

# ERC3-SA7C

Controller-Integrated, Slider Type, Actuator Width 74mm, Pulse Motor, Straight Type

|                           |             |             |                |                 |                                        |                                                      |                                                                                                                        |                                                     |                              |                                                                                     |
|---------------------------|-------------|-------------|----------------|-----------------|----------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------|
| Model Specification Items | <b>ERC3</b> | <b>SA7C</b> | <b>I</b>       | <b>56P</b>      |                                        |                                                      |                                                                                                                        |                                                     |                              |                                                                                     |
|                           | Series      | Type        | Encoder type   | Motor type      | Lead                                   | Stroke                                               | I/O type                                                                                                               | Cable length                                        | Controller type              | Options                                                                             |
|                           |             |             | I: Incremental | 56□ Pulse motor | 24:24mm<br>16:16mm<br>8: 8mm<br>4: 4mm | 50:50mm<br>?<br>800:800mm<br>(50mm pitch 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□□: Custom length | CN: CON type<br>MC: MEC type | B : Brake<br>NM : Non-motor end specification<br>ABU: Simple absolute specification |

\* See page Pre-47 for details on the model descriptions.



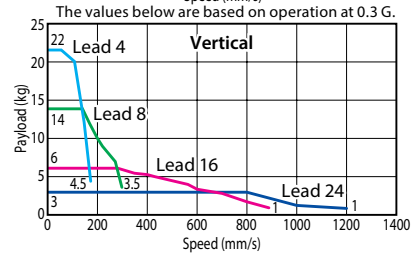
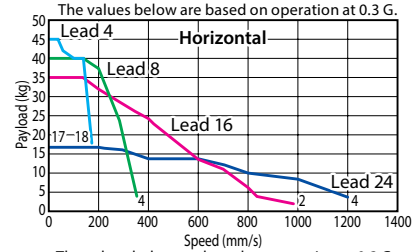
Technical References Appendix P.5



- (1) If the high-output setting is enabled (factory default), the duty must be limited. (Refer to page A-95.) 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.
- (2) Refer to page A-99 for the payload at each speed/acceleration when the high-output setting is enabled.

### Speed vs. Load Capacity

Due to the characteristics of the pulse motor, the ERC3 series' load capacity decreases at high speeds. In the table below, check if your desired speed and load capacity are supported.



High-output setting enabled (Factory default)

### 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) | Max. Load Capacity (Note 1) |               | Stroke (mm)            |
|----------------------------|-----------|-----------------------------|---------------|------------------------|
|                            |           | Horizontal (kg)             | Vertical (kg) |                        |
| ERC3-SA7C-I-56P-24-①-②-③-④ | 24        | 17                          | 3             | 50~800<br>(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            |                        |

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

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

Code explanation ① Stroke ② I/O type ③ Cable length ④ Options \*See page A-71 for details on push motion.

\* The values enclosed in < > apply to vertical settings.  
\* The values of lead 8 and lead 4 apply when acceleration is at 0.1G.

#### ① Stroke

| ① Stroke (mm) | Standard price | ① Stroke (mm) | Standard price |
|---------------|----------------|---------------|----------------|
| 50            | —              | 450           | —              |
| 100           | —              | 500           | —              |
| 150           | —              | 550           | —              |
| 200           | —              | 600           | —              |
| 250           | —              | 650           | —              |
| 300           | —              | 700           | —              |
| 350           | —              | 750           | —              |
| 400           | —              | 800           | —              |

#### ④ Options

| Name                          | Option code | See page | Standard price |
|-------------------------------|-------------|----------|----------------|
| Brake                         | <b>B</b>    | → A-42   | —              |
| Non-motor end specification   | <b>NM</b>   | → A-52   | —              |
| Simple absolute specification | <b>ABU</b>  | → A-42   | — (*)          |

(\*) If the simple absolute specification is selected, SE (SIO type) I/O type and the separately sold PIO converter with simple absolute specification (with battery) are required.

#### ③ Cable Length

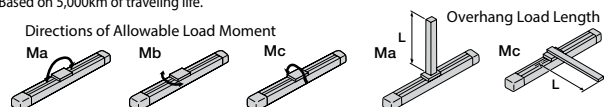
| Type                    | Cable symbol                       | Standard price |
|-------------------------|------------------------------------|----------------|
| Standard (Robot Cables) | <b>P</b> (1m)                      | —              |
|                         | <b>S</b> (3m)                      | —              |
|                         | <b>M</b> (5m)                      | —              |
| Special length          | <b>X06</b> (6m) ~ <b>X10</b> (10m) | —              |

\* See page 586 for cables for maintenance.

#### Actuator Specifications

| Item                                    | Description                                |
|-----------------------------------------|--------------------------------------------|
| Drive System                            | Ball screw, ø12mm, rolled C10              |
| Positioning repeatability (*1)          | ±0.02mm [±0.03mm]                          |
| Lost Motion                             | 0.1mm or less                              |
| Allowable static moment                 | Ma: 70.0 N·m, Mb: 100.0 N·m, Mc: 159.5 N·m |
| Allowable dynamic moment (*2)           | Ma: 15.0 N·m, Mb: 21.4 N·m, Mc: 34.1 N·m   |
| Allowable overhang                      | 150mm or less in Ma, Mb and Mc directions  |
| Ambient operating temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

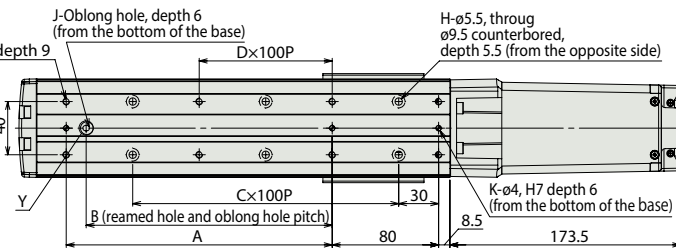
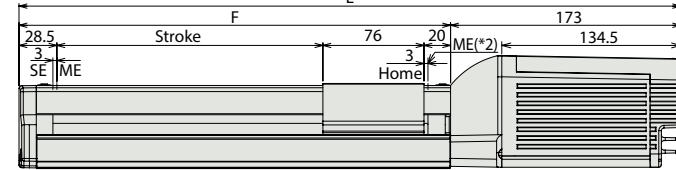
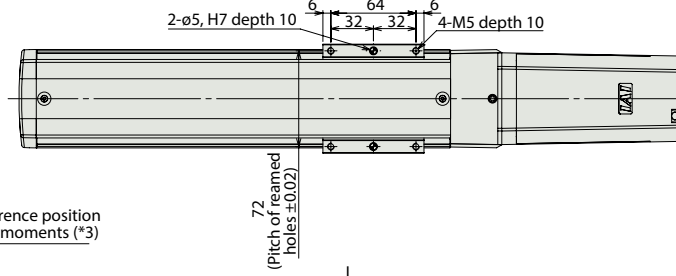
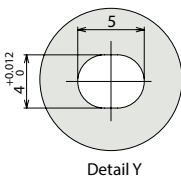
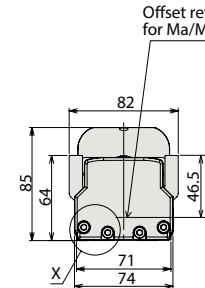
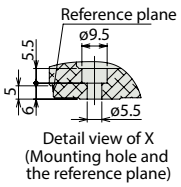
(\*1) The specification in [ ] applies when the lead is 24mm.  
(\*2) Based on 5,000km of traveling life.



Dimensional Drawings

CAD drawings can be downloaded from the website. [www.intelligentactuator.com](http://www.intelligentactuator.com)

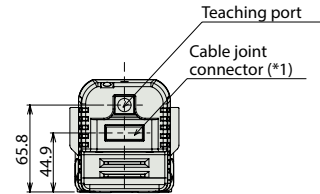
For Special Orders Appendix P.15



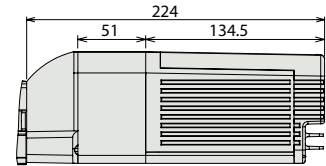
\*1 Connect the power & I/O cable. Refer to page 586 for details on this cable  
SE: Stroke End  
ME: Mechanical End

\*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 is 0.5 kg heavier.



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      |
| Weight (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)

I/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 | —              | → P577         |
| 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                               | —                                    |             |                                                                                         |                |                |