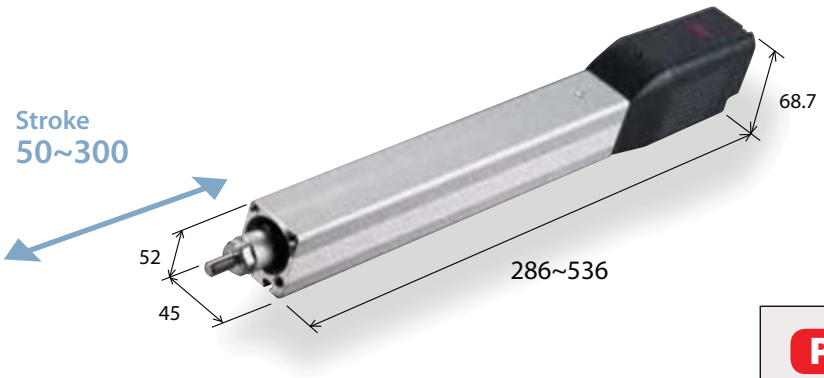
■ Model Specification Items

**ERC3 — RA4C — I — 42P — □ — □ — □ — □ — □ — □ — □**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| ERC3 | RA4C | I: Incremental specification | 42□Pulse motor | 20: 20mm<br>12: 12mm<br>6: 6mm<br>3: 3mm | 50:50mm<br>〜<br>300:300mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification<br>FL : Flange<br>FT : Foot bracket |

*Refer to P.11 for the description of items constituting the model number.

RoHS

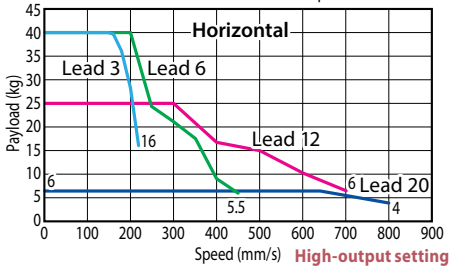



Unit: mm

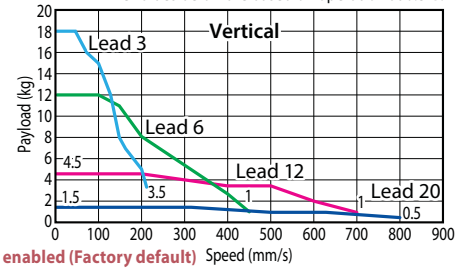
## ■ Correlation diagrams of Speed and Payload

With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

### POINT Notes on selection

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Maximum push force (N) | Stroke (mm) |
|---|---|---|---|---|---|
| ERC3-RA4C-I-42P-20-①-②-③-④ | 20 | 6 | 1.5 | 56 | 50~300 (every 50mm) |
| ERC3-RA4C-I-42P-12-①-②-③-④ | 12 | 25 | 4.5 | 93 | |
| ERC3-RA4C-I-42P-6-①-②-③-④ | 6 | 40 | 12 | 185 | |
| ERC3-RA4C-I-42P-3-①-②-③-④ | 3 | 40 | 18 | 370 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed (Unit: mm/s)

| Lead \ Stroke | 50~200 (every 50mm) | 250 (mm) | 300 (mm) |
|---|---|---|---|
| 20 | 800 | | |
| 12 | 700 | 695 | 485 |
| 6 | 450 | 345 | 240 |
| 3 | 225 | 170 | 120 |

The values of lead 3 apply when acceleration is at 0.1G.

### ①Stroke

| Stroke (mm) | Standard price |
|---|---|
| 50 | — |
| 100 | — |
| 150 | — |
| 200 | — |
| 250 | — |
| 300 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

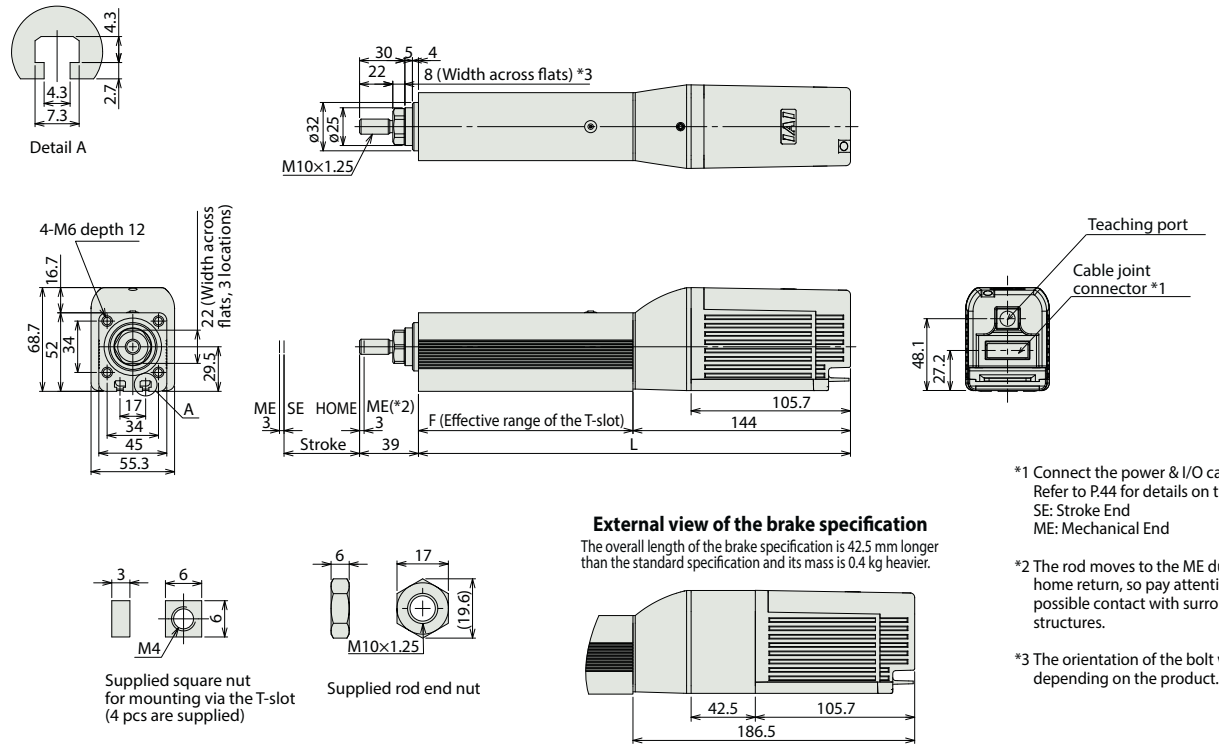
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |
| Flange | FL | →P12 | — |
| Foot bracket | FT | →P12 | — |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

2D CAD




**External view of the brake specification**

The overall length of the brake specification is 42.5 mm longer than the standard specification and its mass is 0.4 kg heavier.




*1 Connect the power & I/O cable. Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

*2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 The orientation of the bolt will vary depending on the product.

## Actuator specificaton

| Item | Description |
|---|---|
| Drive system | Ball screw ø10 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less [0.2 mm or less] |
| Rod diameter | ø25 mm |
| Rod non-rotation precision | ±1.5 degrees |
| Ambient operating temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 20 mm.

### ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|
| L | 286 | 336 | 386 | 436 | 486 | 536 |
| F | 142 | 192 | 242 | 292 | 342 | 392 |
| Mass (kg) | 1.4 | 1.7 | 2.0 | 2.3 | 2.6 | 2.9 |

# Controllers (Built into the Actuator)

## ②I/O type

With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3-RA4C-I-42P-☐-☐-NP-☐-☐ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3-RA4C-I-42P-☐-☐-PN-☐-☐ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3-RA4C-I-42P-☐-☐-SE-☐-☐ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3-RA4C-I-42P-☐-☐-PLN-☐-☐ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3-RA4C-I-42P-☐-☐-PLP-☐-☐ | Pulse-train input type supporting the PNP specification | – | | | | |

# ERC3-RA6C

● Standard type
● Rod type ● Actuator Width 64mm

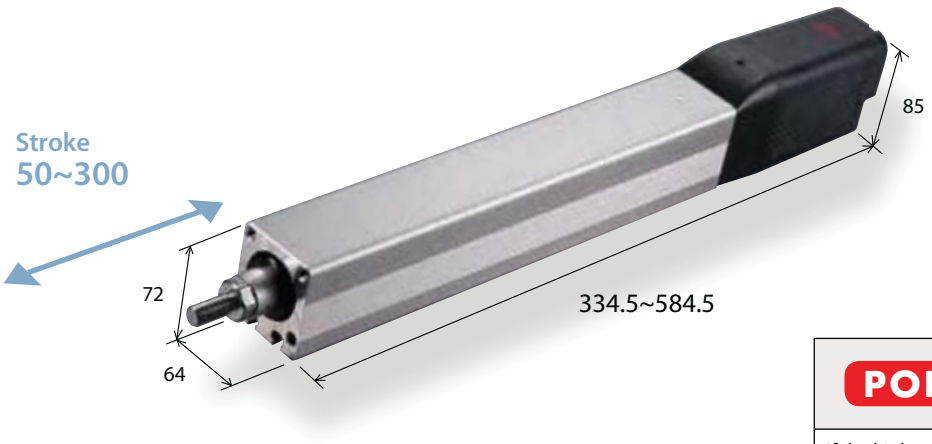
■ Model Specification Items

**ERC3 — RA6C — I — 56P — □ — □ — □ — □ — □ — □ — □**

| Series | Type | Encoder type | Motor type | Lead | Stroke | I/O type | Cable length | Controller type | Option |
|---|---|---|---|---|---|---|---|---|---|
| | | I: Incremental specification | 56□Pulse motor | 24: 24mm<br>16: 16mm<br>8: 8mm<br>4: 4mm | 50:50mm<br>~<br>300:300mm<br>(Can be set in 50mm increments) | NP: PIO (NPN) type<br>PN: PIO (PNP) type<br>SE: SIO type<br>PLN: Pulse-train (NPN) type<br>PLP: Pulse-train (PNP) type | N: None P: 1m<br>S: 3 m M: 5m<br>X□□: Specified length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification<br>FL : Flange<br>FT : Foot bracket |

*Refer to P.11 for the description of items constituting the model number.

RoHS

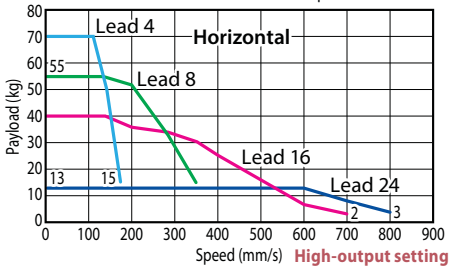



Unit: mm

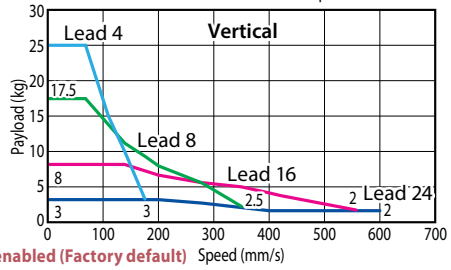
## ■ Correlation diagrams of Speed and Payload

With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases. Use the chart below to confirm that the desired speed and payload requirements are met.

The values below are based on operation at 0.3 G.




The values below are based on operation at 0.3 G.




High-output setting enabled (Factory default)

**POINT** **Notes on selection**

If the high-output setting is enabled (factory default), the duty must be limited. (Refer to P.13.) If the high-output setting is disabled, the payload and maximum speed become lower, but the actuator can be used at a duty of 100%. Refer to the operation manual for information on how to change the high-output setting. Refer to P.32 for the payload at each speed/acceleration when the high-output setting is enabled.
Refer to P.33 for the specifications that apply when the high-output setting is disabled.

For other cautionary items, refer to "Explanations of/Cautionary Notes on Items Specified in Catalog (P.13)."

## Actuator Specifications (High-output Setting Enabled)

### ■ Leads and Payloads

(Note 1) Take caution that the maximum payload decreases as the speed increases.

| Model number | Lead (mm) | Maximum payload (Note 1) Horizontal (kg) | Maximum payload (Note 1) Vertical (kg) | Maximum push force (N) | Stroke (mm) |
|---|---|---|---|---|---|
| ERC3-RA6C-I-56P-24-①-②-③-④ | 24 | 13 | 3 | 182 | 50~300 (every 50mm) |
| ERC3-RA6C-I-56P-16-①-②-③-④ | 16 | 40 | 8 | 273 | |
| ERC3-RA6C-I-56P-8-①-②-③-④ | 8 | 55 | 17.5 | 547 | |
| ERC3-RA6C-I-56P-4-①-②-③-④ | 4 | 70 | 25 | 1094 | |

Legend ① Stroke ② I/O type ③ Cable length ④ Option

### ■ Stroke and Maximum Speed (Unit: mm/s)

| Lead \ Stroke | 50~250 (every 50mm) | 300 (mm) |
|---|---|---|
| 24 | 800 <600> | |
| 16 | 700 <560> | |
| 8 | 420 | 400 |
| 4 | 210 <175> | 210 <175> |

The value inside < > indicates vertical usage.
The values of lead 8 and lead 4 apply when acceleration is at 0.1G.

### ①Stroke

| Stroke (mm) | Standard price |
|---|---|
| 50 | — |
| 100 | — |
| 150 | — |
| 200 | — |
| 250 | — |
| 300 | — |

### ③Cable length

| Type | Cable symbol | Standard price PIO type | Standard price SIO type |
|---|---|---|---|
| Standard type (Robot cable) | P (1m) | — | — |
| | S (3m) | — | — |
| | M(5m) | — | — |
| Special length | X06(6m)~X10(10m) | — | — |

*Refer to P. 44 for maintenance cables.

### ④Options

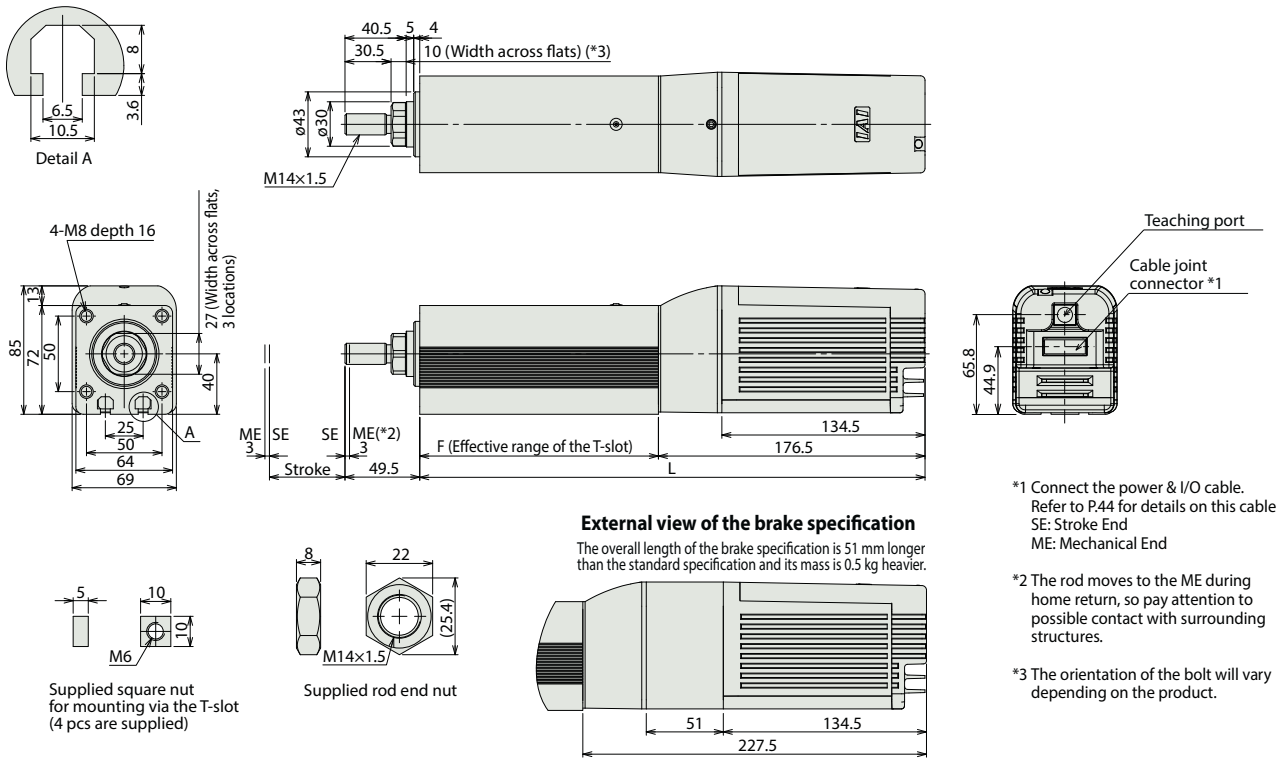
| Name | Option code | See page | Standard price |
|---|---|---|---|
| Brake | B | →P12 | — |
| Non-motor end specification | NM | →P12 | — |
| Simple absolute specification | ABU | →P12 | — (*) |
| Flange | FL | →P12 | — |
| Foot bracket | FT | →P12 | — |

(*) If the simple absolute specification is selected, the separately sold PIO converter of simple absolute specification (with battery) is required.

## Dimensional Drawings

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

2D CAD




*1 Connect the power & I/O cable. Refer to P.44 for details on this cable
SE: Stroke End
ME: Mechanical End

*2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures.

*3 The orientation of the bolt will vary depending on the product.




Supplied square nut for mounting via the T-slot (4 pcs are supplied)




Supplied rod end nut

**External view of the brake specification**

The overall length of the brake specification is 51 mm longer than the standard specification and its mass is 0.5 kg heavier.




## Actuator specificaton

| Item | Description |
|---|---|
| Drive system | Ball screw ø12 mm, rolled C10 |
| Positioning repeatability (*1) | ± 0.02 mm [± 0.03 mm] |
| Lost motion | 0.1 mm or less [0.2 mm or less] |
| Rod diameter | ø30 mm |
| Rod non-rotation precision | ±1.0 degrees |
| Ambient operating temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) The specification in [ ] applies when the lead is 24 mm.

## ■Dimensions and Mass by Stroke

| Stroke | 50 | 100 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|
| L | 334.5 | 384.5 | 434.5 | 484.5 | 534.5 | 584.5 |
| F | 158 | 208 | 258 | 308 | 358 | 408 |
| Mass (kg) | 3.9 | 4.4 | 4.9 | 5.4 | 5.9 | 6.4 |

# Controllers (Built into the Actuator)

## ②I/O type

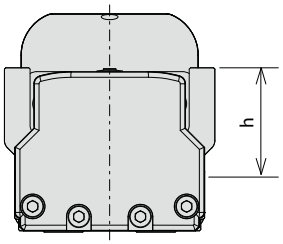
With the ERC3 series, one of the following five types of built-in controllers can be selected depending on the external input/output (I/O) type. Select the type that meets your purpose.

| Name | External view | Model number | Features | Maximum number of positioning points | Input power | Power supply capacity | Standard price | Reference page |
|---|---|---|---|---|---|---|---|---|
| PIO type (NPN specification) |  | ERC3-RA6C-I-56P-☐-☐-NP-☐-☐ | Simple control type accommodating up to 16 positioning points | 16 | DC24V | High-output setting enabled: 3.5A rated 4.2A max.<br>High-output setting disabled: 2.2A | — | →P35 |
| PIO type (PNP specification) | | ERC3-RA6C-I-56P-☐-☐-PN-☐-☐ | I/O type supporting inputs/outputs of the PNP specification often used overseas | 16 | | | | |
| SIO type | | ERC3-RA6C-I-56P-☐-☐-SE-☐-☐ | High-function type accommodating up to 512 positioning points (PIO converter is used) | 512 | | | | |
| Pulse-train type (NPN specification) | | ERC3-RA6C-I-56P-☐-☐-PLN-☐-☐ | Pulse-train input type supporting the NPN specification | – | | | | |
| Pulse-train type (PNP specification) | | ERC3-RA6C-I-56P-☐-☐-PLP-☐-☐ | Pulse-train input type supporting the PNP specification | – | | | | |

# Selection Guideline (Correlation Diagram of the Push Force and the Current-limiting Value)

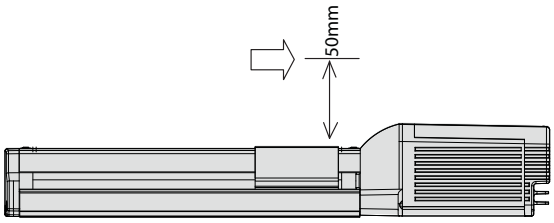
In a push-motion operation, the push force can be used by changing the current-limiting value of the controller over a range of 20% to 70%. The maximum push-force varies depending on the model, so check the required push force from the table below and select an appropriate type meeting the purpose of use.

When performing a push-motion operation using a slider actuator, limit the push current so that the reactive force moment generated by the push force will not exceed 80% of the rated moment (Ma, Mb) specified in the catalog.
To help with the moment calculations, the application position of the guide moment is shown in the figure below. Calculate the necessary moment by considering the offset of the push force application position.
Note that if an excessive force exceeding the rated moment is applied, the guide may be damaged and the life may become shorter. Accordingly, include a sufficient safety factor when deciding on the push force.




**ERC3**
SA5C：h=36.5mm
SA7C：h=46.5mm
**ERC3CR/ERC3D**
SA5C：h=39mm
SA7C：h=43mm

Calculation example)
If a push-motion operation is performed with an ERC3-SA7C by applying 100 N at the position shown to the right, the moment received by the guide, or Ma, is calculated as (46.5 + 50) x 100
= 9650 (N•mm)
= 9.65 (N•m).

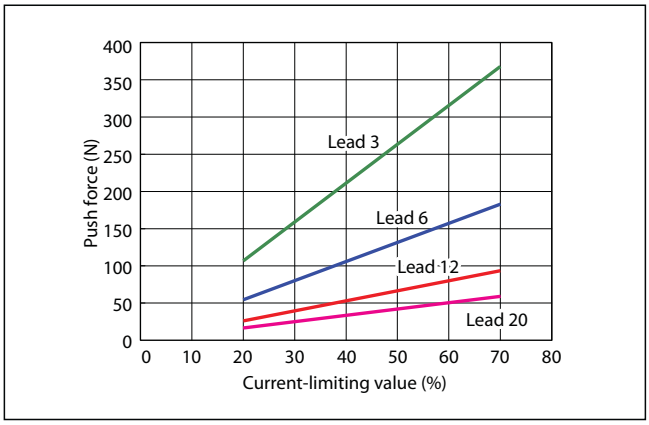



Since the rated moment Ma of the SA7C is 15 (N•m), 15 x 0.8 = 12 > 9.65, suggesting that this selection is acceptable. If an Mb moment generates due to the push-motion operation, calculate the moment from the overhang length and confirm, in the same way, that the calculated moment is within 80% of the rated moment.

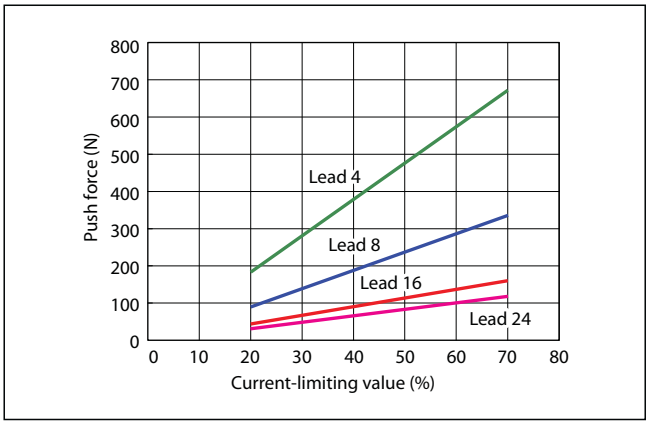
## Correlation Diagrams of the Push Force and the Current-limiting Value

The table below is only a reference, and the graphs may vary slightly from the actual values.

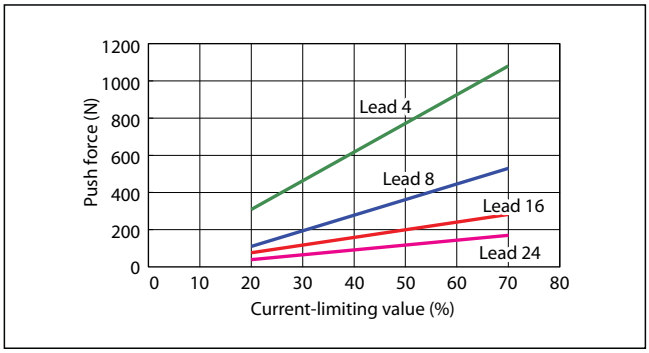
### SA5C/RA4C type




### SA7C type




### RA6C type




### Notes on Use

- The relationship of the push force and the current-limiting value is only a reference, and the graphs may vary slightly from the actual values.
- If the current-limiting value is less than 20%, the push force may vary. Make sure the current-limiting value remains 20% or more.
- The graphs assume a traveling speed of 20 mm/s during push-motion operation.

# Selection Guideline
## (Table of ERC3□ Payload by Speed/Acceleration)

High-output setting enabled (Factory default)

The maximum acceleration/deceleration of the ERC3□ is 1.0 G in a horizontal application or 0.5 G in vertical application. The payload drops as the acceleration increases, so when selecting a model, use the tables below to find one that meets the desired speed, acceleration and payload.

### ■ERC3□-SA5C

**Lead 20**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 6.5 | 6.5 | 5 | 5 | 4 | 1 | 1 | 1 |
| 160 | 6.5 | 6.5 | 5 | 5 | 4 | 1 | 1 | 1 |
| 320 | 6.5 | 6.5 | 5 | 5 | 4 | 1 | 1 | 1 |
| 480 | 6.5 | 6.5 | 4 | 4 | 4 | 1 | 1 | 1 |
| 640 | 6.5 | 6.5 | 3.5 | 3.5 | 3 | 1 | 1 | 1 |
| 800 | 5.5 | 5.5 | 3.5 | 3 | 1 | 1 | 1 | 1 |
| 960 | | 5.5 | 2.5 | 2 | 1 | | 0.5 | 0.5 |
| 1120 | | 5.5 | 1 | 1 | 1 | | 0.5 | 0.5 |

**Lead 12**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 9 | 9 | 9 | 9 | 8 | 2.5 | 2.5 | 2.5 |
| 100 | 9 | 9 | 9 | 9 | 8 | 2.5 | 2.5 | 2.5 |
| 200 | 9 | 9 | 9 | 9 | 8 | 2.5 | 2.5 | 2.5 |
| 300 | 9 | 9 | 9 | 9 | 7 | 2.5 | 2.5 | 2.5 |
| 400 | 9 | 9 | 8 | 8 | 6 | 2.5 | 2.5 | 2.5 |
| 500 | 9 | 9 | 8 | 5.5 | 5.5 | 2.5 | 2.5 | 2 |
| 600 | 9 | 9 | 8 | 5.5 | 4 | 2.5 | 2 | 1.5 |
| 700 | 9 | 7 | 6 | 4 | 2.5 | 2.5 | 1 | 0.5 |
| 800 | | 5.5 | 3.5 | 2 | 1 | | 0.5 | 0.5 |
| 900 | | 5 | 2.5 | 1 | | | 0.5 | |

**Lead 6**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 18 | 18 | 13 | 12 | 11 | 6 | 6 | 6 |
| 50 | 18 | 18 | 13 | 12 | 11 | 6 | 6 | 6 |
| 100 | 18 | 18 | 13 | 12 | 11 | 6 | 6 | 6 |
| 150 | 18 | 18 | 13 | 12 | 11 | 6 | 6 | 6 |
| 200 | 18 | 18 | 13 | 12 | 11 | 6 | 6 | 6 |
| 250 | 18 | 17 | 13 | 12 | 9 | 6 | 5 | 4.5 |
| 300 | 16 | 16 | 12 | 11 | 7 | 4.5 | 4 | 3.5 |
| 350 | 14 | 14 | 8 | 8 | 6 | 4 | 3.5 | 3 |
| 400 | 10.5 | 10 | 7 | 4.5 | 4 | 2.5 | 2 | 1.5 |
| 450 | 7.5 | 7 | 4 | 2.5 | 1 | 1 | 0.5 | |

**Lead 3**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 20 | 20 | 16 | 16 | 13 | 12 | 12 | 12 |
| 25 | 20 | 20 | 16 | 16 | 13 | 12 | 12 | 12 |
| 50 | 20 | 20 | 16 | 16 | 12 | 12 | 12 | 12 |
| 75 | 20 | 20 | 16 | 16 | 12 | 12 | 12 | 12 |
| 100 | 20 | 18 | 14 | 12 | 10 | 12 | 10.5 | 10.5 |
| 125 | 20 | 17 | 14 | 9.5 | 8 | 12 | 10.5 | 10.5 |
| 150 | 20 | 17 | 11 | 8 | 7 | 9.5 | 8 | 8 |
| 175 | 20 | 10 | 10 | 4.5 | 3.5 | 7 | 7 | 6 |
| 200 | 20 | 9 | 3 | | | 6 | 4 | 2 |
| 225 | 15 | | | | | 4.5 | | |

### ■ERC3□-SA7C

**Lead 24**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 20 | 17 | 15 | 13 | 11 | 3 | 3 | 3 |
| 200 | 20 | 17 | 15 | 13 | 11 | 3 | 3 | 3 |
| 400 | 20 | 14 | 14 | 13 | 10 | 3 | 3 | 3 |
| 600 | 20 | 14 | 10 | 8 | 8 | 3 | 3 | 3 |
| 800 | 10 | 10 | 8 | 6 | 2.5 | | 3 | 2.5 |
| 1000 | | 8 | 4 | 2 | 1 | | 2 | |
| 1200 | | 4 | 2 | | | | 1 | |

**Lead 16**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 35 | 35 | 35 | 26.5 | 26.5 | 7 | 6 | 4 |
| 140 | 35 | 35 | 35 | 26.5 | 26.5 | 7 | 6 | 4 |
| 280 | 35 | 28 | 28 | 22 | 18 | 7 | 6 | 4 |
| 420 | 30 | 23 | 12.5 | 11 | 10 | 5 | 5 | 4 |
| 560 | 22 | 15 | 9.5 | 7.5 | 5.5 | 5 | 4 | 3 |
| 700 | 20 | 11 | 5.5 | 3.5 | 2 | 3.5 | 2.5 | 1.5 |
| 840 | | 4 | 2.5 | | | | 1 | |
| 980 | | 2 | | | | | | |

**Lead 8**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 43 | 40 | 40 | 40 | 40 | 15 | 14 | 13 |
| 70 | 43 | 40 | 40 | 40 | 40 | 15 | 14 | 13 |
| 140 | 40 | 40 | 40 | 38 | 35 | 15 | 14 | 13 |
| 210 | 40 | 36 | 35 | 30 | 24 | 11 | 9 | 9 |
| 280 | 40 | 23 | 11 | 8 | 2 | 8 | 7 | 6 |
| 350 | 35 | 4 | 2 | 2 | | 5 | 3.5 | 1.5 |
| 420 | 25 | | | | | 2.5 | | |
| 490 | 15 | | | | | 1.5 | | |

**Lead 4**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 45 | 45 | 45 | 40 | 35 | 22 | 22 | 22 |
| 35 | 45 | 45 | 45 | 40 | 35 | 22 | 22 | 22 |
| 70 | 45 | 42 | 42 | 35 | 35 | 22 | 22 | 22 |
| 105 | 42 | 40 | 40 | 35 | 35 | 20 | 20 | 19 |
| 140 | 42 | 40 | 25 | 25 | 22 | 15 | 12 | 11 |
| 175 | 38 | 18 | | | | 10 | 4.5 | |
| 210 | 35 | | | | | 6.5 | | |

### ■ERC3-RA4C

**Lead 20**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 6 | 6 | 6 | 5 | 4.5 | 1.5 | 1.5 | 1.5 |
| 160 | 6 | 6 | 6 | 5 | 4.5 | 1.5 | 1.5 | 1.5 |
| 320 | 6 | 6 | 6 | 5 | 3 | 1.5 | 1.5 | 1.5 |
| 480 | 6 | 6 | 6 | 4.5 | 3 | 1 | 1 | 1 |
| 640 | | 6 | 4 | 3 | 2 | | 1 | 1 |
| 800 | | 4 | 3 | | | | 0.5 | 0.5 |

**Lead 12**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 25 | 25 | 14 | 14 | 12 | 4.5 | 4.5 | 3.5 |
| 100 | 25 | 25 | 14 | 14 | 12 | 4.5 | 4.5 | 3.5 |
| 200 | 25 | 25 | 11 | 8 | 8 | 4.5 | 4.5 | 3.5 |
| 300 | 25 | 25 | 11 | 7 | 5.5 | 4 | 4 | 3.5 |
| 400 | 17.5 | 16.5 | 8 | 4 | 3.5 | 3.5 | 3.5 | 2.5 |
| 500 | | 15 | 5.5 | 2 | 2 | | 3.5 | 2 |
| 600 | | 10 | 3.5 | | | | 2 | 1 |
| 700 | | 6 | 2 | | | | 1 | 1 |

**Lead 6**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 40 | 40 | 31.5 | 30 | 25 | 12 | 12 | 10 |
| 50 | 40 | 40 | 31.5 | 30 | 25 | 12 | 12 | 10 |
| 100 | 40 | 40 | 31.5 | 24.5 | 21 | 12 | 12 | 10 |
| 150 | 40 | 40 | 24.5 | 17.5 | 17.5 | 11 | 11 | 7 |
| 200 | 40 | 40 | 21 | 14 | 12.5 | 8 | 8 | 5.5 |
| 250 | 35 | 24.5 | 17.5 | 14 | 11 | 7 | 7 | 4 |
| 300 | 28 | 21 | 12.5 | 12.5 | 8 | 5.5 | 5.5 | 4 |
| 350 | 24.5 | 17.5 | 9.5 | 5.5 | 5.5 | 4 | 3.5 | 3.5 |
| 400 | 17.5 | 9.5 | 7 | 4 | 2.5 | 3.5 | 2.5 | 2 |
| 450 | 17.5 | 5.5 | 2 | | | | 1 | 1 |

**Lead 3**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 40 | 40 | 40 | 40 | 35 | 18 | 18 | 17 |
| 25 | 40 | 40 | 40 | 40 | 35 | 18 | 18 | 17 |
| 50 | 40 | 40 | 40 | 40 | 35 | 18 | 18 | 17 |
| 75 | 40 | 40 | 40 | 40 | 35 | 16 | 16 | 16 |
| 100 | 40 | 40 | 40 | 40 | 35 | 16 | 15 | 15 |
| 125 | 40 | 40 | 40 | 40 | 30 | 16 | 12 | 10 |
| 150 | 40 | 40 | 40 | 30 | 25 | 10 | 8 | 5.5 |
| 175 | 36 | 36 | 35 | 25 | 20 | 10 | 5.5 | 5 |
| 200 | 36 | 28 | 28 | 19.5 | 14 | 7 | 5 | 4.5 |
| 225 | 36 | 16 | 14 | 10 | 6 | 4 | 3.5 | 2 |

### ■ERC3-RA6C

**Lead 24**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 20 | 13 | 11 | 10 | 8 | 3 | 3 | 2 |
| 200 | 20 | 13 | 11 | 10 | 8 | 3 | 3 | 2 |
| 400 | 20 | 13 | 11 | 10 | 8 | 2 | 2 | 2 |
| 600 | | 13 | 7 | 5 | 3.5 | | 2 | 2 |
| 800 | | 3 | 1 | | | | | |

**Lead 16**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 45 | 40 | 30 | 28 | 26 | 8 | 8 | 8 |
| 140 | 45 | 40 | 30 | 28 | 26 | 8 | 8 | 8 |
| 280 | 45 | 34 | 30 | 24 | 18 | 6.5 | 5.5 | 5.5 |
| 420 | 45 | 22 | 17 | 13 | 10 | 5.5 | 4 | 3 |
| 560 | | 9.5 | 5 | 2.5 | 1.5 | | 2 | 1 |
| 700 | | 2 | | | | | | |

**Lead 8**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 60 | 55 | 45 | 40 | 40 | 17.5 | 17.5 | 17.5 |
| 70 | 60 | 55 | 45 | 40 | 40 | 17.5 | 17.5 | 17.5 |
| 140 | 60 | 55 | 40 | 40 | 40 | 11 | 11 | 11 |
| 210 | 60 | 50 | 40 | 28 | 26 | 7.5 | 7.5 | 7 |
| 280 | 60 | 32 | 20 | 15 | 11 | 6 | 5.5 | 4.5 |
| 350 | 50 | 14 | 4.5 | 1 | | 3 | 2.5 | 2 |
| 420 | 15 | | | | | 2 | | |

**Lead 4**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration (G) | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 70 | 70 | 60 | 60 | 50 | 25 | 25 | 25 |
| 35 | 70 | 70 | 60 | 60 | 50 | 25 | 25 | 25 |
| 70 | 70 | 70 | 60 | 60 | 50 | 25 | 25 | 25 |
| 105 | 70 | 70 | 55 | 45 | 40 | 15 | 15 | 15 |
| 140 | 70 | 50 | 30 | 20 | 15 | 11.5 | 10 | 8 |
| 175 | 50 | 15 | | | | 6 | 3 | |
| 210 | 20 | | | | | | | |

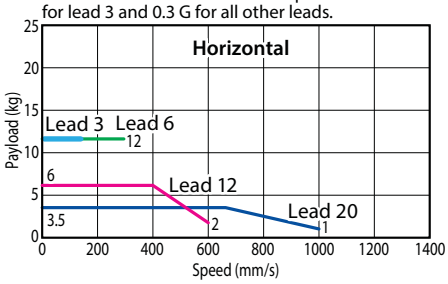
## High-output setting disabled Specification

### ■Correlation diagrams of Speed and Payload

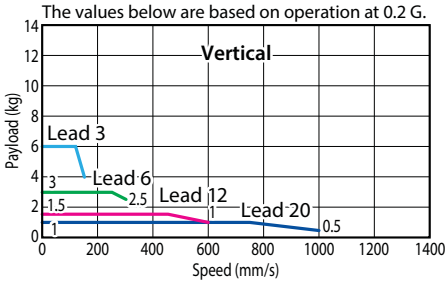
With the ERC3 series, due to the characteristics of the pulse motor, payload decreases as the speed increases.
Use the chart below to confirm that the desired speed and payload requirements are met.

#### ERC3□-SA5C

The values below are based on operation at 0.2 G for lead 3 and 0.3 G for all other leads.

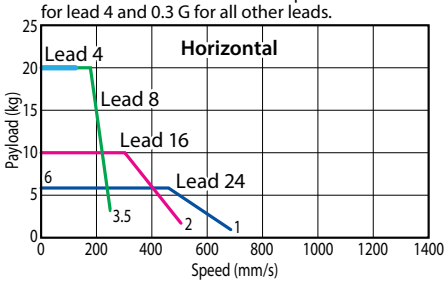



The values below are based on operation at 0.2 G.

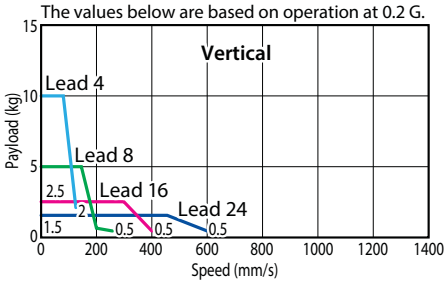



#### ERC3□-SA7C

The values below are based on operation at 0.2 G for lead 4 and 0.3 G for all other leads.

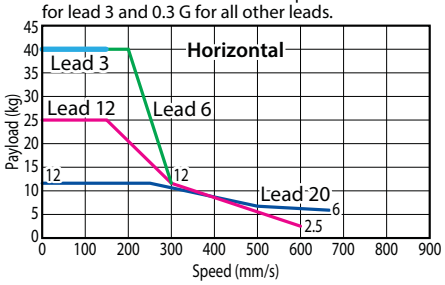



The values below are based on operation at 0.2 G.

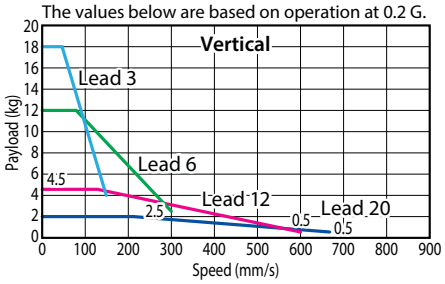



#### ERC3-RA4C

The values below are based on operation at 0.2 G for lead 3 and 0.3 G for all other leads.

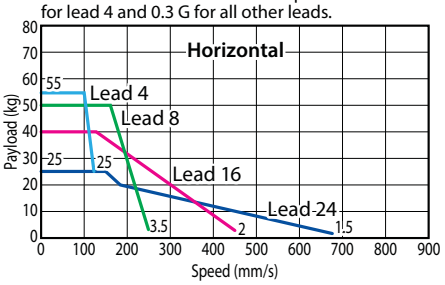



The values below are based on operation at 0.2 G.

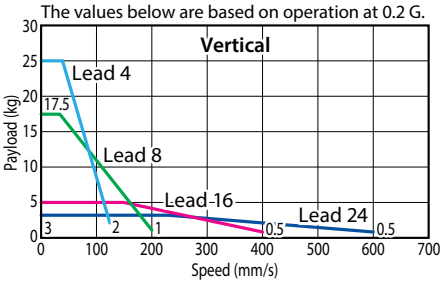



#### ERC3-RA6C

The values below are based on operation at 0.2 G for lead 4 and 0.3 G for all other leads.




The values below are based on operation at 0.2 G.



# High-output setting disabled Specification

## ■Stroke and Maximum Speed (Unit: mm/s)

### •ERC3CR-SA5C
### •ERC3D-SA5C

| Lead \ Stroke | 50~550 (every 50mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) |
|---|---|---|---|---|---|---|
| 20 | 1000 | 1000 | 900 | 785 | 690 | 610 |
| 12 | 600 | 570 | 490 | 425 | 375 | 330 |
| 6 | 300 | 285 | 245 | 215 | 185 | 165 |
| 3 | 150 | 140 | 120 | 105 | 90 | 80 |

### •ERC3CR-SA7C
### •ERC3D-SA7C

| Lead \ Stroke | 50~800 (every 50mm) |
|---|---|
| 24 | 675 <600> |
| 16 | 450 <400> |
| 8 | 250 |
| 4 | 125 |

The value inside < > indicates vertical usage.

### •ERC3-SA5C

| Lead \ Stroke | 50~550 (every 50mm) | 600 (mm) | 650 (mm) | 700 (mm) | 750 (mm) | 800 (mm) |
|---|---|---|---|---|---|---|
| 20 | 1000 | 935 | 795 | 680 | 585 | 510 |
| 12 | 600 | 560 | 475 | 405 | 350 | 300 |
| 6 | 300 | 280 | 235 | 200 | 175 | 150 |
| 3 | 150 | 140 | 115 | 100 | 85 | 75 |

### •ERC3-SA7C

| Lead \ Stroke | 50~750 (every 50mm) | 800 (mm) |
|---|---|---|
| 24 | 675 <600> | |
| 16 | 450 <400> | |
| 8 | 250 | 245 |
| 4 | 125 | 120 |

The value inside < > indicates vertical usage.

### •ERC3-RA4C

| Lead \ Stroke | 50~250 (every 50mm) | 300 (mm) |
|---|---|---|
| 20 | 667 | 667 |
| 12 | 600 | 485 |
| 6 | 300 | 240 |
| 3 | 150 | 120 |

### •ERC3-RA6C

| Lead \ Stroke | 50~300 (every 50mm) |
|---|---|
| 24 | 675 <600> |
| 16 | 450 <400> |
| 8 | 250 <200> |
| 4 | 125 |

The value inside < > indicates vertical usage.

# ERC3 controller specification

■Model number NP/PN/SE/PLN/PLP

Controller part of actuator with built-in controller

## List of Models

| Controller type | CON type | | | | | MEC type | | |
|---|---|---|---|---|---|---|---|---|
| Operation mode | Positioner mode | | | Pulse-train control mode | | Positioner mode | | |
| I/O type | PIO | | SIO | NPN | PNP | PIO | | SIO |
| | NPN | PNP | | | | NPN | PNP | |
| Type (I/O type) | NP | PN | SE | PLN | PLP | NP | PN | SE |
| Position points | 16 points | | 512 points (When the PIO converter or gateway unit is used) | — | — | 3 points | | 2 points/ 3 points |
| Description | Basic type | Basic type | The PIO converter or gateway unit can be used. (Note) | When pulse trains are used | When pulse trains are used | 3-point movement | 3-point movement | The Quick Teach and PIO converter or gateway unit can be used. (Note) |
| External view |  | | | | | | | |
| Standard price | — | | | | | | | |

(Note) The PIO converter and gateway unit cannot be used at the same time.

## Model number

⑦&⑨refers to the I/O type and controller type shown in the above table.

① Series

| | |
|---|---|
| ERC3 | Standard type |
| ERC3CR | Cleanroom type |
| ERC3D | Simple, dustproof type |

② Type

| | |
|---|---|
| SA5C | Actuator width 50 mm |
| SA7C | Actuator width 74 mm |
| RA4C | Actuator width 45 mm |
| RA6C | Actuator width 64 mm |

③ Encoder type

| | |
|---|---|
| I | Incremental type |

④ Motor type

| | |
|---|---|
| 42P | Pulse motor 42□size |
| 56P | Pulse motor 56□size |

⑤ Lead

| | |
|---|---|
| 20 | for SA5C/RA4C 20 mm |
| 12 | for SA5C/RA4C 12 mm |
| 6 | for SA5C/RA4C 6 mm |
| 3 | for SA5C/RA4C 3 mm |
| 24 | for SA7C/RA6C 24 mm |
| 16 | for SA7C/RA6C 16 mm |
| 8 | for SA7C/RA6C 8 mm |
| 4 | for SA7C/RA6C 4 mm |

⑥ Stroke

| | | |
|---|---|---|
| Slider type | 50 | 50 mm |
| | ≀ | ≀ |
| | 800 | 800 mm |
| Rod type | 50 | 50 mm |
| | ≀ | ≀ |
| | 300 | 300 mm |

(Can be set in 50mm increments)

⑦ I/OType

| | |
|---|---|
| NP | PIO (NPN) type |
| PN | PIO (PNP) type |
| SE | SIO type |
| PLN | Pulse-train (NPN) type |
| PLP | Pulse-train (PNP) type |

⑧ Cable length

| | |
|---|---|
| N | None |
| P | 1m |
| S | 3m |
| M | 5m |
| X□□ | Specified length |

* The standard cable is a robot cable.

⑨ Controller type

| | |
|---|---|
| CN | CON type |
| MC | MEC type |

* If the I/O type is PLN or PLP, "CN" is selected automatically.

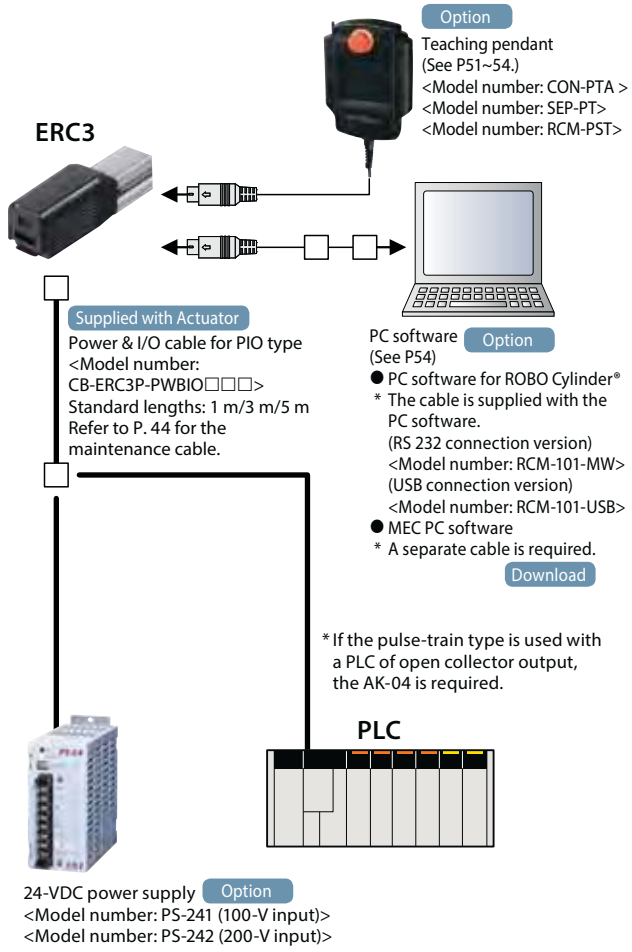
⑩ Option

| | |
|---|---|
| B | Brake |
| NM | Non-motor end specification |
| ABU | Simple absolute specification |
| FL | Flange |
| FT | Foot bracket |
| VR | Vacuum joint on opposite side |

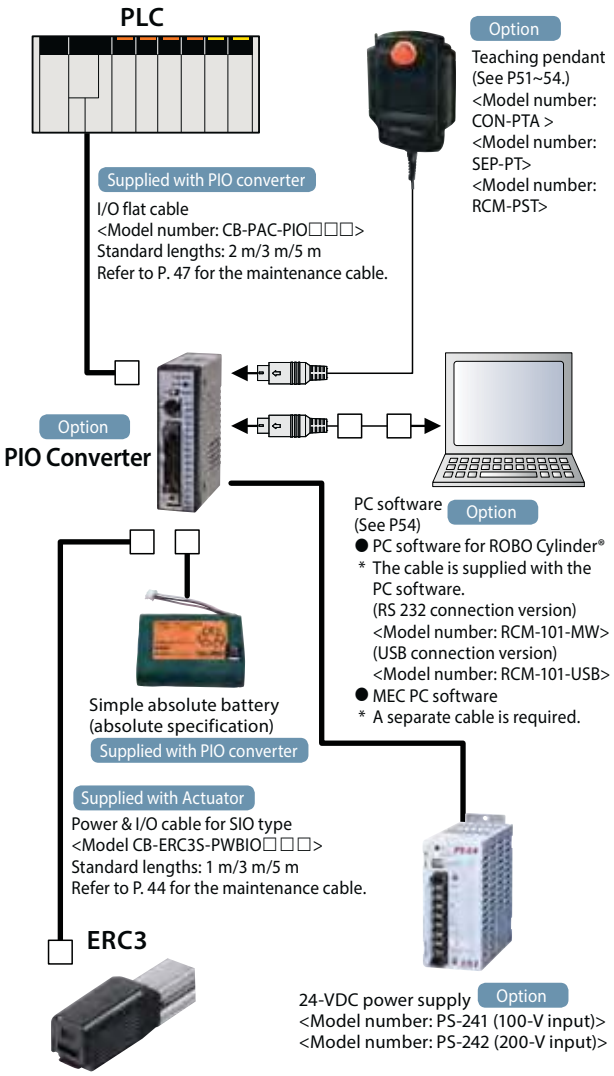
* The simple absolute specification can be selected only when the I/O type is "SIO communication."
* The flange and foot bracket option can be selected only for rod types.

## System Configuration

### ■PIO Type/Pulse-train type

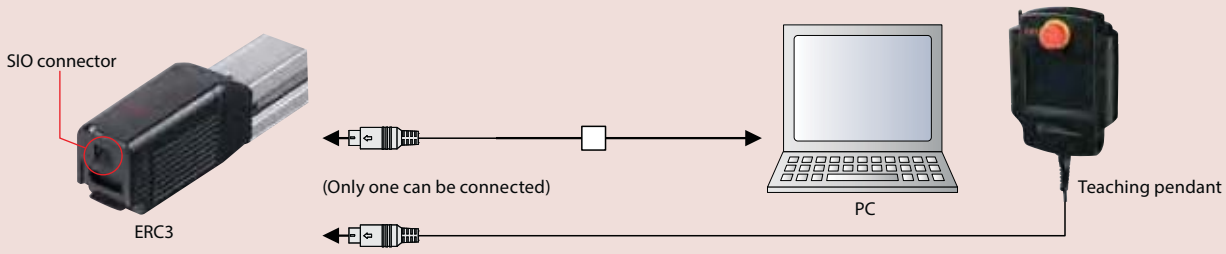



### ■SIO Type




## PC Wiring Diagram

The SIO connector is used to connect a teaching tool.



## List of Base Controller Specifications

| Item | | Description |
|---|---|---|
| Power supply voltage | | 24 VDC±10% |
| Load current (including current consumed for control) | | High-output setting enabled: 3.5 A rated/4.2 A max. High-output setting disabled: 2.2A |
| Heat output | | High-output setting enabled: 8 W High-output setting disabled: 5W |
| Rush current (Note 1) | | 8.3A |
| Momentary power failure resistance | | MAX. 500μs |
| Motor control method | | Field-weakening vector control |
| Supported encoder | | Incremental encoder of 800 pulses/rev in resolution |
| Actuator cable length | | 10 m max. |
| Serial communication interface (SIO port) | | RS485: 1 channel (conforming to Modbus protocol RTU/ASCII) / Speed: 9.6 to 230.4 kbps<br>Actuators can be controlled via serial communication in a mode other than pulse-train |
| External interface PIO specification | | Dedicated 24-VDC signal input/output (NPN or PNP selected)—Up to 6 input points, up to 4 output points<br>Cable length: 10m max. |
| Data setting/input method | | PC software, touch-panel teaching pendant, quick teach |
| Data retention memory | | Position data and parameters are saved in the non-volatile memory<br>(There is no limit to the number of times the memory can be written.) |
| Operation mode | | Positioner mode/Pulse-train control mode |
| Number of positions in positioner mode | | Standard 8 points, maximum 16 points<br>Note) Positioning points vary depending on the selected PIO pattern. |
| Pulse-train interface | Input pulse | Differential method (line driver method): 200 kpps max. / Cable length: 10m max. |
| | | Open collector method: Not supported<br>* If the host is of open collector output type, use the optional AK-04 (sold separately) to convert open collector pulses to differential pulses. |
| | Command pulse magnification (electronic gear ratio: A/B) | 1/50 < A/B < 50/1<br>Setting range of A and B (set by parameters): 1 to 4096 |
| | Feedback pulse output | None |
| LED indicators (installed on the motor unit) | | Servo ON (green), servo OFF (unlit), emergency stop (red), alarm (red), resetting (orange) |
| Isolation resistance | | 500 VDC, 10 MΩ or more |
| Electric shock protection mechanism | | Class I basic isolation |
| Cooling method | | Natural air cooling |
| Environment | Ambient operating temperature | 0 to 40°C |
| | Ambient operating humidity | 85%RH or less (non-condensing) |
| | Ambient storage temperature | -20 to 70°C (excluding batteries) |
| | Operating altitude | Altitude 1000m or less |
| | Protection degree | IP20 |
| | Cooling method | Natural air cooling |
| | Vibration resistance | (Test conditions) Number of vibrations: 10 to 57 Hz/Amplitude: 0.075 mm<br>Number of vibrations: 57 to 150 Hz/Acceleration: 9.8 $m/s^2$<br>Sweep time in X/Y/Z directions: 10 minutes/Number of sweeps: 10 times |
| | Impact | (Test conditions) 150$mm/sec^2$, 11mm/sec, sinusoidal half pulse, 3 times each in X, Y and Z directions |

Note 1 Rush current will flow for approx. 5msec after the power is turned on (at 40°C).
Take note that the value of rush current varies depending on the impedance of the power line.

## Emergency Stop Circuit

The ERC3 series has no built-in emergency stop circuit, so the customer must provide an emergency stop circuit. Refer to the operation manual for details on the emergency stop circuit.

# ■Positioner mode

## I/O specification (PIO type)

### ■Input Part

| Item | Specification |
|---|---|
| Input points | 6 points |
| Input voltage | 24 VDC ±10% |
| Input current | 5mA/1 circuit |
| Leak current | 1mA/point max. |

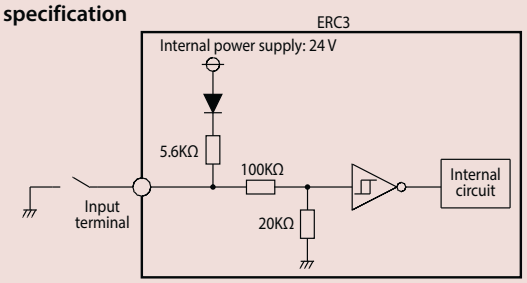
* The input circuit is not isolated from signals input from external equipment.

### ■Output Part

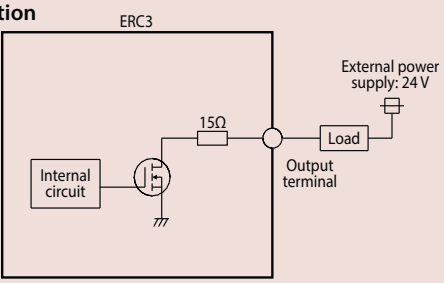
| Item | Specification |
|---|---|
| Output points | 4 points |
| Load voltage | 24 VDC ±10% |
| Maximum load current | 5mA/1 circuit |
| Residual voltage | 2 V or less |

* The output circuit is not isolated from signals output to external equipment.

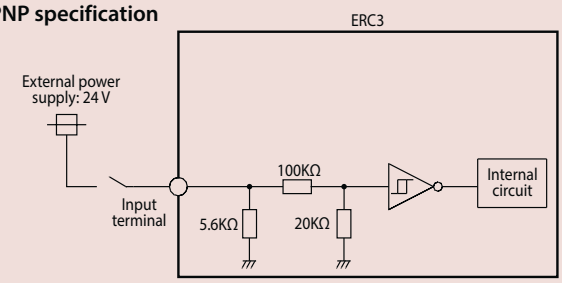
**NPN specification**



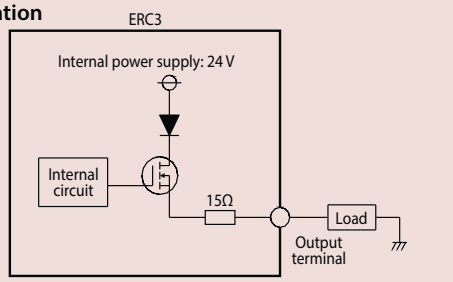

**NPN specification**




**PNP specification**




**PNP specification**




## I/O Signal Table (PIO Type) [ERC3 and PLC Connected Directly]

| Pin number | Category | Controller type | CN (CON type) | | | MC (MEC type) | |
|---|---|---|---|---|---|---|---|
| | | PIO function | Parameter No. 25 (PIO pattern) selection | | | Selected on teaching pendant or in PC software | |
| | | | 0 | 1 | 2 | | |
| | | | 8-point type | Solenoid type | 16-point type | Standard/Movement between 2 points (single solenoid) | 2 inputs/Movement among 3 points |
| | Input | Number of positioning points | 8 points | 3 points | 16 points | 2 points | 3 points |
| | | Home return signal | ○ | × | × | × | × |
| | | Jog signal | × | × | × | × | × |
| | | Teaching signal (writing of current position) | × | × | × | × | × |
| | | Brake release | × | × | × | × | × |
| | Output | Moving signal | × | × | × | × | × |
| | | Zone signal | ○ | × | ○ | × | × |
| | | Position zone signal | × | × | ○ | × | × |
| A1 | Frame ground | FG | | | | | |
| B1 | +24V for control power supply | CP | | | | | |
| A2 | – | — | | | | | |
| B2 | 0 V for control power supply | GND | | | | | |
| A3 | External brake release input | BK | | | | | |
| B3 | +24V for motor power supply | MP | | | | | |
| A4 | Emergency stop input | EMG | | | | | |
| B4 | 0 V for motor power supply | GND | | | | | |
| A5 | – | — | | | | | |
| B5 | – | — | | | | | |
| A6 | – | — | | | | | |
| B6 | – | — | | | | | |
| A7 | – | — | | | | | |
| B7 | – | — | | | | | |
| A8 | – | — | | | | | |
| B8 | – | — | | | | | |
| A9 | Input | IN0 | PC1 | ST0 | PC1 | ST0 | ST0 |
| B9 | | IN1 | PC2 | ST1 | PC2 | — | ST1 |
| A10 | | IN2 | PC4 | ST2 | PC4 | RES | RES |
| B10 | | IN3 | HOME | — | PC8 | — | — |
| A11 | | IN4 | CSTR | RES | CSTR | — | — |
| B11 | | IN5 | *STP | *STP | *STP | — | — |
| A12 | Output | OUT0 | PEND | PE0 | PEND | LS0/PE0 | LS0/PE0 |
| B12 | | OUT1 | HEND | PE1 | HEND | LS1/PE1 | LS1/PE1 |
| A13 | | OUT2 | ZONE1 | PE2 | PZONE/ZONE1 | HEND | LS2/PE2 |
| B13 | | OUT3 | *ALM | *ALM | *ALM | *ALM | *ALM |

(Note) Signals marked with an asterisk (*) (ALM/STP) are negative logic signals so they are nomally on.

## I/O Signal Table (SIO Type) [ERC3 and PLC Connected via PIO Converter]

| Pin number | | Category | Controller type | CN (CON type) | | | | | | MC (MEC type) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PIO function | Parameter No. 25 (PIO pattern) selection | | | | | | Selected on teaching pendant or in PC software | |
| | | | | 0 | 1 | 2 | 3 | 4 | 5 | | |
| | | | | Positioning mode | Teaching mode | 256-point mode | 512-point mode | Solenoid valve mode 1 | Solenoid valve mode 2 | Standard/Movement between 2 points (single solenoid) | 2 inputs/Movement among 3 points |
| | | Input | Number of positioning points | 64 points | 64 points | 256 points | 512 points | 7 points | 3 points | 2 points | 3 points |
| | | | Home return signal | ○ | ○ | ○ | ○ | ○ | × | × | × |
| | | | Jog signal | × | ○ | × | × | × | × | × | × |
| | | | Teaching signal (writing of current position) | × | ○ | × | × | × | × | × | × |
| | | | Brake release | ○ | × | ○ | ○ | ○ | ○ | × | × |
| | | Output | Moving signal | ○ | ○ | × | × | × | × | × | × |
| | | | Zone signal | ○ | × | × | × | ○ | ○ | × | × |
| | | | Position zone signal | ○ | ○ | ○ | × | ○ | ○ | × | × |
| PIO converter | 1A | — | | — | | | | | | | |
| | 2A | — | | — | | | | | | | |
| | 3A | — | | — | | | | | | | |
| | 4A | — | | — | | | | | | | |
| | 5A | Input | IN0 | PC1 | PC1 | PC1 | PC1 | ST0 | ST0 | ST0 | ST0 |
| | 6A | | IN1 | PC2 | PC2 | PC2 | PC2 | ST1 | ST1(JOG+) | — | ST1 |
| | 7A | | IN2 | PC4 | PC4 | PC4 | PC4 | ST2 | ST2 *1 | RES | RES |
| | 8A | | IN3 | PC8 | PC8 | PC8 | PC8 | ST3 | — | — | — |
| | 9A | | IN4 | PC16 | PC16 | PC16 | PC16 | ST4 | — | — | — |
| | 10A | | IN5 | PC32 | PC32 | PC32 | PC32 | ST5 | — | — | — |
| | 11A | | IN6 | — | MODE | PC64 | PC64 | ST6 | — | — | — |
| | 12A | | IN7 | — | JISL | PC128 | P128 | — | — | — | — |
| | 13A | | IN8 | — | JOG+ | — | PC256 | — | — | — | — |
| | 14A | | IN9 | BKRL | JOG- | BKRL | BKRL | BKRL | BKRL | — | — |
| | 15A | | IN10 | — | — | — | — | — | — | — | — |
| | 16A | | IN11 | HOME | HOME | HOME | HOME | HOME | — | — | — |
| | 17A | | IN12 | *STP | *STP | *STP | *STP | *STP | — | — | — |
| | 18A | | IN13 | CSTR | CSTR/PWRT | CSTR | CSTR | — | — | — | — |
| | 19A | | IN14 | RES | RES | RES | RES | RES | RES | — | — |
| | 20A | | IN15 | SON | SON | SON | SON | SON | SON | — | — |
| | 1B | Output | OUT0 | PM1(ALM1) | PM1(ALM1) | PM1(ALM1) | PM1(ALM1) | PE0 | LS0 | LS0/PE0 | LS0/PE0 |
| | 2B | | OUT1 | PM2(ALM2) | PM2(ALM2) | PM2(ALM2) | PM2(ALM2) | PE1 | LS1(TRQS) | LS1/PE1 | LS1/PE1 |
| | 3B | | OUT2 | PM4(ALM4) | PM4(ALM4) | PM4(ALM4) | PM4(ALM4) | PE2 | LS2 *1 | HEND | LS2/PE2 |
| | 4B | | OUT3 | PM8(ALM8) | PM8(ALM8) | PM8(ALM8) | PM8(ALM8) | PE3 | — | *ALM | *ALM |
| | 5B | | OUT4 | PM16 | PM16 | PM16 | PM16 | PE4 | — | — | — |
| | 6B | | OUT5 | PM32 | PM32 | PM32 | PM32 | PE5 | — | — | — |
| | 7B | | OUT6 | MOVE | MOVE | PM64 | PM64 | PE6 | — | — | — |
| | 8B | | OUT7 | ZONE1 | MODES | PM128 | PM128 | ZONE1 | ZONE1 | — | — |
| | 9B | | OUT8 | PZONE/ZONE2 | PZONE/ZONE1 | PZONE/ZONE1 | PM256 | PZONE/ZONE2 | PZONE/ZONE2 | — | — |
| | 10B | | OUT9 | — | — | — | — | — | — | — | — |
| | 11B | | OUT10 | HEND | HEND | HEND | HEND | HEND | HEND | — | — |
| | 12B | | OUT11 | PEND | PEND/WEND | PEND | PEND | PEND | — | — | — |
| | 13B | | OUT12 | SV | SV | SV | SV | SV | SV | — | — |
| | 14B | | OUT13 | *EMGS | *EMGS | *EMGS | *EMGS | *EMGS | *EMGS | — | — |
| | 15B | | OUT14 | *ALM | *LM | *ALM | *ALM | *ALM | *ALM | — | — |
| | 16B | | OUT15 | LOAD/TRQS *ALML | * ALML | LOAD/TRQS *ALML | LOAD/TRQS *ALML | LOAD/TRQS *ALML | *ALML | — | — |
| | 17B | — | | — | | | | | | | |
| | 18B | — | | — | | | | | | | |
| | 19B | — | | — | | | | | | | |
| | 20B | — | | — | | | | | | | |

(Note) In the table above, codes in ( ) indicate functions effective before the home return. * indicates a negative logic signal.
PM1 to PM8 serve as alarm binary code output signals when an alarm occurs.
*1 These signals are invalid before the home return.

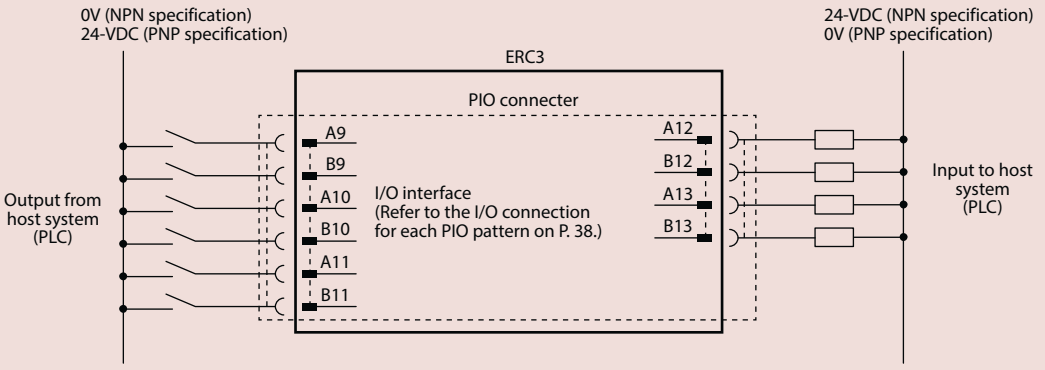
## Explanation of Signal Names

| Category | Signal name | Signal abbreviation | Function overview |
|---|---|---|---|
| Input | PTP strobe (start signal) | CSTR | The actuator starts moving to the position set by the command position number. |
| | Command position number | PC1~PC256 | This signal is used to input the position number of the position to move the actuator to (binary input). |
| | Forced brake release | BKRL | The brake is forcibly released. |
| | Pause | *STP | When this signal turns OFF while the actuator is moving, the actuator will decelerate to a stop. The remaining travel is put on hold while the actuator is stopped and will resume when the signal turns ON. |
| | Reset | RES | Present alarms are reset when this signal turns ON. By turning ON this signal while the actuator is paused (*STP signal is OFF), the remaining travel can be cancelled. |
| | Servo ON | SON | The servo is ON while this signal is ON, and OFF while the signal is OFF. |
| | Home return | HOME | Home return operation is performed when this signal is turned ON. |
| | Teaching mode | MODE | The actuator switches to the teaching mode when this signal turns ON.<br>The mode will not change unless the CSTR, JOG+ and JOG- signals are all OFF and the actuator is not operating. |
| | Jog/inching switching | JISL | The actuator can be jogged with a JOG+ or JOG- command while this signal is OFF.<br>The actuator operates by inching with a JOG+ or JOG- command while this signal is ON. |
| | Jog | JOG +<br>JOG – | When the JISL signal is OFF, the actuator jogs in the positive direction upon detection of the ON edge of the JOG+ signal, or in the negative direction upon detection of the ON edge of the JOG- signal. The actuator decelerates to a stop if the OFF edge is detected while jogging in each direction. The actuator operates by inching when the JISL signal is ON. |
| | Current position write | PWRT | When a position number is specified and this signal is turned ON for 20 ms or more in the teaching mode, the current position is written to the specified position number. |
| | Start signal | ST0~ST6 | In the solenoid mode, the actuator moves to the specified position when this signal turns ON. |
| Output | Positioning complete | PEND/INP | This signal turns ON when the actuator reaches the positioning band after moving. The PEND signal does not turn OFF even when the actuator moves beyond the positioning band, but the INP signal turns OFF. A parameter is used to switch between PEND and INP. |
| | Completed position number | PM1~PM256 | The position number of the position reached upon completion of positioning is output (by a binary signal). |
| | Home return complete | HEND | This signal turns ON upon completion of home return. It will remain ON until the home position is lost. |
| | Zone signal 1 | ZONE1 | This signal turns ON when the current position of the actuator falls within the parameter-set range. |
| | Zone signal 2 | ZONE2 | |
| | Position zone | PZONE | This signal turns ON when the current position of the actuator enters the range set in the position data table while moving to a position. This signal can be used with ZONE1, but the PZONE signal is effective only when moving to a set position. |
| | Alarm | *ALM | This signal remains ON while the controller is normal, and turns OFF when an alarm occurs. |
| | Moving | MOVE | This signal is ON while the actuator is moving (also during home return and push-motion operation). |
| | Servo ON | SV | This signal is ON when the servo is ON. |
| | Emergency stop output | *EMGS | This signal is ON when the controller is not in the emergency stop mode, and turns OFF when an emergency stop is actuated. |
| | Teaching mode output | MODES | This signal turns ON when the actuator enters the teaching mode due to an input of the MODE signal. It turns OFF when the actuator returns to the normal mode. |
| | Write complete | WEND | This signal is OFF immediately after switching to the teaching mode, and turns ON the moment the writing per the PWRT signal is completed.<br>This signal also turns OFF when the PWRT signal turns OFF. |
| | Current position number | PE0~PE6 | This signal turns ON when the actuator completes moving to the target position in the solenoid mode. |
| | Limit switch output | LS0~LS2 | This signal turns ON when the current position of the actuator enters the positioning band (±) around the target position. If the home return has been completed, this signal is output even before a move command is issued or the servo is OFF. |
| | Load output judgment status | LOAD | This signal turns ON when the in-certification-range command torque exceeds the threshold. |
| | Torque level status signal | TRQS | This signal turns ON when the motor current reaches the threshold. |
| | Minor failure alarm | *ALML | This signal is output when a message-level alarm generates. |

(Note) In the table above, * indicates a negative logic signal.

## I/O Wiring Diagram

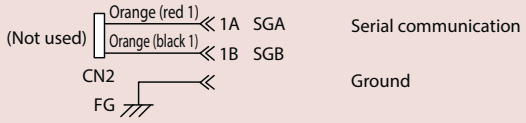
### PIO 8-point Type (ERC3 and PLC Connected Directly)



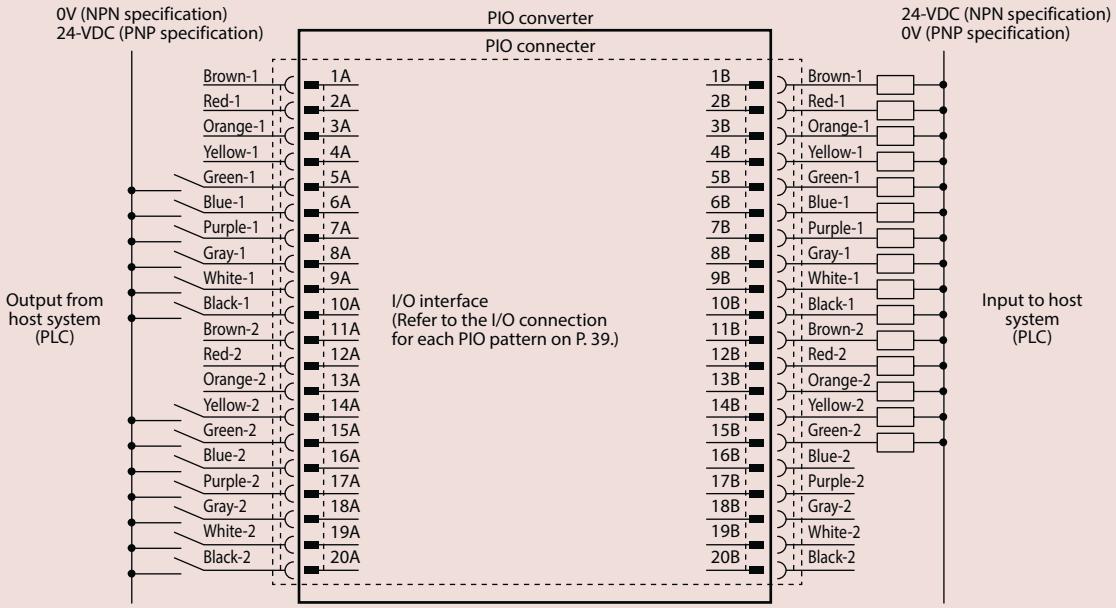

*The wire colors change as follows if a robot cable is used.

| Line color | Pin number |
|---|---|
| Gray (red 1) | 2A |
| Gray (black 1) | 2B |
| Gray (red 2) | 7A |
| Gray (black 2) | 7B |

(Note) To forcibly release the brake, provide a switch between BKR and 0V and turn it ON.




### PIO Positioning Mode (Standard Type) (ERC3 and PLC Connected via PIO Converter)



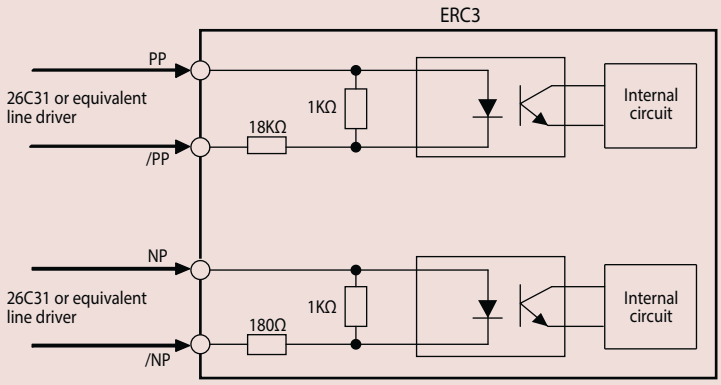
# ■Pulse-train control mode

## I/O specification (Pulse-train type)

### ■Input Part

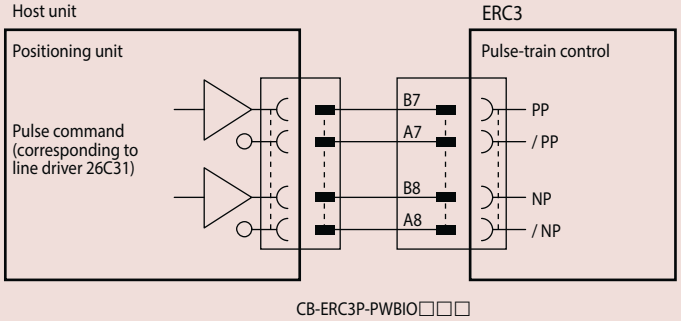
| Code | Remarks |
|---|---|
| Differential input voltage range | 26C31 or equivalent |
| Maximum cable length | Differential line driver method: 10m max.<br>Open collector method (AK-04 used): 2m max. |
| Maximum number of input pulses | Differential line driver method: 200 kpps max.<br>Open collector method (AK-04 used): 60kpps max. |

* If the user-side I/O is of open collector type, use the AK-04.

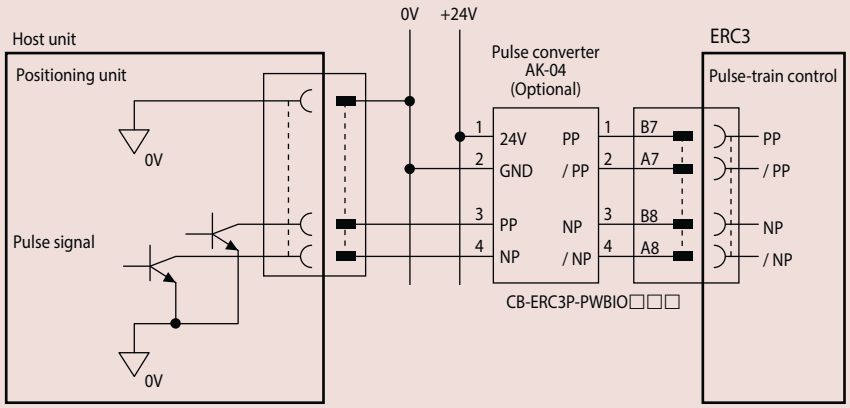



## Pulse-train Control Circuit

●Host Unit = Differential Type




●Host Unit = Open Collector Type




* The AK-04 (optional) is needed to input pulses.
* Use the same power supply for open collector input/output to/from the host and for the AK-04.

## I/O Signals for the Pulse-train Control Mode

The table below lists the signal assignments for the flat cable for the pulse-train control mode. Connect an external device (such as PLC) according to this table.

### [1] Positioning Operation - PIO Pattern: 0

| Pin number | Category | I/O number | Signal abbreviation | Signal name | Description of function |
|---|---|---|---|---|---|
| A1 | Frame ground | | FG | — | Frame ground. |
| B1 | +24 V for control power supply | | CP | — | +24 V of the control power supply is input. |
| A2 | | | | — | |
| B2 | 0 V for control power supply | | GND | — | 0 V of the control power supply. |
| A3 | External brake release input | | BK | — | This signal is used to release the brake externally.<br>The brake is released when +24 V is input. |
| B3 | +24 V for motor power supply | | MP | — | +24 V of the motor power supply is input. |
| A4 | Emergency stop input | | EMG | — | Input signal for emergency stop. |
| B4 | 0 V for motor power supply | | GND | — | +24 V of the motor power supply is input. |
| A5 | | | | | |
| B5 | | | | | |
| A6 | | | | | |
| B6 | | | | | |
| A7 | | | /PP | Command pulse | |
| B7 | | | PP | Command pulse | |
| A8 | | | /NP | Command pulse | |
| B8 | | | NP | Command pulse | |
| A9 | Input | IN0 | SON | Servo ON | The servo is ON while this signal is ON, and OFF while the signal is OFF. |
| B9 | | IN1 | TL | Torque limit selection | When this signal is turned ON, the motor torque is limited to the value set by a parameter. |
| A10 | | IN2 | HOME | Home return | Home return operation is performed when this signal is turned ON. |
| B10 | | IN3 | RES | Reset | Present alarms are reset when this signal is turned ON. |
| A11 | | IN4 | — | | |
| B11 | | IN5 | — | | |
| A12 | Output | OUT0 | SV | Servo ON status | This signal turns ON when the servo is ON. |
| B12 | | OUT1 | INP | Positioning complete | This signal turns ON when the amount of remaining travel pulses in the deviation counter falls within the positioning band. |
| A13 | | OUT2 | HEND | Home return complete | This signal turns ON upon completion of home return. |
| B13 | | OUT3 | *ALM | Controller alarm status | This signal turns ON when the controller is normal, and turns OFF when an alarm generates. |

* indicates a negative logic signal. Negative logic signals are normally ON while the power is supplied, and turn OFF when the signal is output.

### [2] Push-motion Operation - PIO Pattern: 1

| Pin number | Category | I/O number | Signal abbreviation | Signal name | Description of function |
|---|---|---|---|---|---|
| A1 | Frame ground | | FG | — | Frame ground. |
| B1 | +24 V for control power supply | | CP | — | +24 V of the control power supply is input. |
| A2 | | | | — | |
| B2 | 0 V for control power supply | | GND | — | 0 V of the control power supply. |
| A3 | External brake release input | | BK | — | This signal is used to release the brake externally. The brake is released when +24 V is input. |
| B3 | +24 V for motor power supply | | MP | — | +24 V of the motor power supply is input. |
| A4 | Emergency stop input | | EMG | — | Input signal for emergency stop. |
| B4 | 0 V for motor power supply | | GND | — | +24 V of the motor power supply is input. |
| A5 | | | | | |
| B5 | | | | | |
| A6 | | | | | |
| B6 | | | | | |
| A7 | | | /PP | Command pulse | |
| B7 | | | PP | Command pulse | |
| A8 | | | /NP | Command pulse | |
| B8 | | | NP | Command pulse | |
| A9 | Input | IN0 | SON | Servo ON | The servo is ON while this signal is ON, and OFF while the signal is OFF. |
| B9 | | IN1 | TL | Torque limit selection | When this signal is turned ON, the motor torque is limited to the value set by a parameter. |
| A10 | | IN2 | HOME | Home return | Home return operation is performed when this signal is turned ON. |
| B10 | | IN3 | RES | Reset | This signal serves as a reset signal when the torque is not limited (torque TL signal is OFF). When this signal turns ON, present alarms are reset. |
| | | | DCLR | Deviation counter clear | This signal serves as a deviation counter signal when the torque is limited (torque TL signal is ON). This signal clears the deviation counter. |
| A11 | | IN4 | — | | |
| B11 | | IN5 | — | | |
| A12 | Output | OUT0 | SV | Servo ON status | This signal turns ON when the servo is ON. |
| B12 | | OUT1 | INP | Positioning complete | This signal serves as a positioning complete signal when the torque is not limited (torque TL signal is OFF). It turns ON when the remaining travel pulses in the deviation counter are within the range of positioning band. |
| | | | TLR | Torque limited | This signal serves as a torque limited signal when the torque is limited (torque TL signal is ON). If the torque is limited, this signal turns ON when the torque limit is reached. |
| A13 | | OUT2 | HEND | Home return complete | This signal turns ON upon completion of home return. |
| B13 | | OUT3 | *ALM | Controller alarm status | This signal turns ON when the controller is normal, and turns OFF when an alarm generates. |

*indicates a negative logic signal. Negative logic signals are normally ON while the power is supplied, and turn OFF when the signal is output.

# Cable/Maintenance Parts

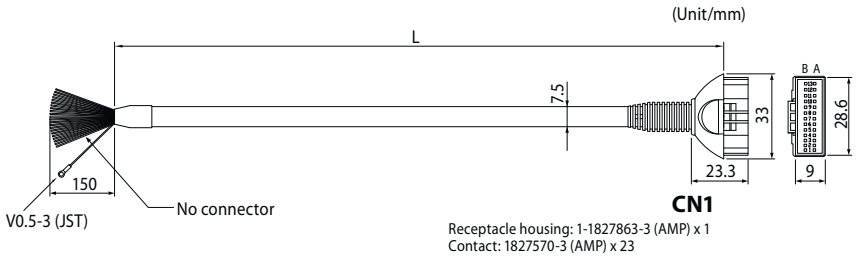
## Power & I/O Cable for PIO Type

Model number **CB-ERC3P-PWBIO□□□**

*□□□ indicates the cable length (L). A desired length can be specified up to 10m. Example: 080=8m

* The standard cable is a robot cable.

| Wiring | Color | Signal | No. |
|---|---|---|---|
| AWG22 | Ground | FG | 1 |




Receptacle housing: 1-1827863-3 (AMP) x 1
Contact: 1827570-3 (AMP) x 23

| No. | Signal | Color | Wiring |
|---|---|---|---|
| A1 | FG | Ground | AWG22 |
| A2 | — | — | — |
| A3 | BK | Red 1 | AWG28 |
| A4 | EMG | Orange 1 | |
| A5 | — | — | — |
| A6 | — | — | — |
| A7 | — | Blue | AWG28 |
| A8 | — | Gray | |
| A9 | IN0 | Brown2 | |
| A10 | IN2 | Orange2 | |
| A11 | IN4 | Green2 | |
| A12 | OUT0 | Purple2 | |
| A13 | OUT2 | White2 | |
| B1 | CP | Brown | AWG22 |
| B2 | CP_GND | Red | |
| B3 | MP | Orange | AWG19 |
| B4 | MP_GND | Yellow | |
| B5 | — | Green | AWG28 |
| B6 | — | Brown1 | |
| B7 | — | Purple | |
| B8 | — | White | |
| B9 | IN1 | Red2 | |
| B10 | IN3 | Yellow2 | |
| B11 | IN5 | Blue2 | |
| B12 | OUT1 | Gray2 | |
| B13 | OUT3 | Black | |

Minimum bending R: r = 45mm or more (when movable type is used)

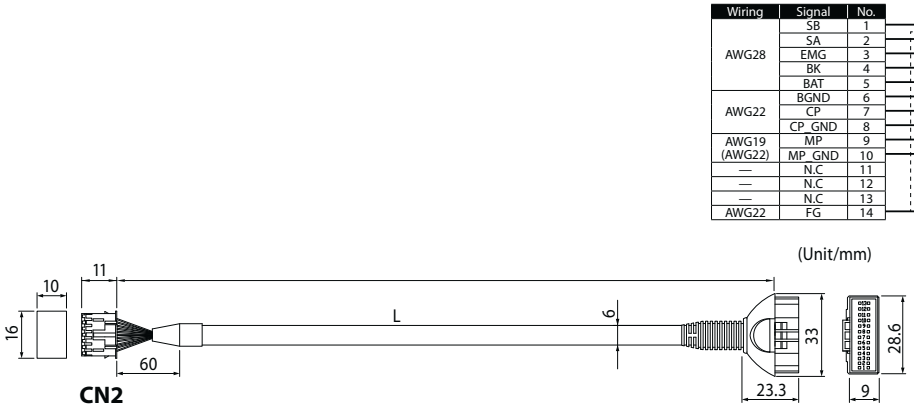
## Power & I/O Cable for SIO Type

Model number **CB-ERC3S-PWBIO□□□**

*□□□ indicates the cable length (L). A desired length can be specified up to 10m. Example: 080=8m

* The standard cable is a robot cable.

| Wiring | Signal | No. |
|---|---|---|
| AWG28 | SB | 1 |
| | SA | 2 |
| | EMG | 3 |
| | BK | 4 |
| | BAT | 5 |
| AWG22 | BGND | 6 |
| | CP | 7 |
| | CP_GND | 8 |
| AWG19 (AWG22) | MP | 9 |
| | MP_GND | 10 |
| — | N.C | 11 |
| — | N.C | 12 |
| — | N.C | 13 |
| AWG22 | FG | 14 |




| No. | Signal | Wiring |
|---|---|---|
| A1 | FG | AWG22 |
| A2 | – | – |
| A3 | BK | AWG28 |
| A4 | EMG | |
| A5 | BGND | AWG22 |
| A6 | BAT | AWG28 |
| B1 | CP | AWG22 |
| B2 | CP_GND | |
| B3 | MP | AWG19 |
| B4 | MP_GND | |
| B5 | SA | AWG28 |
| B6 | SB | |
| A7 | N.C | — |
| B7 | N.C | — |
| A8 | N.C | — |
| B8 | N.C | — |
| A9 | N.C | — |
| B9 | N.C | — |
| A10 | N.C | — |
| B10 | N.C | — |
| A11 | N.C | — |
| B11 | N.C | — |
| A12 | N.C | — |
| B12 | N.C | — |
| A13 | N.C | — |
| B13 | N.C | — |

Plug housing: PADP-14V-1-S (JST) x 1
Socket contact: SPND-001T-C0.5 (JST) x 6
SPND-002T-C0.5 (JST) x 5

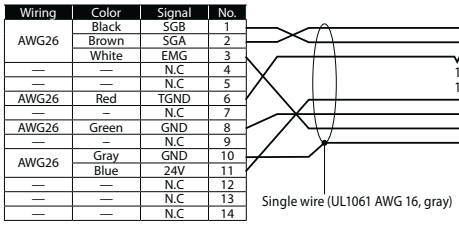
Receptacle housing: 1-1827863-3 (AMP) x 1
Receptacle contact: 1827570-2 (AMP) x 11

Minimum bending R: r = 36 mm or more (when movable type is used)

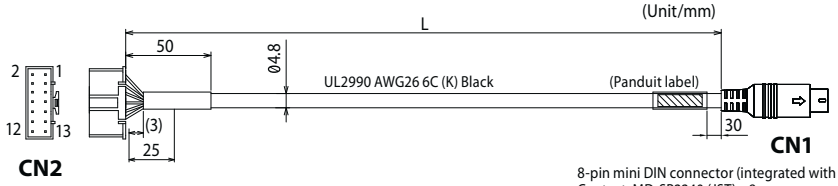
## SIO Communication Cable (for Quick Teach)

Model number **CB-PST-SIO050**

| Wiring | Color | Signal | No. |
|---|---|---|---|
| AWG26 | Black | SGB | 1 |
| | Brown | SGA | 2 |
| | White | EMG | 3 |
| — | — | N.C | 4 |
| — | — | N.C | 5 |
| AWG26 | Red | TGND | 6 |
| — | – | N.C | 7 |
| AWG26 | Green | GND | 8 |
| — | – | N.C | 9 |
| AWG26 | Gray | GND | 10 |
| | Blue | 24V | 11 |
| — | — | N.C | 12 |
| — | — | N.C | 13 |
| — | — | N.C | 14 |




| No. | Signal | Color | Wiring |
|---|---|---|---|
| 1 | SGA | Brown | AWG26 |
| 2 | SGB | Black | |
| 3 | 5V | Red | |
| 4 | N.C | — | |
| 5 | N.C | — | |
| 6 | 24V | Yellow | AWG26 |
| 7 | GND | Green | |
| 8 | EMGB | White | |
| | GND | Shield | — |




Housing: PADP-14V-1-S (JST)
Contact: SPND-002T-C0.5 (JST)

8-pin mini DIN connector (integrated with molding)
Contact: MD-SP2240 (JST) x 8
Metal shell: MD-PS8T (JST)
Housing A: MD-PI8A (JST)
Housing B: MD-PI8B (JST)
Cover: MD-PCC8T-S2 (JST)

Options

# PIO Converter <RCB-CV>

RoHS

## Realizing controller functions of the next higher class with the ERC3 series

When connected to the PIO converter, the ERC3 series can demonstrate functions equivalent to the RCP4 controller "PCON-CA." Use the PIO converter if you want to configure a high-function system using the ERC3 series, use the absolute function or monitor the status of the actuator.

### Features

#### Increased maximum number of positioning points

While the maximum number of positioning points supported by the ERC3 series' built-in controller is 16, it increases to 512 when the PIO converter is connected. Connecting the PIO converter also increases the numbers of I/O signals, allowing for complex controls and connection with peripheral equipment.

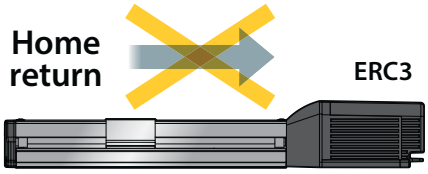
#### Supporting the simple absolute mode

The standard encoder of the ERC3 series is of incremental type. Once the power is turned off, therefore, the actuator's current position is lost and home return operation will be required next time the actuator is started. When the PIO converter is connected, the ERC3 lets you select the simple absolute mode. Home return operation is not required while the encoder is in the simple absolute mode, because the current position is retained.

* To use the simple absolute function, the PIO converter must be of the simple absolute type (equipped with the simple absolute battery) and the actuator must also be of the simple absolute specification.
* Among the diffrent I/O types, only the serial communication type supports the simple absolute function.

In the simple absolute mode…

Home return operation is no longer required

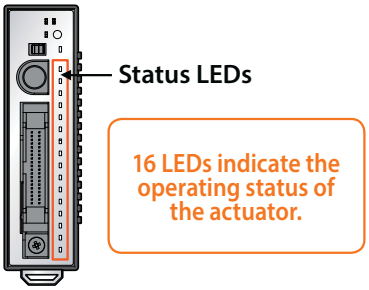



The actuator can be operated immediately after reconnecting the power.

#### Status LEDs indicating the operating status of the actuator

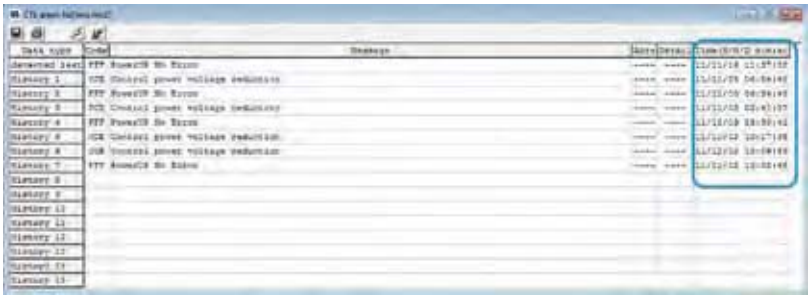
The PIO converter lets you check the following status using the status LEDs provided on the front panel (optional).

- Command current ratio level
- Alarm code
- PIO input terminal status
- PIO output terminal status



## Calendar function for checking when errors occurred

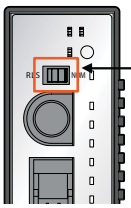
The PIO converter has a calendar function that lets you check the details of past alarms, such as when each alarm occurred, by connecting the teaching pendant and PC software to the PIO converter. This function is useful when analyzing alarms.



## Brake release switch for at-will release of the brake

If your ERC3 actuator comes with a brake, the brake can be turned on/off freely using the brake release switch on the front panel of the PIO converter. To release the brake, turn the switch to the "RLS" position.

* If the actuator is used vertically, hold the actuator in place before releasing the brake.




**Brake release switch**

Release the brake: RLS
Normal: NOM

## Model Configuration

**RCB** Series — Type — I/O type — I/O cable length — Simple absolute function supported

| Type | |
|---|---|
| CV | Built-in power cutoff relay type (standard) |
| CVG | External power cutoff relay type |

| I/O type | |
|---|---|
| NP | NPN specification (without monitoring LEDs) |
| PN | PNP specification (without monitoring LEDs) |
| NPM | NPN specification (with monitoring LEDs) |
| PNM | PNP specification (with monitoring LEDs) |

* Select "NPM/PNM" if you want to use the functions of monitoring LEDs on the front panel.

| I/O cable length | |
|---|---|
| 0 | No cable |
| 2 | With 2m cable |
| 3 | With 3m cable |
| 5 | With 5m cable |

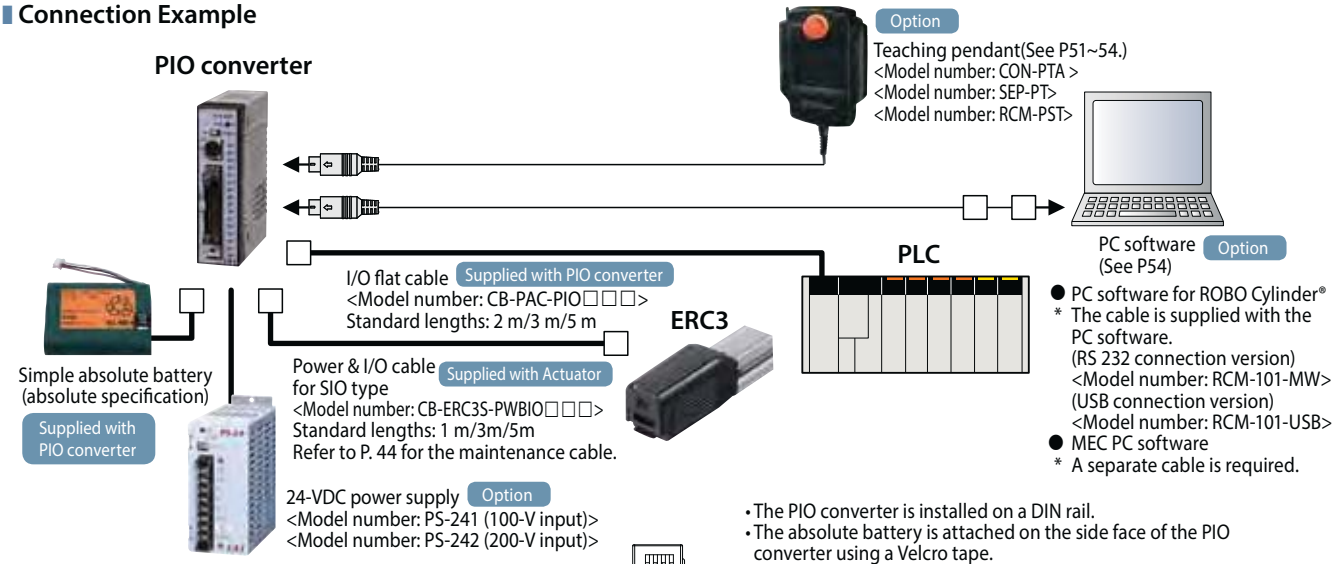
| Simple absolute function supported | |
|---|---|
| (No entry) | Simple absolute function not supported (for incremental specification only) |
| AB | Simple absolute function supported (with simple absolute battery) |
| ABUN | Simple absolute function supported (without simple absolute battery |

## Base Specifications

| Item | | Description |
|---|---|---|
| Number of connected axes | | ERC3 1 axis |
| Power supply voltage | | 24VDC±10% |
| Control power capacity | | 0.8A max. |
| Heat output | | 1.3W |
| Momentary power failure resistance | | 500μs max. |
| Serial communication interface (SIO port) | | RS485: 1 channel (conforming to Modbus protocol RTU/ASCII) / Speed: 9.6 to 230.4 kbps<br>Actuators can be controlled via serial communication. |
| External interface | | Dedicated 24-VDC signal input/output (NPN or PNP selected)—Up to 16 input points, up to 16 output points / Cable length: 10 m max. |
| Data setting/input method | | PC software, touch-panel teaching pendant |
| Operation Mode | | Positioner mode |
| Number of positions in positioner mode | | Standard 64 points, maximum 512 points Note) Positioning points vary depending on the selected PIO pattern. |
| LED display (installed on the front panel) | | Status indicator LED - Steady green light: Servo ON / Blinking green light: Auto servo OFF / Steady red light: Alarm present<br>Absolute battery status indicator LED - Green: Fully charged / Orange: Charging / Red: Not connected<br>Absolute reset status LED - Green: Absolute reset complete / Red: Absolute reset not yet complete<br>LED0 to LED15 (optional): 4 different statuses can be indicated by changing the switch setting.<br>Command current ratio, alarm code, PIO input status, PIO output status |
| Electromagnetic brake forced release switch (installed on the front panel) | | Switched between NOM (standard) and BK RLS (forced releases) |
| Isolation resistance | | 500VDC, 10MΩ or more |
| Electric shock protection mechanism | | Class I basic isolation |
| Cooling method | | Natural air cooling |
| Environment | Ambient operating temperature | 0 to 40° |
| | Ambient operating humidity | 85%RH or less (non-condensing) |
| | Ambient storage temperature | –20 to 70° (excluding batteries) |
| | Operating altitude | Altitude 1000m or less |
| | Protection degree | IP20 |
| | Vibration resistance | Number of vibrations: 10 to 57 Hz / Amplitude: 0.075 mm<br>Number of vibrations: 57 to 150 Hz / Acceleration: 9.8 m/s²<br>Sweep time in X/Y/Z directions: 10 minutes / Number of sweeps: 10 times |
| | Weight | 103g or less, or 287g (including 190g for the battery) or less for the simple absolute specification |
| | External Dimensions | 25W×90H×98D |
| Consumable parts | | RTC backup capacitor: Approx. 5 years*<br>Drive-source cutoff relay: Approx. 100,000 actuations<br>Absolute battery: Approx. 3 years |

*When the power is supplied 12 hours a day at an ambient temperature of 40°C and the actuator is stopped (power turned off) 12 hours a day in an ambient temperature of 20°C.

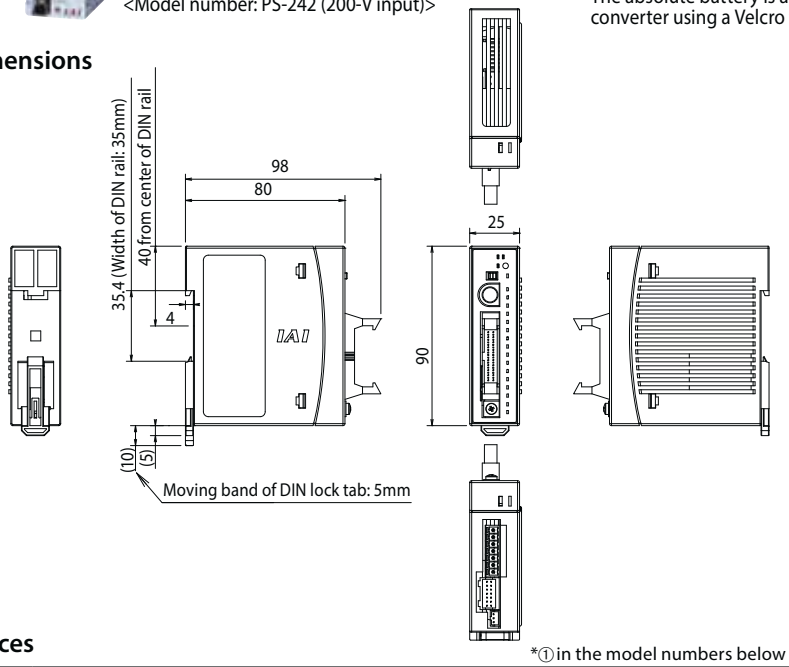
## Connection Example




- PC software for ROBO Cylinder®
  * The cable is supplied with the PC software.
  (RS 232 connection version)
  <Model number: RCM-101-MW>
  (USB connection version)
  <Model number: RCM-101-USB>
- MEC PC software
  * A separate cable is required.

- The PIO converter is installed on a DIN rail.
- The absolute battery is attached on the side face of the PIO converter using a Velcro tape.

## External Dimensions




## Standard Prices

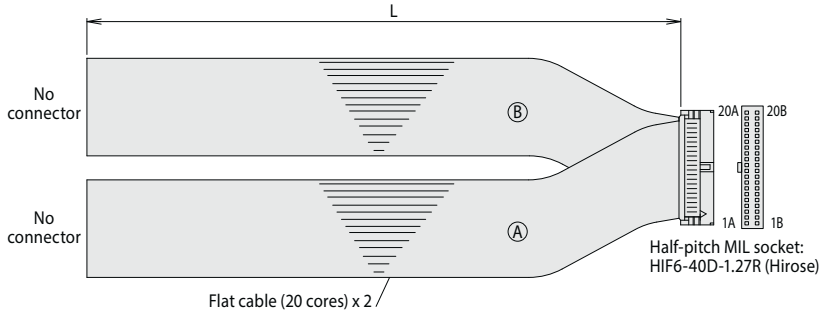
*① in the model numbers below represents the number indicating I/O cable length.

| Power cut-off relay | Monitoring LEDs | Positoning method | Model Numbers | Standard Prices |
|---|---|---|---|---|
| Built-in type | N/A | Incremental specification | RCB-CV-(NP/PN)-① | — |
| | | Simple absolute specification (with battery) | RCB-CV-(NP/PN)-①-AB | — |
| | | Simple absolute specification (without battery) | RCB-CV-(NP/PN)-①-ABUN | — |
| | Available | Incremental specification | RCB-CV-(NPM/PNM)-① | — |
| | | Simple absolute specification (with battery) | RCB-CV-(NPM/PNM)-①-AB | — |
| | | Simple absolute specification (without battery) | RCB-CV-(NPM/PNM)-①-ABUN | — |
| External type | N/A | Incremental specification | RCB-CVG-(NP/PN)-① | — |
| | | Simple absolute specification (with battery) | RCB-CVG-(NP/PN)-①-AB | — |
| | | Simple absolute specification (without battery) | RCB-CVG-(NP/PN)-①-ABUN | — |
| | Available | Incremental specification | RCB-CVG-(NPM/PNM)-① | — |
| | | Simple absolute specification (with battery) | RCB-CVG-(NPM/PNM)-①-AB | — |
| | | Simple absolute specification (without battery) | RCB-CVG-(NPM/PNM)-①-ABUN | — |

## I/O Flat Cable

Model number **CB-PAC-PIO□□□**

*□□□ indicates the cable length (L). A desired length can be specified up to 10m. Example: 080=8m




HIF6-40D-1.27R

| No. | Signal name | Cable color | Wiring |
|---|---|---|---|
| 1A | - | Brown - 1 | Flat cable Ⓐ (crimped) |
| 2A | - | Red - 1 | |
| 3A | - | Orange - 1 | |
| 4A | - | Yellow - 1 | |
| 5A | IN0 | Green - 1 | |
| 6A | IN1 | Blue - 1 | |
| 7A | IN2 | Purple - 1 | |
| 8A | IN3 | Gray - 1 | |
| 9A | IN4 | White - 1 | |
| 10A | IN5 | Black - 1 | |
| 11A | IN6 | Brown - 2 | |
| 12A | IN7 | Red - 2 | |
| 13A | IN8 | Orange - 2 | |
| 14A | IN9 | Yellow - 2 | |
| 15A | IN10 | Green - 2 | |
| 16A | IN11 | Blue - 2 | |
| 17A | IN12 | Purple - 2 | |
| 18A | IN13 | Gray - 2 | |
| 19A | IN14 | White - 2 | |
| 20A | IN15 | Black - 2 | |

| No. | Signal name | Cable color | Wiring |
|---|---|---|---|
| 1B | OUT0 | Brown - 3 | Flat cable Ⓑ (crimped) AWG 28 |
| 2B | OUT1 | Red - 3 | |
| 3B | OUT2 | Orange - 3 | |
| 4B | OUT3 | Yellow - 3 | |
| 5B | OUT4 | Green - 3 | |
| 6B | OUT5 | Blue - 3 | |
| 7B | OUT6 | Purple - 3 | |
| 8B | OUT7 | Gray - 3 | |
| 9B | OUT8 | White - 3 | |
| 10B | OUT9 | Black - 3 | |
| 11B | OUT10 | Brown - 4 | |
| 12B | OUT11 | Red - 4 | |
| 13B | OUT12 | Orange - 4 | |
| 14B | OUT13 | Yellow - 4 | |
| 15B | OUT14 | Green - 4 | |
| 16B | OUT15 | Blue - 4 | |
| 17B | — | Purple - 4 | |
| 18B | — | Gray - 4 | |
| 19B | — | White - 4 | |
| 20B | — | Black - 4 | |

Options

# Gateway Unit <RCM-EGW>

RoHS

The ERC3 gateway unit lets you connect up to four ERC3 actuators to implement the gateway function.
The gateway unit connects to a PLC or other host control system via a field network. It supports seven network protocols (CC-Link, DeviceNet, PROFIBUS-DP, MECHATROLINK-II, CompoNet, EtherCAT, EtherNet/IP).

## Features

- Use the position adjustment switches on the front panel to jog the actuator
- The brake release switch for each axis is provided on the front panel

## Model Configuration

RCM — [ ] — [ ]

Series | Controller type | I/O signal pattern

| Controller type | |
|---|---|
| EGW | Built-in power cutoff relay type |
| EGWG | External power cutoff relay type |

| I/O signal pattern | |
|---|---|
| CC | CC-Link |
| DV | DeviceNet |
| PR | ProfiBus |
| ML | MECHATROLINK-II (To be released soon) |
| CN | CompoNet |
| EC | EtherCAT (To be released soon) |
| EP | EtherNet/IP |


## Base Specifications

| Item | | Description |
|---|---|---|
| Number of controlled axes | | Up to 4 axes |
| Control/motor power-supply voltage | | 24 VDC ±10% |
| Control power capacity | | 1 A max. |
| Load current (per axis) | High-output setting enabled | 3.5 A rated/4.2 A max. |
| | High-output setting disabled | 1.2 A rated/2.2 A max. |
| Brake release power capacity (per axis) | | 0.15 A max. |
| Rush current (Note) | | 60 A max. |
| Cable length between actuator and gateway unit | | 10 m max. (A dedicated cable is used) |
| Number of positioning points | | Up to 512 points (Unlimited in the simple direct mode or direct numerical specification mode) (Note) The number of positioning points varies depending on the operation pattern selected by the parameter. |
| Electromagnetic brake forced release | | The electromagnetic brake for each axis can be released using the applicable brake forced release switch provided on the front panel. |
| Environment | Ambient operating temperature | 0~40° |
| | Ambient operating humidity | 85% RH max. (Non-condensing) |
| | Protection class | IP20 |

Note) Approx. 50 µs of rush current flows after the power is turned on.

## Standard Price

| | Built-in power cutoff relay type | | External power cutoff relay type | |
|---|---|---|---|---|
| | Model | Standard price | Model | Standard price |
| CC-Link connection specification | RCM-EGW-CC | — | RCM-EGWG-CC | — |
| DeviceNet connection specification | RCM-EGW-DV | — | RCM-EGWG-DV | — |
| ProfiBus connection specification | RCM-EGW-PR | — | RCM-EGWG-PR | — |
| MECHATROLINK-II connection specification (*) | RCM-EGW-ML | — | RCM-EGWG-ML | — |
| CompoNet connection specification | RCM-EGW-CN | — | RCM-EGWG-CN | — |
| EtherCAT connection specification (*) | RCM-EGW-EC | — | RCM-EGWG-EC | — |
| EtherNet/IP connection specification | RCM-EGW-EP | — | RCM-EGWG-EP | — |

(*) To be released soon

## Operation Mode

| Operation pattern | Description |
|---|---|
| Positioner 1/simple direct mode | In the positioner 1 mode, position data of up to 512 points can be registered to stop the actuator at any of the registered positions. The current position can also be monitored. In the simple direct mode, the target position can be specified directly by entering a value. The current position can also be monitored. |
| Direct numerical specification mode | The target position, speed, acceleration/deceleration and push-current limiting value can be each specified by entering a value.<br>In addition to the current position, the current speed and command current value can also be monitored. |
| Positioner 2 mode | In this mode, the actuator is operated using the position data of up to 512 points set in the position table. The current position cannot be monitored. The functions available in this mode are the same as those provided in the positioner 1 mode, except that less amount of data can be sent/received. |
| Positioner 3 mode | In this mode, the actuator is operated using the position data of up to 256 points set in the position table. The current position cannot be monitored. The amount of data sent/received in this mode is further less than that in the positioner 2 mode, and the actuator is controlled using the minimum signals required for positioning. |
| Remote I/O | The same six functions (Note 1) available with the PIO specification (CON type) can be controlled.<br>The same two functions (Note 2) available with the PIO specification (MEC type) can be controlled. |

Note 1) Switched using the ERC3's PIO pattern parameter.
Note 2) Switched using the ERC3's operation pattern parameter.

## Control Signals in the Remote I/O Mode

The table below lists the ERC3 functions that can be controlled in each type.

### CON Type Specifications

O: Supported X: Not supported

| ROBO Cylinder function | Operation pattern (PIO pattern) | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 |
| | Positioning mode | Teaching mode | 256-point mode | 512-point mode | Solenoid valve mode 1 | Solenoid valve mode 2 |
| Home return operation | ○ | ○ | ○ | ○ | ○ | × (Note 1) |
| Positioning operation | ○ | ○ | ○ | ○ | ○ | ○ |
| Speed & acceleration/deceleration setting | ○ | ○ | ○ | ○ | ○ | ○ |
| Pitch feed (inching) | ○ | ○ | ○ | ○ | ○ | ○ |
| Push-motion operation | ○ | ○ | ○ | ○ | ○ | × |
| Speed change while moving | ○ | ○ | ○ | ○ | ○ | ○ |
| Operation at different acceleration/speed | ○ | ○ | ○ | ○ | ○ | ○ |
| Pause | ○ | ○ | ○ | ○ | ○ | ○ (Note 2) |
| Zone signal output | ○ | ○ | ○ | × | ○ | ○ |
| PIO pattern selection | ○ | ○ | ○ | ○ | ○ | ○ |

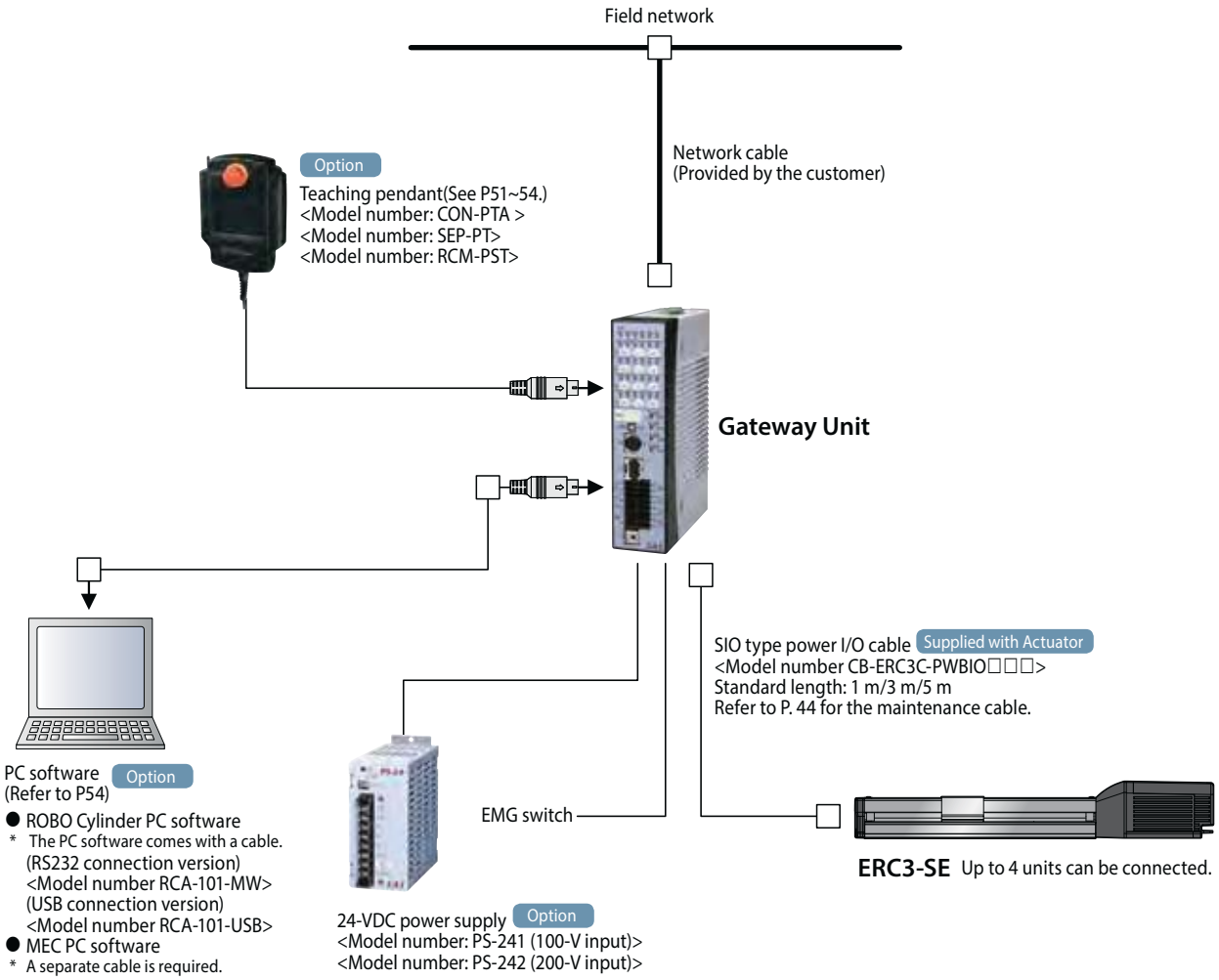
Note 1) Home return is performed with the first move command.
Note 2) Supported if ERC3 Parameter No. 27, "Move command type" is set to "0."

### MEC Type Specifications

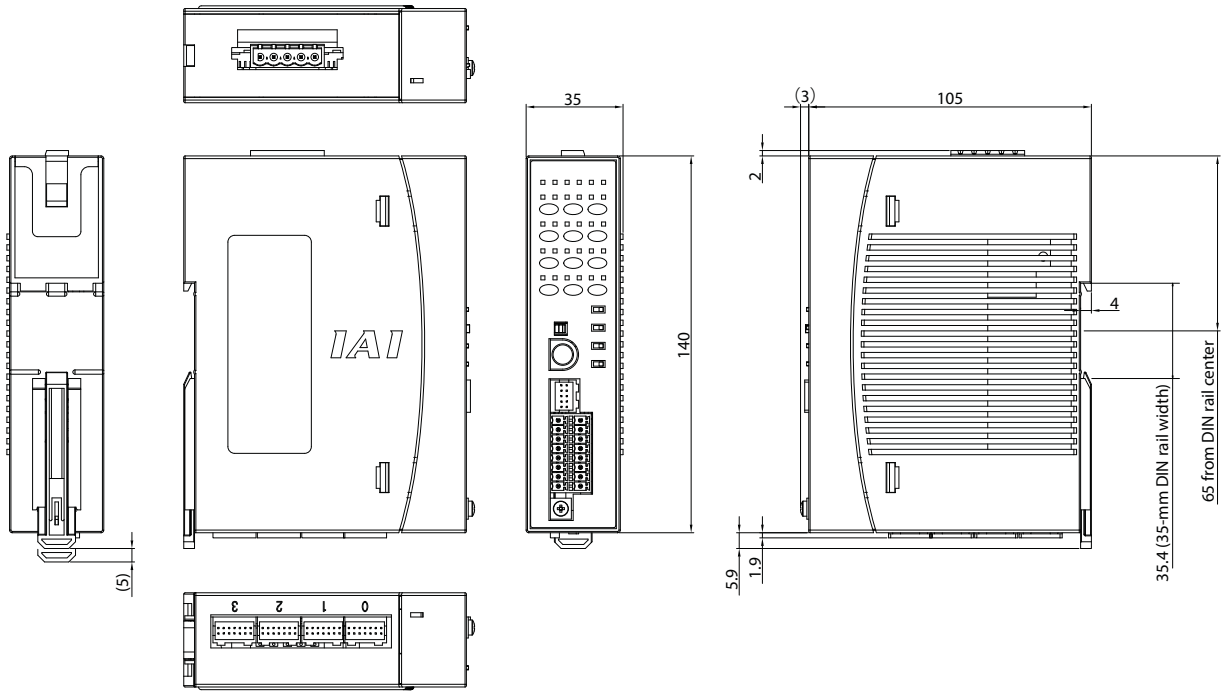
| ROBO Cylinder function | Operation pattern | |
|---|---|---|
| | 1-input, 2-point move | 2-input, 3-point move |
| Home return operation | × (Note 1) | × (Note 1) |
| Positioning operation | ○ | ○ |
| Speed & acceleration/deceleration setting | ○ | ○ |
| Pitch feed (inching) | × | × |
| Push-motion operation | ○ | ○ |
| Speed change while moving | × | × |
| Operation at different acceleration/speed | ○ | ○ |
| Pause | × | ○ |
| Zone signal output | × | × |

Note 1) Home return is performed with the first move command.

## Example of Connection




## External Dimensions



## Notes on Selecting Teaching Pendant and PC Software

With the ERC3 series, usable teaching pendant and PC software vary depending on the controller type (CON type/MEC type). Refer to P.5 for controller types.

**Teaching pendant**

| Controller type | CON-PTA | RCM-PST | SEP-PT |
|---|---|---|---|
| CON type | ○ | △ | — |
| MEC type | ○ | ○ | ○ |

**PC software**

| Controller type | RCM-101-MW | RCM-101-USB | MEC PC software |
|---|---|---|---|
| CON type | ○ | ○ | — |
| MEC type | — | — | ○ |

○: All functions are supported / △: Limited functions are supported (home return, servo ON/OFF, JOG+, JOG-, stop (press and hold to reset alarms))

## Options

# Quick Teach <RCM-PST>

RoHS

A teaching pendant equipped with intuitive operation buttons and acceleration/speed knobs that can be used easily even by mechanical engineers and those who never operated a robot before.

**Features**
- User-friendly panel sheet switches and knobs let you complete the settings in no time.
- The small pendant can be held in a hand.
- Separate power-supply unit

### Model configuration

RCM — [Unit name] — [Input power supply] — [Panel language]

RCM Series

| Unit name | |
|---|---|
| PST | Product unit |
| PS | Power-supply unit |

| Input power supply | |
|---|---|
| 0 | 24 VDC (24-V power-supply specification, without power-supply unit) |
| 1 | Single-phase 100 to 115 VAC (100-V power-supply specification) |
| 2 | Single-phase 100 to 230 VAC (200-V power-supply specification) |
| EU | Single-phase 100 to 230 VAC (200-V power-supply specification for Europe) |

| Panel language | |
|---|---|
| (No entry) | Japanese version |
| ENG | English version |

### Base Specifications

| Item | | Description | | | |
|---|---|---|---|---|---|
| Product name | | 24-VDC specification | 100-VDC specification | 200-VDC specification | 200-V power-supply specification for Europe (Note 2) |
| Product model | | RCM-PST-0 | RCM-PST-1 | RCM-PST-2 | RCM-PST-EU |
| Product configuration | Teaching pendant | RCM-PST-0 | | | |
| | Power-supply unit | – (Teaching pendant only) | RCM-PS-1 | RCM-PS-2 | RCM-PS-EU |
| Power supply voltage | | 24 VDC±10% (DC 21.6V to DC 26.4V) | Single-phase 100 to 115 VAC±10% (AC 90V to AC 126.5V) | Single-phase 100 to 230 VAC±10% (AC 90V to AC253 V) | Single-phase 100 to 230 VAC±10% (AC90V~AC253V) |
| Load capacity (motor power capacity) of connected ERC3 (Note 1) | ERC3 | Rated | | Maximum | |
| | 42P | 1.2A | | 2.2A | |
| | 56P | 1.2A | | 2.2A | |
| Number of controlled axes | | 1 axis | | | |
| Environment conditions | | Operating temperature range: 0 to 40°C<br>Operating humidity range: 85% RH or less (non-condensing)<br>Storage temperature range: -20°C to 70°C | | | |
| Protection degree | | IP20 | | | |
| Power-supply frequency | | 50Hz/60Hz | | | |
| Pollution degree | | Pollution degree 2 | | | |
| Leak current | | — | 0.5mA max | 0.75mA max | |
| Cooling method | | Natural air cooling | | | |
| Cable length | | Actuator cable: 10m or less<br>AC cable: 2m<br>SIO communication cable (optional): 5m | | | |
| Product size | | 65 (W) x 157 (H) x 21.6 (D) | 65 (W) x 157 (H) x 64.4 (D) | | |
| Weight *Excluding connection cables | | 120g | 540g | 535g | |
| Standard price | | — | — | — | — |

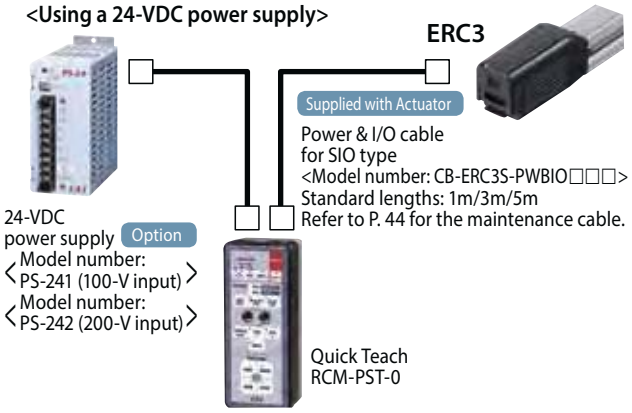
Note 1) If an ERC3 actuator whose high-output setting is enabled is used to perform test run using the Quick Teach connected to the above power-supply unit, the ERC3 may not operate as specified. (Position data can be edited without problems.)
If test run is performed with the actuator's high-output setting enabled, connect a 24-VDC power supply to the Quick Teach. In this case, disconnect the power-supply unit.

Note 2) The CE Mark-compliant 200-V power-supply specification for Europe will be released soon.

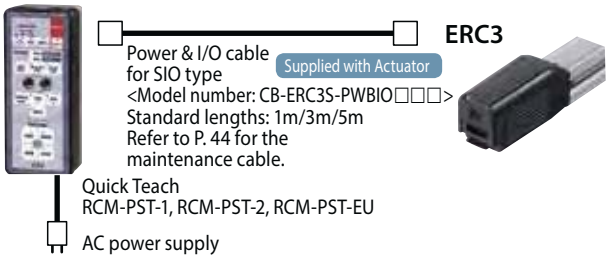
## Connection Example

### ■ Supplying power from the Quick Teach to the ERC3

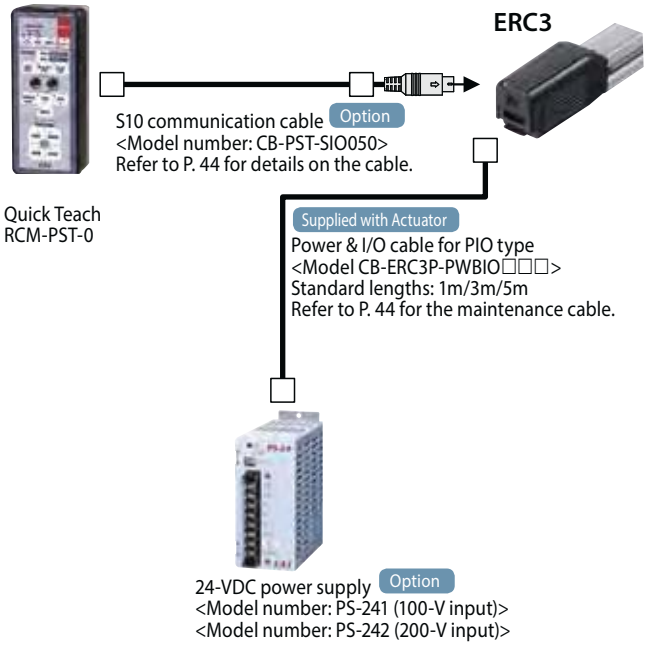
<Using a 24-VDC power supply>



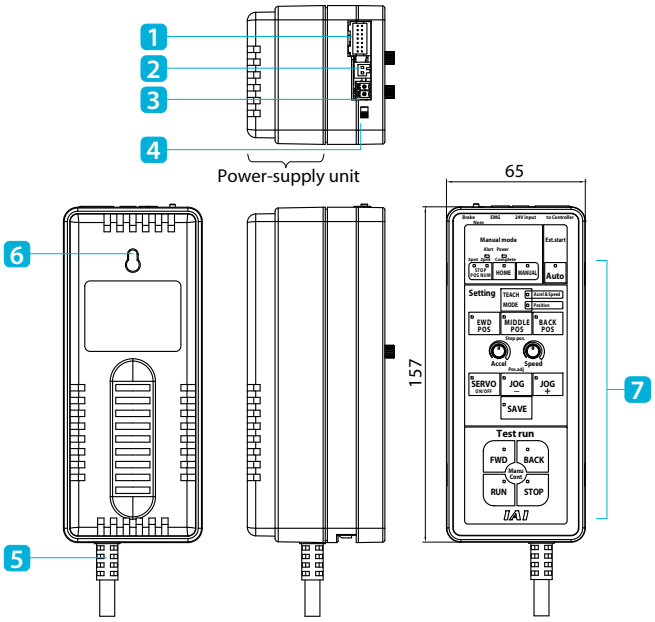

<Using a 100/200-VAC power supply>

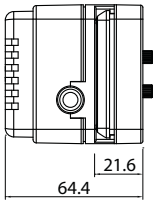



### ■ Connecting the Quick Teach to the ERC3 supplied with power



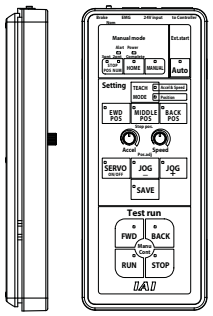

## Name and Function of Each Part/External Dimensions



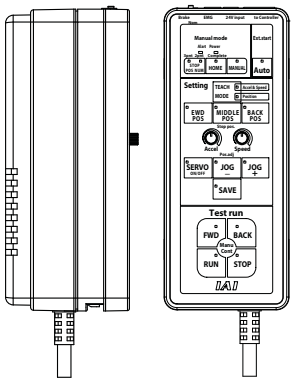




Shown above are the external dimensions of the Quick Teach with power-supply unit (model number: RCM-PST-1/2/EU).
The 24-V power-supply specification (model number: RCM-PST-0) has no power-supply unit.

### <Quick Teach and Model Numbers>



**Model number: RCM-PST-0**
**(24-VDC specification)**



**Model number: RCM-PST-1**
**RCM-PST-2**
**RCM-PST-EU**
**(Power-supply unit specifications)**

| | | |
|---|---|---|
| 1 | ERC3 connector | For cable connection with the ERC3. |
| 2 | External 24-V connector | 24 VDC±10%. * Supplied with a plug connector. |
| 3 | Emergency stop connector | Connect an emergency stop switch. * Supplied with a plug connector. |
| 4 | Brake switch | Forced release switch for an actuator with brake. |
| 5 | AC input cable | Single-phase 100 or 230-V input. * Varies depending on the product. |
| 6 | Wall-mounting hook | The hook can be secured with M3 or equivalent screws or bolts (screw head size: Ø6 or less). |
| 7 | Operation switches | Panel sheet switches |

## Options

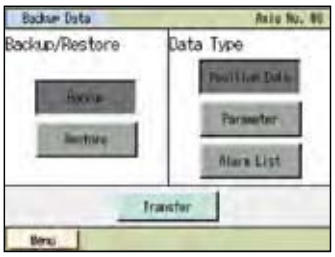
# Touch-panel Teaching Pendant for Position Controller

RoHS

Developed based on the design of the popular CON-PT series adopting an easy-to-use interactive touch-panel menu screen, this new data input device supports various functions offered by the ERC3 series controller.

1. Color screen for greater ease of view
2. Supporting the takt time minimization function and maintenance information checking/ input functions of the ERC3 series
3. Position, parameters and other data can be saved in a SD card
4. Built-in clock function records the date & time of each event; data can then be saved in a SD card.

CON-PTA





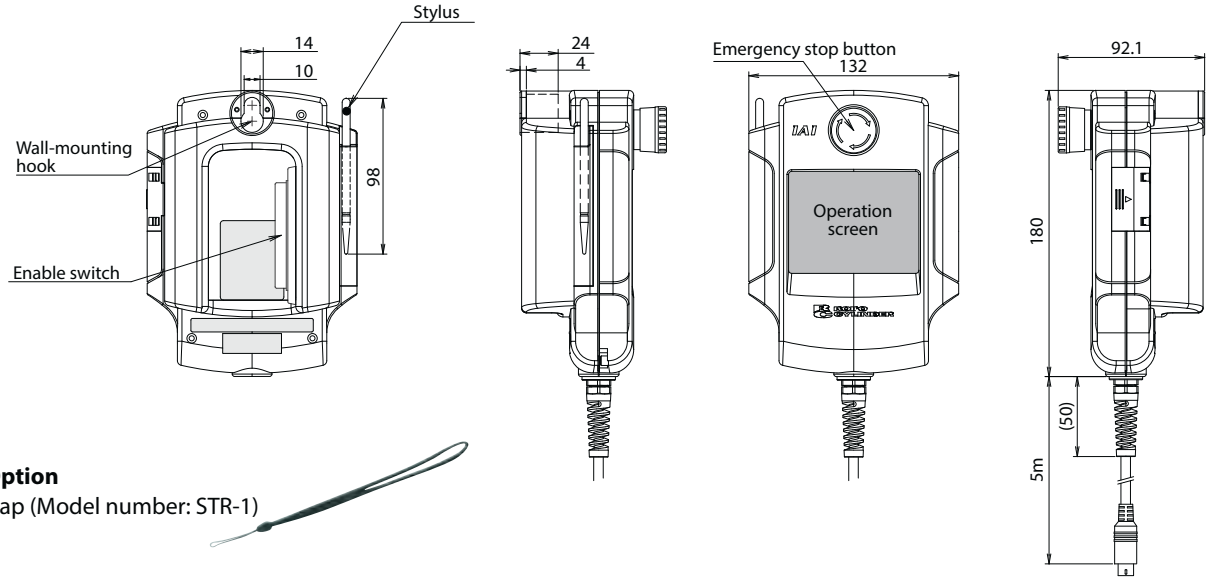
## Model Numbers/Specifications

| Item | Description | | |
|---|---|---|---|
| Model number | CON-PTA-C-ENG | CON-PDA-C-ENG | CON-PGA-C-S-ENG |
| Type | Standard type | Enable switch type | Safety-category compliant type |
| Connectable controllers | ACON/PCON/SCON/RACON/RPCON/MSCON ASEP/PSEP/MSEP/DSEP AMEC/PMEC ERC2 (*1) /ERC3 | | |
| 3-position enable switch | × | ○ | ○ |
| Functions | • Position data input/editing<br>• Moving function (moving to set positions, jogging/inching)<br>• Parameter editing<br>• Monitoring (current position, current speed, I/O signals, alarm code, alarm generation time)<br>• Saving/reading data to/from external SD cards (position data parameters, alarm list)<br>• Takt time minimization function<br>• Maintenance information (total number of movements, total distance travelled, etc.) | | |
| Display | 65536 colors (16-bit colors), white LED backlight | | |
| Ambient operating temperature/humidity | 0 to 50°C, 20 to 80% RH (non-condensing) | | |
| Environmental resistance | IP40 or equivalent | | |
| Mass | Approx. 570g | Approx. 600g | |
| Cable length | 5m | | |
| Accessories | Stylus | Stylus | Stylus, TP adapter (Model number: RCB-LB-TG)<br>Dummy plug (Model number: DP-4)<br>Controller cable (Model number: CB-CON-LB005) |

*1 Among the ERC2 series, only the actuators bearing 4904 or greater number stamped on the serial number label can be connected.

## Name of Eech Part

### ■ Name of Each Part/External Dimensions




### ■ Option

• Strap (Model number: STR-1)

Options

# Touch-panel Teaching Pendant for Position Controller SEP-PT

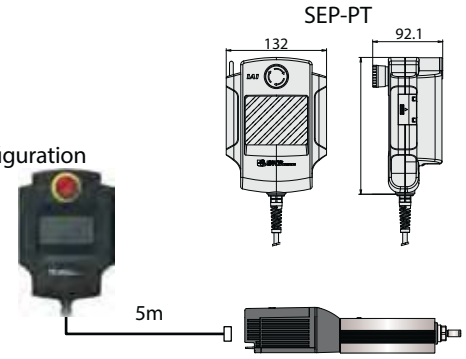
**Features** Teaching device offering position input, test run, monitoring and other functions.
* This teaching pendant can be used when the ERC3's controller type is set to "MEC type."

SEP-PT version 3.00 or later is supported.

**Specifications**

| Item | SEP-PT |
|---|---|
| Data input | ○ |
| Actuator operation | ○ |
| Ambient operating temperature/humidity | Temperature 0 to 40°C, humidity 85%RH or less |
| Operating ambience | Free from corrosive gases or significant powder dust. |
| Protection degree | IP40 |
| Mass | Approx. 550g |
| Cable length | 5m |
| Display | 3-color LED touch panel with backlight |
| Standard price | — |

**Configuration**

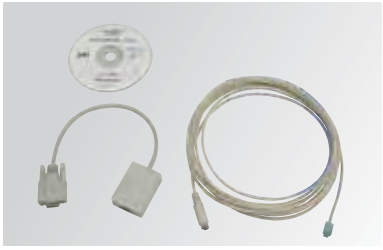



## PC Software (Windows Only)

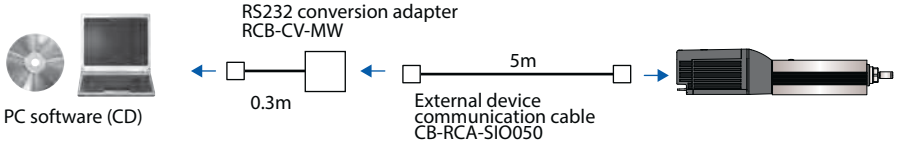
PC software version 8.03.00.00 or later is supported.

**Features** This startup support software provides functions to input positions, perform test runs and monitor data, among others.
Incorporating all functions needed to make adjustments, this software helps shorten the initial startup time.
* This software can be used when the ERC3's controller type is set to "CON type."

**Model number** **RCM-101-MW**
(With external device communication cable + RS232 conversion unit)

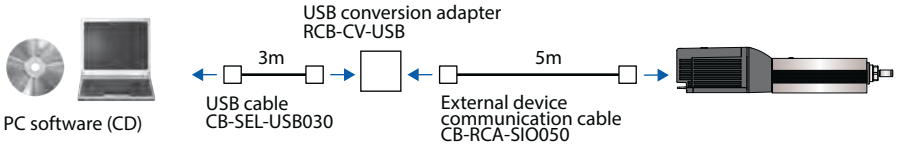


**Configuration**




**Model number** **RCM-101-USB**
(With external equipment communication cable + USB conversion adapter + USB cable)

**Configuration**




## MEC PC Software

You can change the stop position data, perform test run and do many other things on a PC using the MEC PC software. This software also lets you use the middle stop function, perform push-motion operation, change the coordinates, etc., with ease.
The MEC PC software can be downloaded on the IAI's website.

The MEC PC software can be used with the version 2.00.00.00 or later.

**IAI's website: www.intelligentactuator.com**

* This software can be used when the ERC3's controller type is set to "MEC type."

The cable supplied with the above "PC software (RCM-101-MW/RCM-101-USB)" can be used to connect the PC and ERC3 series.
To purchase a cable separately, select an appropriate cable/adapter by referring to the table below.

| PC connection method | Model | Name | Price |
|---|---|---|---|
| RS232 | CB-RCA-SIO050 | External device communication cable | — |
| | RCB-CV-MW | RS232 conversion adapter | — |
| USB | CB-RCA-SIO050 | External device communication cable | — |
| | RCB-CV-USB | USB conversion adapter | — |
| | CB-SEL-USB030 | USB cable | — |

CJ0184-4A-UST-2-0214

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