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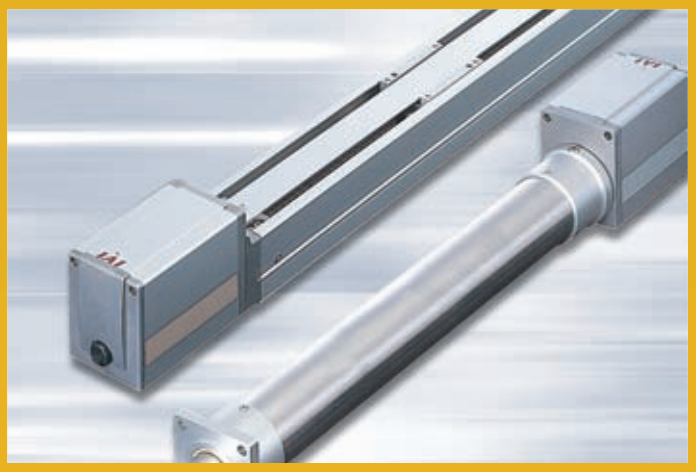
ROBO CYLINDER



Controller-Integrated Type

ERC2

ERC2-SA6C

Controller-Integrated Type, Slider Type, Actuator Width 58mm, Pulse Motor, Straight

■Model Specification Items **ERC2** — **SA6C** — **I** — **PM** — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM: Pulse motor	12:12mm 6: 6mm 3: 3mm	50:50mm ~ 600:600mm (Set in 50-mm steps)	NP: PIO (NPN) type PN: PIO (PNP) type SE: SIOtype	N: No cable P: 1m S: 3m M: 5m X□□: Specified length W□□: Cable with connectors on both ends R□□: Robot cable RW□□: Robot cable with connectors on both ends	B: Brake NM: Reversed-home specification

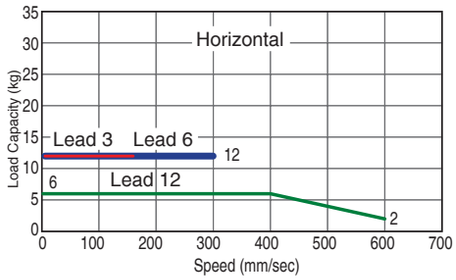
* Refer to p. 31 of the front matter for details on the model specification items.

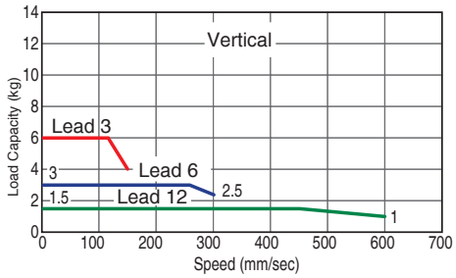
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 3 or the actuator is operated vertically). This is the maximum acceleration.

■ Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■ Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Stroke (mm)
ERC2-SA6C-I-PM-12-①-②-③-④	12	~6	~1.5	50 ~ 600 (Set in 50-mm steps)
ERC2-SA6C-I-PM-6-①-②-③-④	6	12	~3	
ERC2-SA6C-I-PM-3-①-②-③-④	3	12	~6	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 ~ 600 (Set in 50-mm steps)	600 (mm)
12	600	515
6	300	255
3	150	125

(Unit: mm/s)

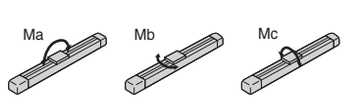
Options

Name	Model	Page
Brake	B	P381
Reversed-home specification	NM	P385

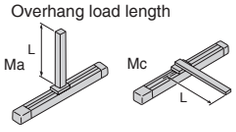
Actuator Specifications

Item	Description
Drive method	Ball screw Ø10mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Allowable load moment	Ma: 8.9N • m Mb: 12.7N • m Mc: 18.6N • m
Overhang load length	Ma direction: 150mm or less, Mb/Mc directions: 150mm or less
Ambient operating temperature, humidity	0~40 C, 85% RH or below (non-condensing)

Direction of allowable load moment



Overhang load length

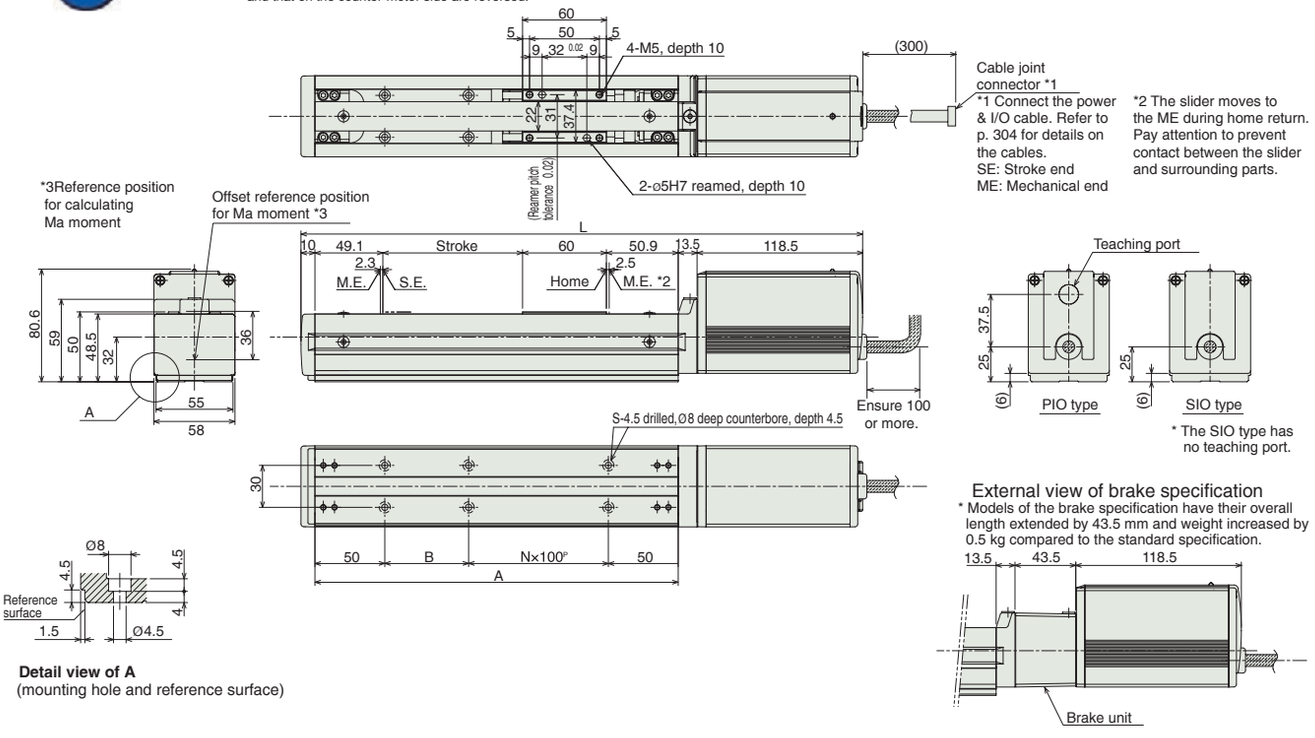


Dimensions

You can download CAD drawings from our website. www.robocylinder.de

2D CAD

* With the reversed-home specification, the dimension on the motor side (distance from the ME to the home) and that on the counter-motor side are reversed.



Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	600
L	352	402	452	502	552	602	652	702	752	802	852	902
A	210	260	310	360	410	460	510	560	610	660	710	760
B	10	60	10	60	10	60	10	60	10	60	10	60
N	1	1	2	2	3	3	4	4	5	5	6	6
S	6	6	8	8	10	10	12	12	14	14	16	16
Weight (kg)	1.9	2.0	2.1	2.3	2.4	2.6	2.7	2.8	3.0	3.1	3.3	3.4

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-SA6C-I-PM-□-□-NP-□-□	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→ P295
PIO type (PNP specification)		ERC2-SA6C-I-PM-□-□-PN-□-□	PNP I/O type popular overseas	16			
SIO type		ERC2-SA6C-I-PM-□-□-SE-□-□	Dedicated field network connection type (using a gateway unit)	64			

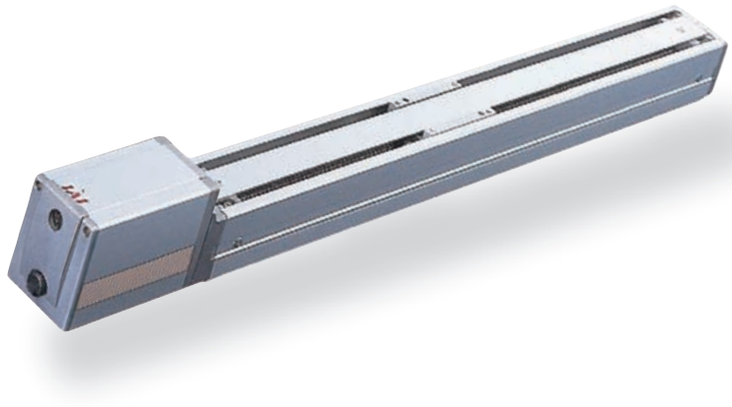
ERC2-SA7C

Controller-Integrated Type, Slider Type, Actuator Width 68mm, Pulse Motor, Straight

■Model Specification Items **ERC2** — **SA7C** — **I** — **PM** — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM:Pulse motor	16: 16mm 8: 8mm 4: 4mm	50:50mm ~ 600:600mm (Set in 50-mm steps)	NP : PIO (NPN) type PN : PIO (PNP) type SE : SIOtype	N : No cable P : 1m S : 3m M : 5m X□□ : Specified length W□□ : Cable with connectors on both ends R□□ : Robot cable RW□□: Robot cable with connectors on both ends	B : Brake NM : Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

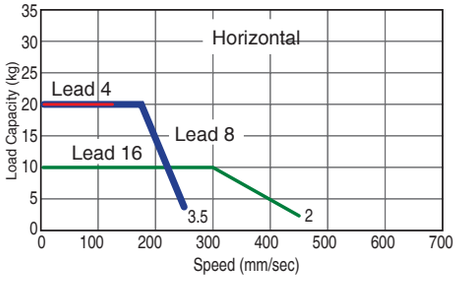


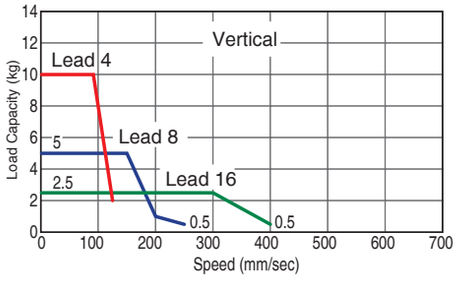
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 4 or the actuator is operated vertically). This is the maximum acceleration.

■ Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■ Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Stroke (mm)
ERC2-SA7C-I-PM-16-①-②-③-④	16	~10	~2.5	50 ~ 600 (Set in 50-mm steps)
ERC2-SA7C-I-PM-8-①-②-③-④	8	~20	~5	
ERC2-SA7C-I-PM-4-①-②-③-④	4	20	~10	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 ~ 600 (Set in 50-mm steps)
16	450 <400>
8	250
4	125

* The figure in < > applies when the actuator is used vertically. (Unit: mm/s)

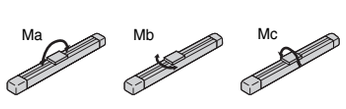
Options

Name	Model	Page
Brake	B	P381
Reversed-home specification	NM	P385

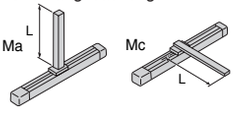
Actuator Specifications

Item	Description
Drive method	Ball screw Ø10mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Allowable load moment	Ma : 13.8N • m Mb : 19.7N • m Mc : 29.0N • m
Overhang load length	Ma direction: 150mm or less, Mb/Mc directions: 150mm or less
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

Direction of allowable load moment



Overhang load length



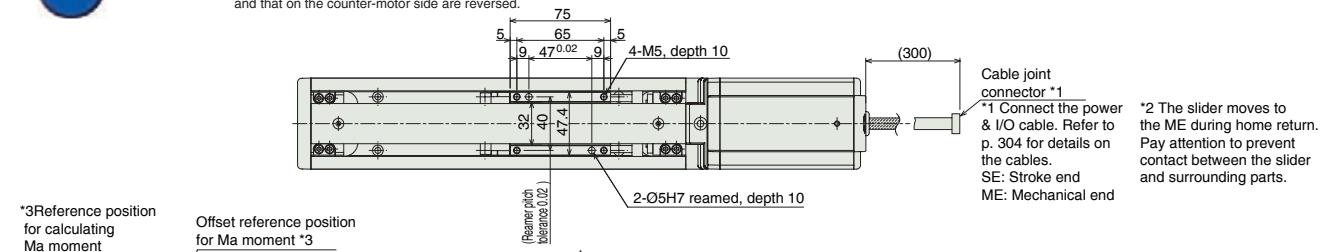
58 mm
68 mm
Pulse Motor
20w
30w
60w
100w
150w

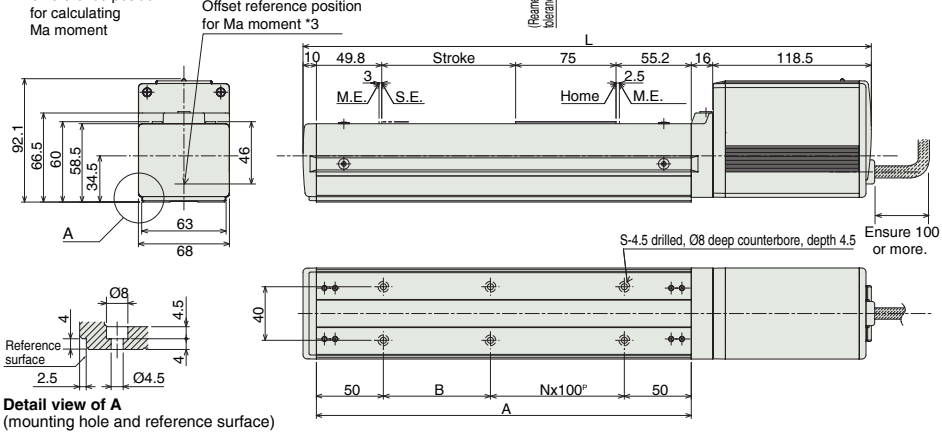
Dimensions

You can download CAD drawings from our website. www.robocylinder.de

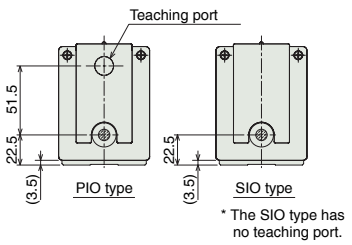
2D CAD

* With the reversed-home specification, the dimension on the motor side (distance from the ME to the home) and that on the counter-motor side are reversed.





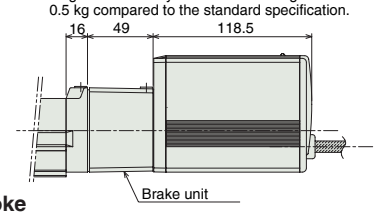
Detail view of A
(mounting hole and reference surface)



* The SIO type has no teaching port.

External view of brake specification

* Models of the brake specification have their overall length extended by 43.5 mm and weight increased 0.5 kg compared to the standard specification.



Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	600
L	374.5	424.5	474.5	524.5	574.5	624.5	674.5	724.5	774.5	824.5	874.5	924.5
A	230	280	330	380	430	480	530	580	630	680	730	780
B	30	80	30	80	30	80	30	80	30	80	30	80
N	1	1	2	2	3	3	4	4	5	5	6	6
S	6	6	8	8	10	10	12	12	14	14	16	16
Weight (kg)	3.1	3.2	3.4	3.6	3.7	3.9	4.0	4.2	4.3	4.5	4.6	4.8

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-SA7C-I-PM-☐-☐-NP-☐-☐	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-SA7C-I-PM-☐-☐-PN-☐-☐	PNP I/O type popular overseas	16			
SIO type		ERC2-SA7C-I-PM-☐-☐-SE-☐-☐	Dedicated field network connection type (using a gateway unit)	64			

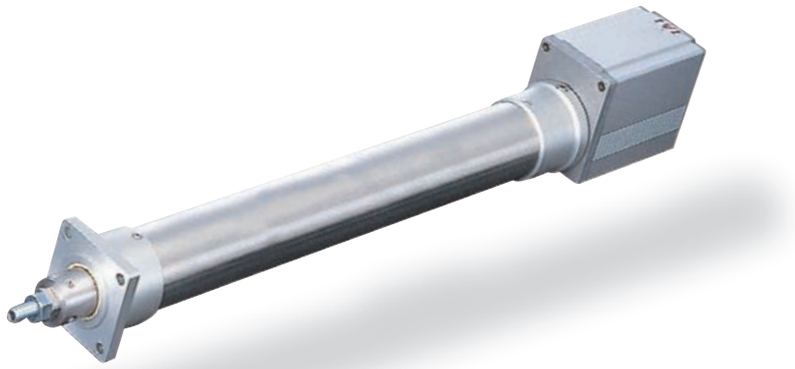
ERC2-RA6C

Controller-Integrated Type, Rod Type, Actuator Width 58mm, Pulse Motor, Straight

■Model Specification Items **ERC2** — **RA6C** — **I** — **PM** — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM:Pulse motor	12: 12mm 6: 6mm 3: 3mm	50:50mm ~ 300:300mm (Set in 50-mm steps)	NP : PIO (NPN) type PN : PIO (PNP) type SE : SIOtype	N : No cable P : 1m S : 3m M : 5m X□□ : Specified length W□□ : Cable with connectors on both ends R□□ : Robot cable RW□□ : Robot cable with connectors on both ends	B : Brake FT : Foot bracket NM : Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

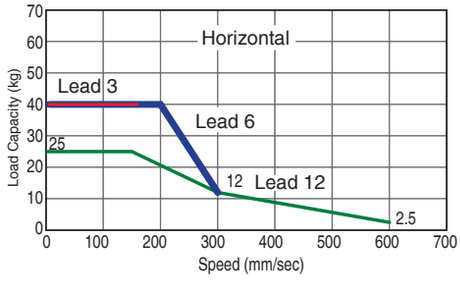


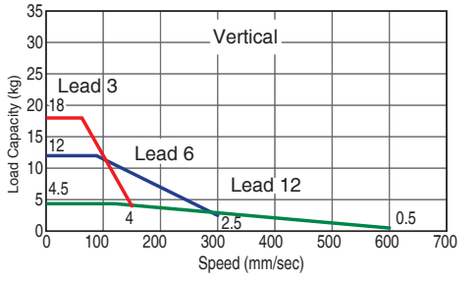
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 3 or the actuator is operated vertically). This is the maximum acceleration.
(4) The horizontal load capacity assumes use of an external guide.

■Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Max. holding push force (N) (Note 2)	Stroke (mm)
ERC2-RA6C-I-PM-12-①-②-③-④	12	~25	~4.5	78	50 ~ 300 (Set in 50-mm steps)
ERC2-RA6C-I-PM-6-①-②-③-④	6	~40	~12	157	
ERC2-RA6C-I-PM-3-①-②-③-④	3	40	~18	304	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

(Note 2) Refer to p. 406 for the graph of holding push force.

■Stroke and Maximum Speed

Lead \ Stroke	50 ~ 600 (Set in 50-mm steps)	600 (mm)
12	600	500
6	300	255
3	150	125

(Unit: mm/s)

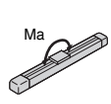
Options

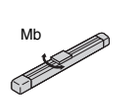
Name	Model	Page
Brake	B	P381
Foot bracket	FT	P383
Reversed-home specification	NM	P385

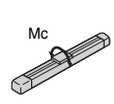
Actuator Specifications

Item	Description
Drive method	Ball screw Ø10mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Rod diameter	Ø22mm, dedicated SUS pipe
Rod non-rotation accuracy	1.5
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

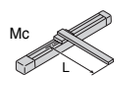
Direction of allowable load moment







Overhang load length

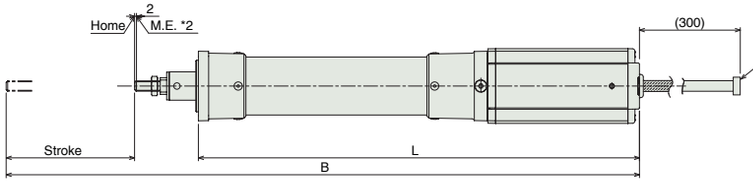


Dimensions

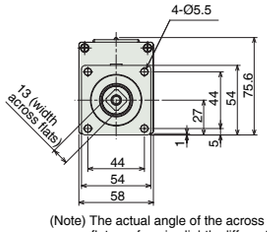
You can download CAD drawings from our website. www.robocylinder.de

2D CAD

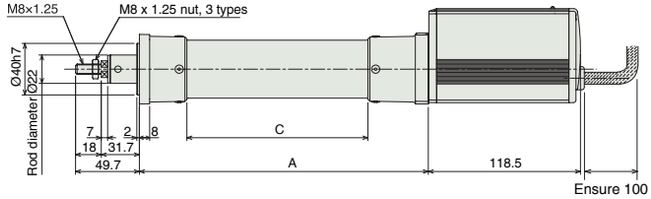
Note
Do not apply an external force on the rod in any direction other than the moving direction of the rod.
If the rod receives an external force from the right-angle direction or rotating direction, the detent may be damaged.

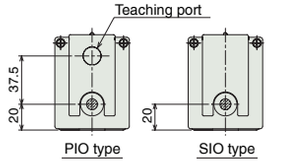


Cable joint connector *1
*1 Connect the power & I/O cable. Refer to p. 304 for details on the cables.
*2 The slider moves to the ME during home return. Pay attention to prevent contact between the slider and surrounding parts.
ME: Mechanical end



(Note) The actual angle of the across flats surface is slightly different.

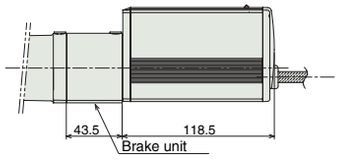




* The SIO type has no teaching port.

External view of brake specification

* Models of the brake specification have their overall length extended by 43.5 mm and weight increased by 0.5 kg compared to the standard specification.



Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300
L	293.5	343.5	393.5	443.5	493.5	543.5
A	175	225	275	325	375	425
B	393.2	493.2	593.2	693.2	793.2	893.2
C	91	141	191	241	291	341
Weight (kg)	1.6	1.7	1.8	2.0	2.1	2.2

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-RA6C-I-PM-☐-☐-NP-☐-☐	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-RA6C-I-PM-☐-☐-PN-☐-☐	PNP I/O type popular overseas	16			
SIO type		ERC2-RA6C-I-PM-☐-☐-SE-☐-☐	Dedicated field network connection type (using a gateway unit)	64			

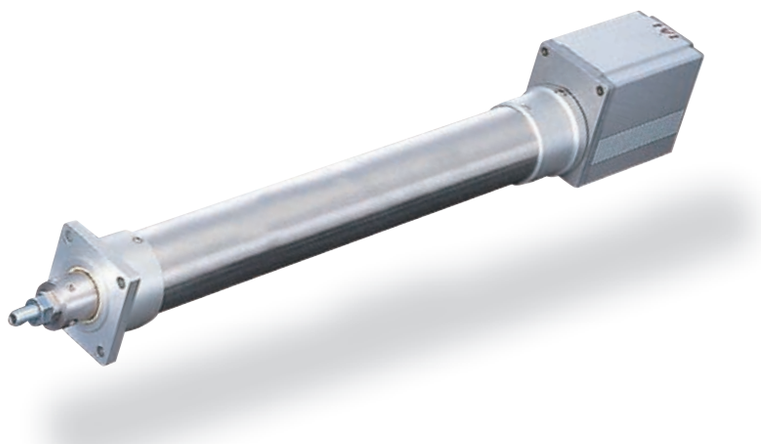
ERC2-RA7C

Controller-Integrated Type, Rod Type, Actuator Width 68mm, Pulse Motor, Straight

■Model Specification Items **ERC2** — **RA7C** — **I** — **PM** — □ — □ — □ — □ — □ — □

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM: Pulse motor	16: 16mm 8: 8mm 4: 4mm	50:50mm ~ 600:600mm (Set in 50-mm steps)	NP: PIO (NPN) type PN: PIO (PNP) type SE: SIOtype	N: No cable P: 1m S: 3m M: 5m X□□: Specified length W□□: Cable with connectors on both ends R□□: Robot cable RW□□: Robot cable with connectors on both ends	B: Brake FT: Foot bracket NM: Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

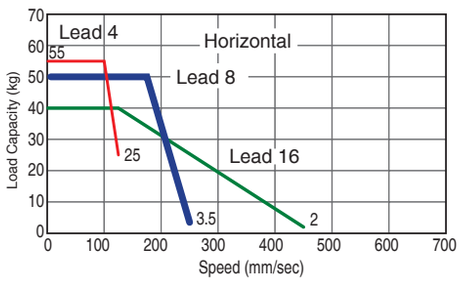


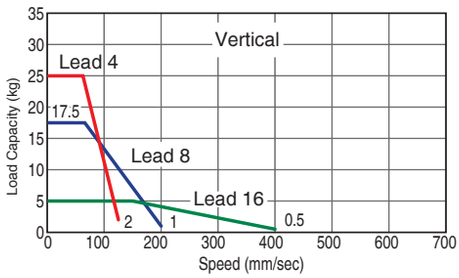
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 4 or the actuator is operated vertically). This is the maximum acceleration.
(4) The horizontal load capacity assumes use of an external guide.

■ Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■ Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Max. holding push force (N) (Note 2)	Stroke (mm)
ERC2-RA7C-I-PM-16-①-②-③-④	16	~40	~5	220	50 ~ 300 (Set in 50-mm steps)
ERC2-RA7C-I-PM-8-①-②-③-④	8	~50	~17.5	441	
ERC2-RA7C-I-PM-4-①-②-③-④	4	~55	~25	873	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

(Note 2) Refer to p. 406 for the graph of holding push force.

■ Stroke and Maximum Speed

Lead \ Stroke	50 ~ 600 (Set in 50-mm steps)
16	450 <400>
8	250 <200>
4	125

* The figure in < > applies when the actuator is used vertically. (Unit: mm/s)

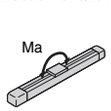
Options

Name	Model	Page
Brake	B	P381
Foot bracket	FT	P384
Reversed-home specification	NM	P385

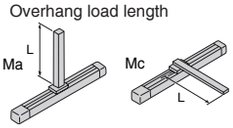
Actuator Specifications

Item	Description
Drive method	Ball screw Ø12mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Rod diameter	Ø30mm, dedicated SUS pipe
Rod non-rotation accuracy	1.5
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

Direction of allowable load moment



Overhang load length

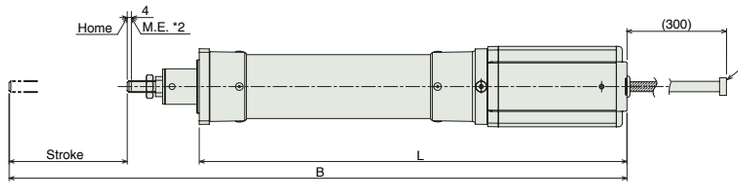


Dimensions

You can download CAD drawings from our website. www.robocylinder.de

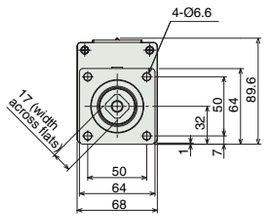
2D CAD

Note
Do not apply an external force on the rod in any direction other than the moving direction of the rod.
If the rod receives an external force from the right-angle direction or rotating direction, the detent may be damaged.

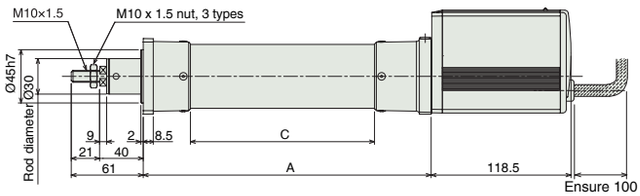


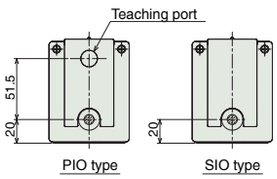
Cable joint connector *1

*1 Connect the power & I/O cable. Refer to p. 304 for details on the cables.
*2 The slider moves to the ME during home return. Pay attention to prevent contact between the slider and surrounding parts.
ME: Mechanical end



(Note) The actual angle of the across flats surface is slightly different.

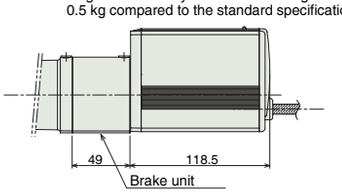




* The SIO type has no teaching port.

External view of brake specification

* Models of the brake specification have their overall length extended by 43.5 mm and weight increased by 0.5 kg compared to the standard specification.



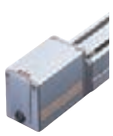
Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300
L	312.5	362.5	412.5	462.5	512.5	562.5
A	194	244	294	344	394	444
B	423.5	523.5	623.5	723.5	823.5	923.5
C	106	156	206	256	306	356
Weight (kg)	2.7	2.9	3.0	3.2	3.3	3.5

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-RA6C-I-PM-□-□-NP-□-□	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-RA6C-I-PM-□-□-PN-□-□	PNP I/O type popular overseas	16			
SIO type		ERC2-RA6C-I-PM-□-□-SE-□-□	Dedicated field network connection type (using a gateway unit)	64			

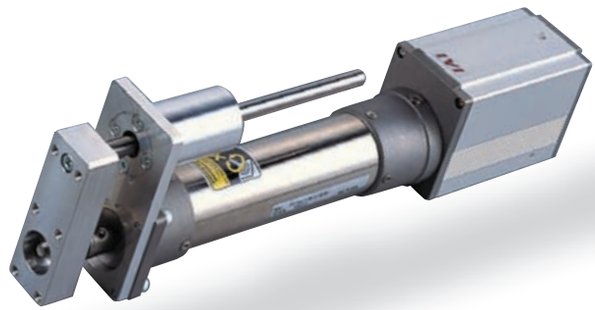
ERC2-RGS6C

Controller-Integrated Type, Rod Type with Single Guide, Actuator Width 58mm
Pulse Motor, Straight

■Model Specification Items **ERC2 — RGS6C — I — PM — □ — □ — □ — □ — □ — □ — □**

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM: Pulse motor	12: 12mm 6: 6mm 3: 3mm	50:50mm ~ 600:600mm (Set in 50-mm steps)	NP: PIO (NPN) type PN: PIO (PNP) type SE: SIOtype	N: No cable P: 1m S: 3m M: 5m X□□: Specified length W□□: Cable with connectors on both ends R□□: Robot cable RW□□: Robot cable with connectors on both ends	B: Brake FT: Foot bracket NM: Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

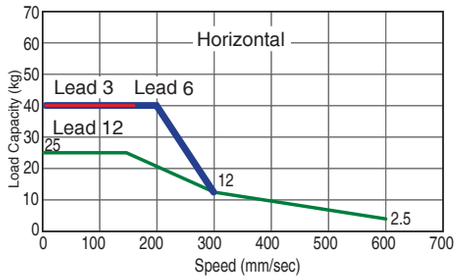


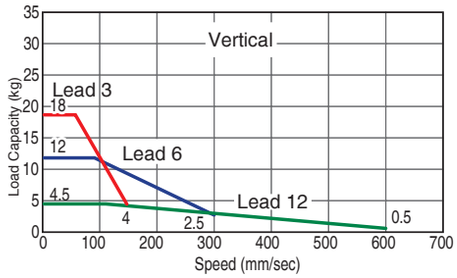
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire. Subtract the guide weight (refer to the facing page) from the load capacity.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 3 or the actuator is operated vertically). This is the maximum acceleration.
(4) The horizontal load capacity assumes use of an external guide.

■Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Max. holding push force (N) (Note 2)	Stroke (mm)
ERC2-RGS6C-I-PM-12-①-②-③-④	12	~25	~4.5	78	50 ~ 300 (Set in 50-mm steps)
ERC2-RGS6C-I-PM-6-①-②-③-④	6	~40	~12	157	
ERC2-RGS6C-I-PM-3-①-②-③-④	3	40	~18	304	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

(Note 2) Refer to p. 406 for the graph of holding push force.

■Stroke and Maximum Speed

Lead \ Stroke	50 ~ 250 (Set in 50-mm steps)	300 (mm)
12	600	500
6	300	250
3	150	125

(Unit: mm/s)

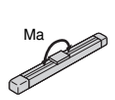
Options

Name	Model	Page
Brake	B	P381
Foot bracket	FT	P383
Reversed-home specification	NM	P385

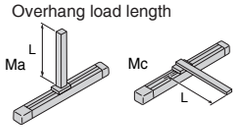
Actuator Specifications

Item	Description
Drive method	Ball screw Ø10mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Rod diameter	Ø22mm, dedicated SUS pipe
Rod non-rotation accuracy	1.5
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

Direction of allowable load moment



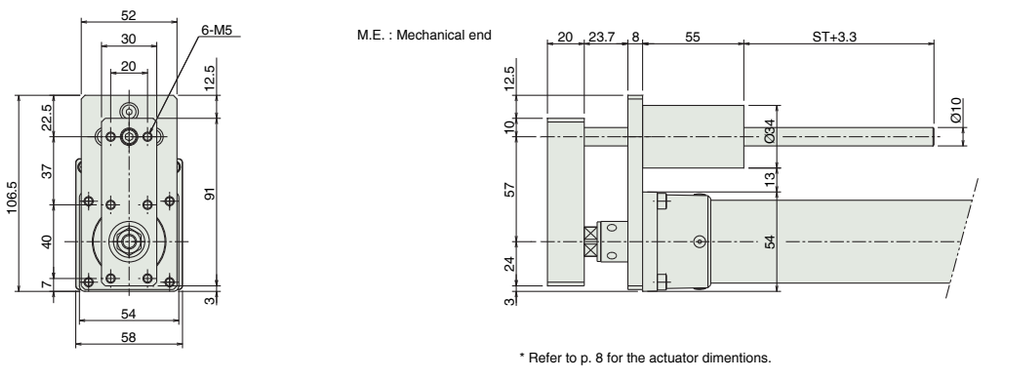
Overhang load length



Dimensions

You can download CAD drawings from our website. www.robocylinder.de

2D CAD



* Refer to p. 8 for the actuator dimentions.

Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300
Guide weight (kg)	0.2	0.2	0.3	0.3	0.3	0.4
Guide + actuator weight (kg)	1.8	1.9	2.1	2.3	2.4	2.6

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-RGS6C-I-PM-□-□-NP-□-□	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-RGS6C-I-PM-□-□-PN-□-□	PNP I/O type popular overseas	16			
SIO type		ERC2-RGS6C-I-PM-□-□-SE-□-□	Dedicated field network connection type (using a gateway unit)	64			

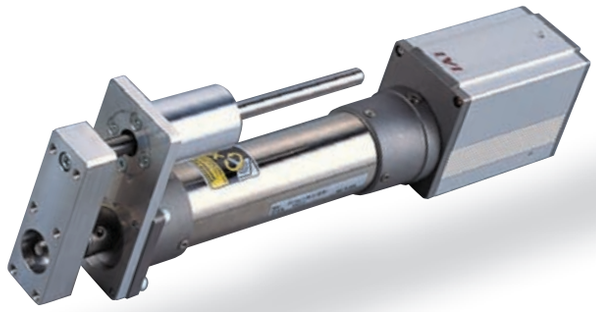
ERC2-RGS7C

Controller-Integrated Type, Rod Type with Single Guide, Actuator Width 68mm
Pulse Motor, Straight

■Model Specification Items **ERC2 — RGS7C — I — PM — □ — □ — □ — □ — □ — □ — □**

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM: Pulse motor	16: 16mm 8: 8mm 4: 4mm	50:50mm ~ 600:600mm (Set in 50-mm steps)	NP: PIO (NPN) type PN: PIO (PNP) type SE: SIOtype	N: No cable P: 1m S: 3m M: 5m X□□: Specified length W□□: Cable with connectors on both ends R□□: Robot cable RW□□: Robot cable with connectors on both ends	B: Brake FT: Foot bracket NM: Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

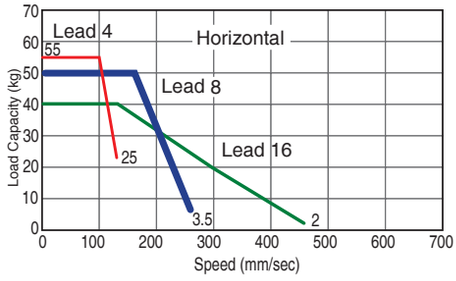


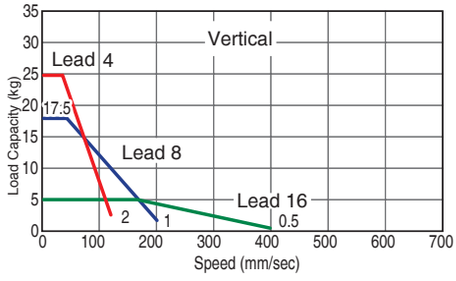
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire. Subtract the guide weight (refer to the facing page) from the load capacity.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 4 or the actuator is operated vertically). This is the maximum acceleration.
(4) The horizontal load capacity assumes use of an external guide.

■ Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■ Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Max. holding push force (N) (Note 2)	Stroke (mm)
ERC2-RGS7C-I-PM-16-①-②-③-④	16	~40	~5	220	50 ~ 300 (Set in 50-mm steps)
ERC2-RGS7C-I-PM-8-①-②-③-④	8	~50	~17.5	441	
ERC2-RGS7C-I-PM-4-①-②-③-④	4	~55	~25	873	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

(Note 2) Refer to p. 406 for the graph of holding push force.

■ Stroke and Maximum Speed

Lead \ Stroke	50 ~ 300 (Set in 50-mm steps)
16	450 <400>
8	250 <200>
4	125

* The figure in < > applies when the actuator is used vertically. (Unit: mm/s)

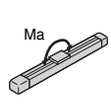
Options

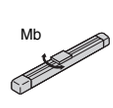
Name	Model	Page
Brake	B	P381
Foot bracket	FT	P384
Reversed-home specification	NM	P385

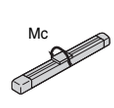
Actuator Specifications

Item	Description
Drive method	Ball screw Ø12mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Rod diameter	Ø30mm, dedicated SUS pipe
Rod non-rotation accuracy	1.5
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

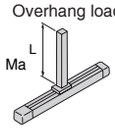
Direction of allowable load moment

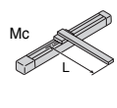






Overhang load length

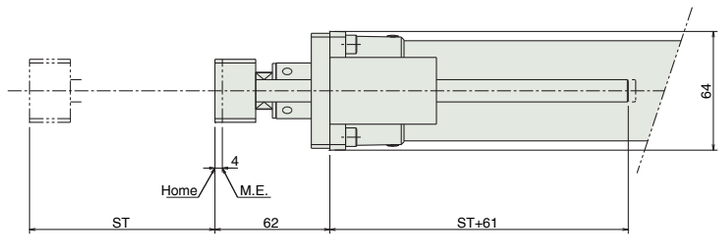




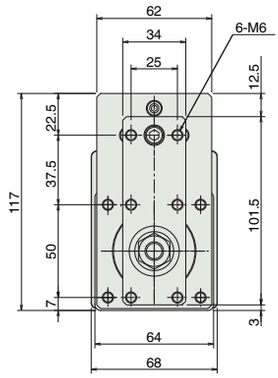
Dimensions

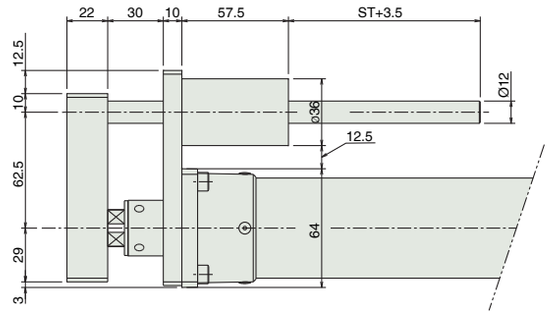
You can download CAD drawings from our website. www.robocylinder.de

2D CAD



M.E. : Mechanical end





* Refer to p. 10 for the actuator dimentions.

Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300
Guide weight (kg)	0.3	0.3	0.4	0.4	0.5	0.5
Guide + actuator weight (kg)	3.0	3.2	3.4	3.6	3.8	4.0

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-RGS7C-I-PM-□-□-NP-□-□	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-RGS7C-I-PM-□-□-PN-□-□	PNP I/O type popular overseas	16			
SIO type		ERC2-RGS7C-I-PM-□-□-SE-□-□	Dedicated field network connection type (using a gateway unit)	64			

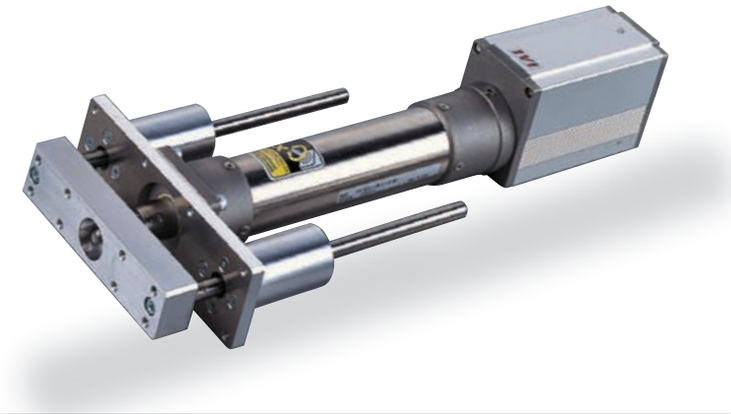
ERC2-RGD6C

Controller-Integrated Type, Rod Type with Double Guide, Actuator Width 58mm
Pulse Motor, Straight

■Model Specification Items **ERC2 — RGD6C — I — PM — ☐ — ☐ — ☐ — ☐ — ☐ — ☐**

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM:Pulse motor	12: 12mm 6: 6mm 3: 3mm	50:50mm 〜 600:600mm (Set in 50-mm steps)	NP : PIO (NPN) type PN : PIO (PNP) type SE : SIOtype	N : No cable P : 1m S : 3m M : 5m X☐☐ : Specified length W☐☐ : Cable with connectors on both ends R☐☐ : Robot cable RW☐☐ : Robot cable with connectors on both ends	B : Brake FT : Foot bracket NM : Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

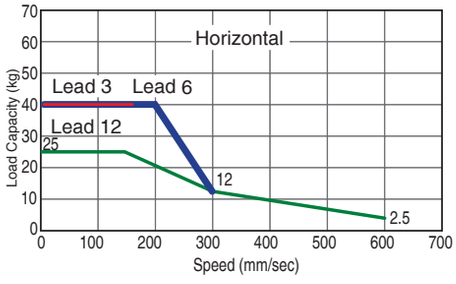


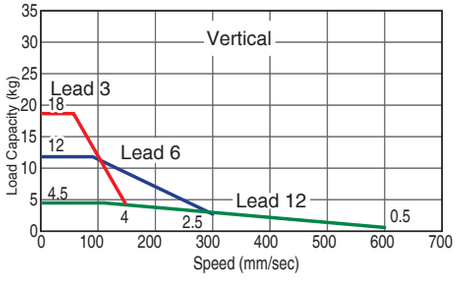
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire. Subtract the guide weight (refer to the facing page) from the load capacity.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 3 or the actuator is operated vertically). This is the maximum acceleration.
(4) The horizontal load capacity assumes use of an external guide.

■Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Max. holding push force (N) (Note 2)	Stroke (mm)
ERC2-RGD6C-I-PM-12-①-②-③-④	12	~25	~4.5	78	50 ~ 300 (Set in 50-mm steps)
ERC2-RGD6C-I-PM-6-①-②-③-④	6	~40	~12	157	
ERC2-RGD6C-I-PM-3-①-②-③-④	3	40	~18	304	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

(Note 2) Refer to p. 406 for the graph of holding push force.

■Stroke and Maximum Speed

Lead \ Stroke	50 ~ 250 (Set in 50-mm steps)	300 (mm)
12	600	500
6	300	250
3	150	125

(Unit: mm/s)

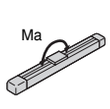
Options

Name	Model	Page
Brake	B	P381
Foot bracket	FT	P383
Reversed-home specification	NM	P385

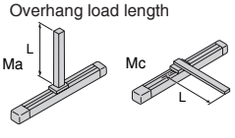
Actuator Specifications

Item	Description
Drive method	Ball screw Ø10mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Rod diameter	Ø22mm, dedicated SUS pipe
Rod non-rotation accuracy	1.5
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

Direction of allowable load moment



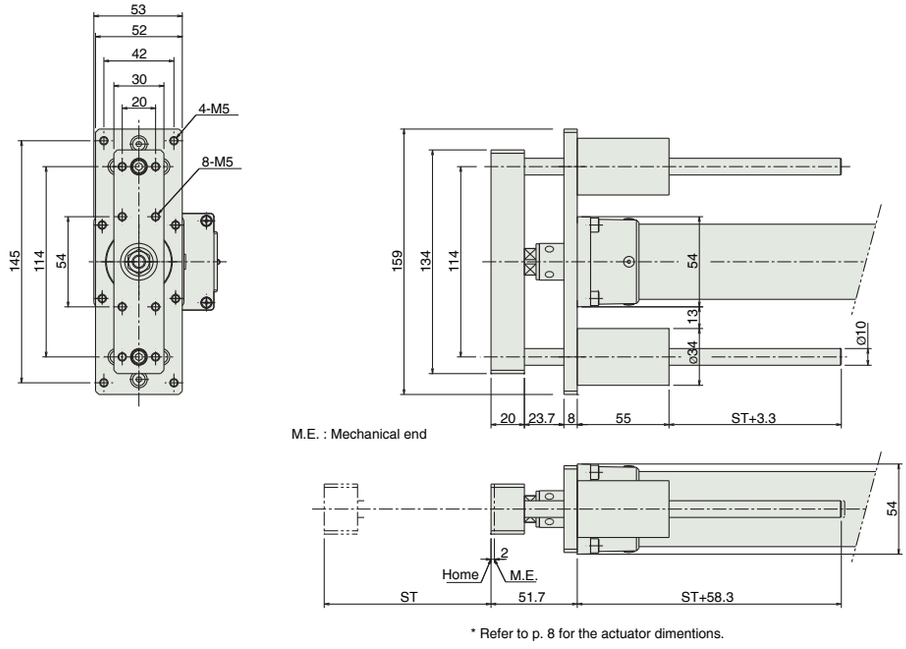
Overhang load length



Dimensions

You can download CAD drawings from our website. www.robocylinder.de

2D CAD



* Refer to p. 8 for the actuator dimentions.

Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300
Guide weight (kg)	0.4	0.4	0.5	0.6	0.6	0.7
Guide + actuator weight (kg)	2.0	2.1	2.3	2.6	2.7	2.9

I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-RGD6C-I-PM-□-□-NP-□-□	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-RGD6C-I-PM-□-□-PN-□-□	PNP I/O type popular overseas	16			
SIO type		ERC2-RGD6C-I-PM-□-□-SE-□-□	Dedicated field network connection type (using a gateway unit)	64			

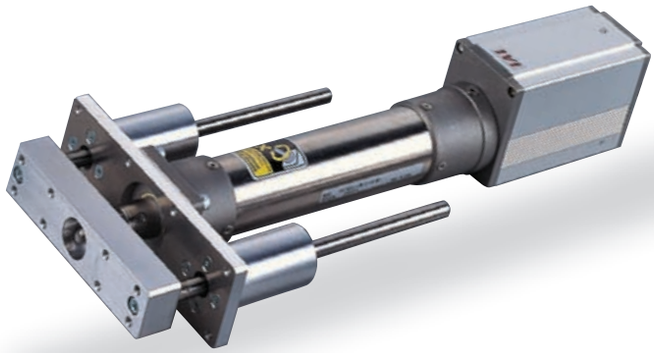
ERC2-RGD7C

Controller-Integrated Type, Rod Type, Actuator Width 68mm, Pulse Motor, Straight

■Model Specification Items **ERC2 — RGD7C — I — PM — □ — □ — □ — □ — □ — □**

Series	Type	Encoder type	Motor type	Lead	Stroke	I/O type	Cable length	Options
—	—	I: Incremental specification	PM: Pulse motor	16: 16mm 8: 8mm 4: 4mm	50:50mm ~ 600:600mm (Set in 50-mm steps)	NP: PIO (NPN) type PN: PIO (PNP) type SE: SIOtype	N: No cable P: 1m S: 3m M: 5m X□□: Specified length W□□: Cable with connectors on both ends R□□: Robot cable RW□□: Robot cable with connectors on both ends	B: Brake FT: Foot bracket NM: Reversed-home specification

* Refer to p. 31 of the front matter for details on the model specification items.

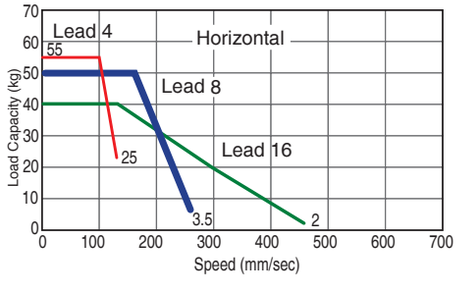


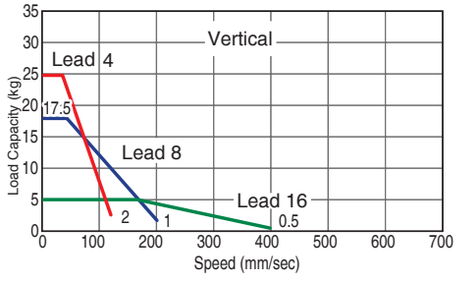
POINT Selection Points

(1) When the stroke increases, the maximum speed will drop to prevent the ball screw from reaching a critical speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The ERC2 series uses a pulse motor, so the load capacity will decrease as the speed increases. Use the correlation diagram of speed and load capacity on the right to check the load capacity corresponding to the speed you desire. Subtract the guide weight (refer to the facing page) from the load capacity.
(3) The load capacity is based on operation at an acceleration of 0.3 G (or 0.2 G if the lead is 4 or the actuator is operated vertically). This is the maximum acceleration.
(4) The horizontal load capacity assumes use of an external guide.

■ Correlation Diagram of Speed and Load Capacity

With the RCP2 series, the load capacity will decrease as the speed increases due to the characteristics of the pulse motor used in the actuator. Use the table below to check if the desired speed and load capacity are satisfied.





Actuator Specifications

■ Lead and Load Capacity

(Note 1) Take note that the maximum load capacity will decrease as the speed increases.

Model	Lead (mm)	Maximum load capacity (Note 1) Horizontal (kg)	Maximum load capacity (Note 1) Vertical (kg)	Max. holding push force (N) (Note 2)	Stroke (mm)
ERC2-RGD7C-I-PM-16-①-②-③-④	16	~40	~5	220	50 ~ 300 (Set in 50-mm steps)
ERC2-RGD7C-I-PM-8-①-②-③-④	8	~50	~17.5	441	
ERC2-RGD7C-I-PM-4-①-②-③-④	4	~55	~25	873	

Explanation of numbers ① Stroke ② I/O type ③ Cable length ④ Options

(Note 2) Refer to p. 406 for the graph of holding push force.

■ Stroke and Maximum Speed

Lead \ Stroke	50 ~ 300 (Set in 50-mm steps)
16	450 <400>
8	250 <200>
4	125

* The figure in < > applies when the actuator is used vertically.

(Unit: mm/s)

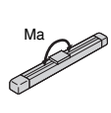
Options

Name	Model	Page
Brake	B	P381
Foot bracket	FT	P384
Reversed-home specification	NM	P385

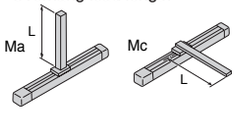
Actuator Specifications

Item	Description
Drive method	Ball screw Ø12mm, rolled C10
Positioning repeatability	±0.05mm
Backlash	0.1mm or less
Rod diameter	Ø30mm, dedicated SUS pipe
Rod non-rotation accuracy	1.5
Ambient operating temperature, humidity	0~40C, 85% RH or below (non-condensing)

Direction of allowable load moment



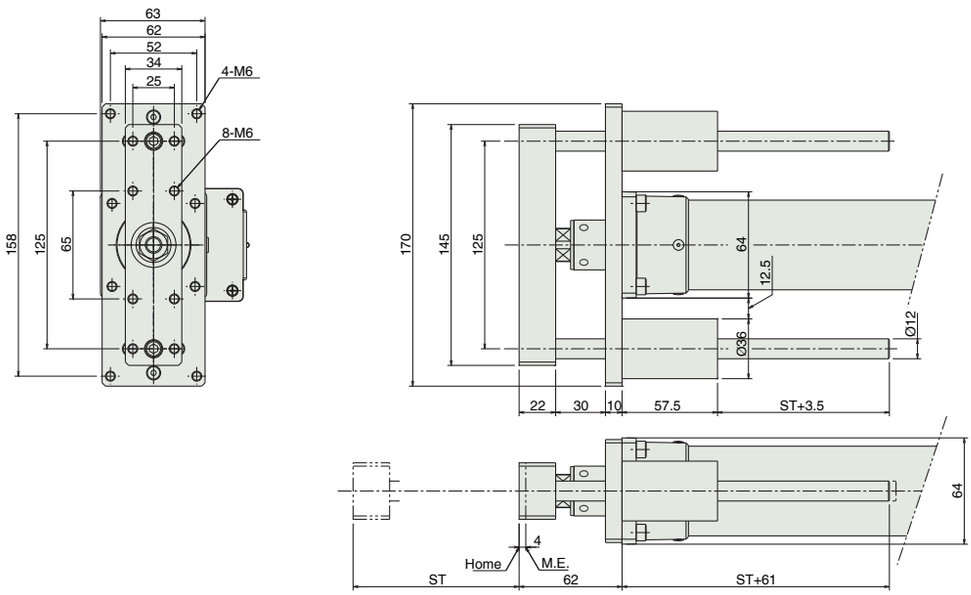
Overhang load length



Dimensions

You can download CAD drawings from our website. www.robocylinder.de

2D CAD



M.E. : Mechanical end

* Refer to p. 10 for the actuator dimentions.

Dimensions and Weight by Stroke

Stroke	50	100	150	200	250	300
Guide weight (kg)	0.5	0.6	0.7	0.8	0.9	1.0
Guide + actuator weight (kg)	3.2	3.5	3.7	4.0	4.2	4.5

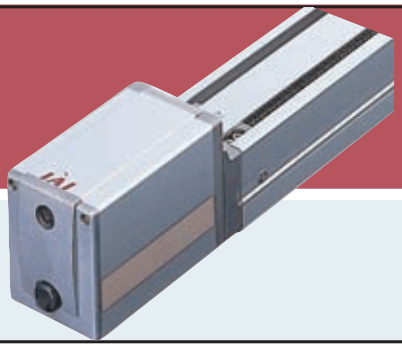
I/O Type (Actuator with Built-In Controller)

I/O Type

You can select a desired built-in controller of the ERC2 series from among the following three types, each adopting different external input/output (I/O) specifications. Choose the type that best suits your specific purpose.

Name	External view	Model	Features	Maximum number of positioning points	Input power supply	Power-supply capacity	Reference page
PIO type (NPN specification)		ERC2-RGD7C-I-PM-□-□-NP-□-□	Simple control type capable of positioning to a maximum of 16 points	16	DC24V	2A max.	→P295
PIO type (PNP specification)		ERC2-RGD7C-I-PM-□-□-PN-□-□	PNP I/O type popular overseas	16			
SIO type		ERC2-RGD7C-I-PM-□-□-SE-□-□	Dedicated field network connection type (using a gateway unit)	64			

ERC2



■ Model NP / PN / SE

Controller module of controller-integrated actuator

Type List

I/O type	NP	PN	SE
Name	PIO type (NPN specification)	PIO type (PNP specification)	Serial communication type
External view			
Description	Move the actuator by specifying position numbers from PLC via PIO	PNP specification of the NP type (overseas specification)	Connected to a field network via a gateway unit
Number of position points	16 points	16 points	64 points

Model

ERC2 — ☐ — **I** — **PM** — ☐ — ☐ — ☐ — ☐ — ☐

Series — Type — Encoder type — Motor type — Lead — Stroke — I/O type — Cable length — Options

PM	Pulse motor

I	Incremental

50 ⟆ 600	50mm ⟆ (Set in 50-mm steps) 600mm

B	Brake
NM	Reversed-home specification
FT	Foot bracket

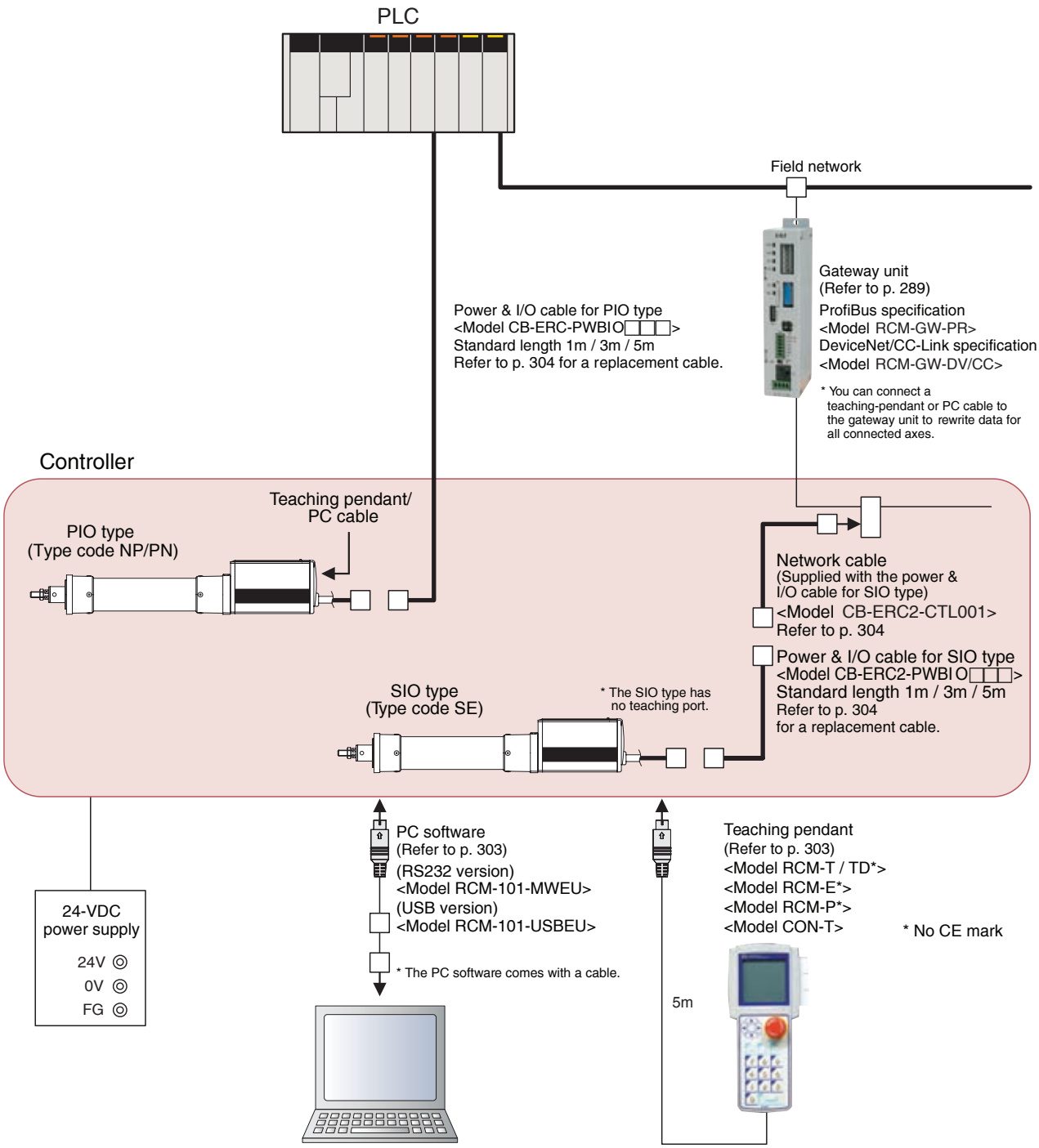
SA6C	Slider type (width 52mm)
SA7C	Slider type (width 58mm)
RA6C	Rod type (width 52mm)
RA7C	Rod type (width 58mm)
RGS6C	Rod type with single guide (width 52mm)
RGS7C	Rod type with single guide (width 58mm)
RGD6C	Rod type with double guides (width 52mm)
RGD7C	Rod type with double guides (width 58mm)

16	16mm
12	12mm
8	8mm
6	6mm
4	4mm
3	3mm

NP	PIO type (NPN specification)
PN	PIO type (PNP specification)
SE	SIO type

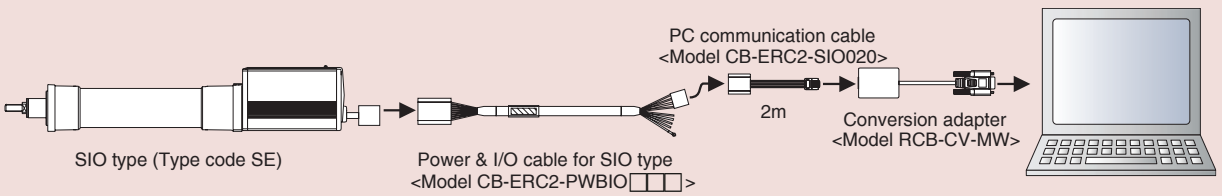
N	No cable
P	1m
S	3m
M	5m
X□□□	Specified length
R□□	Robot cable
W□□	Cable with connectors on both ends
RW□□	Robot cable with connectors on both ends
□L	Cable without connector (1m / 3m / 5m)
□LR	Robot cable without connector (1m / 3m / 5m)

System Configuration



PC Connection Diagram

Use the following cables to connect the SIO type directly to a PC.



I/O Specifications (PIO Type)

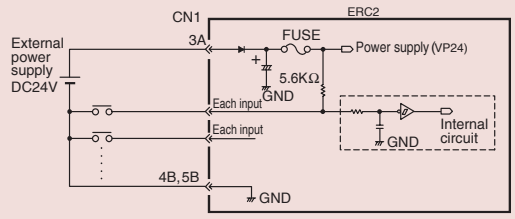
Input Part External input specifications

Item	Specification
Number of input points	6 points
Input voltage	24VDC ± 10%
Input current	4mA/circuit
Leak current	1mA max./point
Operating voltage	ON voltage: 18V min. (3.5mA) OFF voltage: 6V max. (1mA)

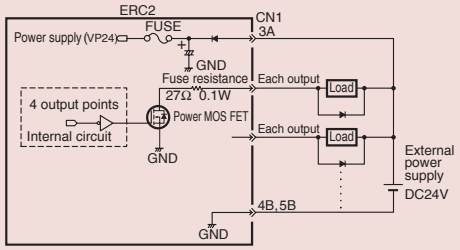
Output Part External output specifications

Item	Specification
Number of input points	4 points
Rated load voltage	DC24V
Maximum current	60mA/point
Residual voltage	2V max.
Short-circuit, reverse-voltage protection	Fuse resistance (27Ω 0.1W)

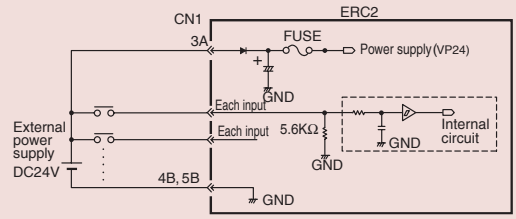
NPN specification



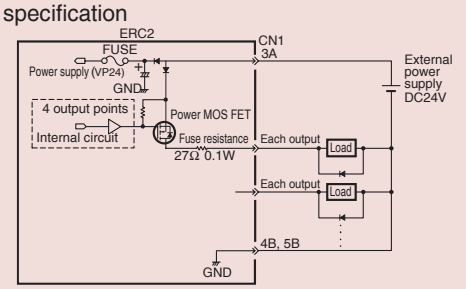
NPN specification



PNP specification



PNP specification



I/O Signal Table (PIO Type)

Parameter (PIO pattern selection)	PIO pattern	Pin number
0	8-point type	A standard specification providing eight positioning points, plus a home return signal, zone signal, etc. (The parameter has been set to this pattern prior to the shipment.)
1	3-point type (solenoid valve type)	Simply turn ON three signals of ST0 to ST2 to move the actuator to the corresponding positions (0 to 2), just like you do with solenoid valves. (This allows for easy conversion from air cylinders.)
2	16-point type (zone signal type)	Up to 16 positioning points can be set. (Same as the 8-point type, except that this pattern provides no home return signal.)
3	16-point type (position zone signal type)	A 16-point pattern with a position zone signal instead of a zone signal.

Pin number	Category	Wire color	Parameter (PIO pattern selection)			
			0	1	2	3
			Conventional type	3-point type (solenoid valve type)	16-point type (zone signal type)	16-point type (position zone signal type)
1A	SIO	Orange (red 1)	SGA			
1B		Orange (black 1)	SGB			
2A	24V	Light blue (red 1)	EMS1			
2B	0V	Light blue (black 1)	EMS2			
3A	24V	White (red 1)	24V			
3B	0V	White (black 1)	BLK			
4A	24V	Yellow (red 1)	MPI			
4B	0V	Yellow (black 1)	GND			
5A	24V	Pink (red 1)	MPI			
5B	0V	Pink (black 1)	GND			
6A	Input	Orange (red 2)	PC1	ST0	PC1	PC1
6B		Orange (black 2)	PC2	ST1	PC2	PC2
7A		Light blue (red 2)	PC4	ST2	PC4	PC4
7B		Light blue (black 2)	HOME	–	PC8	PC8
8A		White (red 2)	CSTR	RES	CSTR	CSTR
8B		White (black 2)	*STP	*STP	*STP	*STP
9A	Output	Yellow (red 2)	PEND	PE0	PEND	PEND
9B		Yellow (black 2)	HEND	PE1	HEND	HEND
10A		Pink (red 2)	ZONE	PE2	ZONE	PZONE
10B		Pink (black 2)	*ALM			

(Note) The signals denoted by an asterisk (*) (ALM/STP) are negative-logic signals that always remain ON.

System Configuration

Category	Signal name	Abbreviation	Function overview
SIO	Serial communication	SGA SGB	Used in serial communication.
24V 0V	Emergency stop	EMS1 EMS2	These signals are wired to enable the emergency stop switch on the teaching pendant. (Refer to p. 301)
	Brake release	BKR	Connection to 0 V forcibly releases the brake. (150 mA is required)
Input	Command position number	PC1 PC2 PC4 PC8	Specify a target position number using 4-bit binary signals (or 3-bit binary signals if the 8-point PIO pattern is selected). (Example) Position 3 → Input PC1 and PC2. Position 7 → Input PC1, PC2 and PC4.
	Position movement	ST0 ST1 ST2	Turn the ST0 signal ON to move the actuator to position 0. Same for ST1 and ST2. (Operation can be started with these signals alone. No need to input a start signal.)
	Home return	HOME	Home-return operation starts at the leading edge of this signal.
	Start	CSTR	Input a command position number signal and turn this signal ON, and the actuator will start moving to the specified position.
	Pause	*STP	This signal is always ON while the actuator is operating normally (negative logic). The actuator starts to decelerate to a stop at the ON → OFF leading edge of this signal.
Output	Position complete	PEND	This signal turns ON once the actuator has moved to the target position and completed the positioning by entering the specified positioning band. Used to determine if positioning has completed.
	Completed position number	PE0 PE1 PE2	PE0 is output upon completion of movement to position 0. Same for PE1 and PE2. (These signals are valid only when the 3-point PIO pattern is selected.)
	Home return complete	HEND	This signal turns ON upon completion of home return.
	Zone	ZONE	This signal turns ON upon entry into the zone signal range set by parameters.
	Position zone	PZONE	This signal turns ON upon entry into the zone signal range set by position data.
	Alarm	*ALM	This signal remain ON in normal conditions and turns OFF upon generation of an alarm (negative logic). Synchronized with the LED at the top of the motor cover. (A green light stays on in normal conditions, and a red light comes on upon generation of an alarm.)

(Note) The signals denoted by an asterisk (*) (ALM/STP) are negative-logic signals that always remain ON.

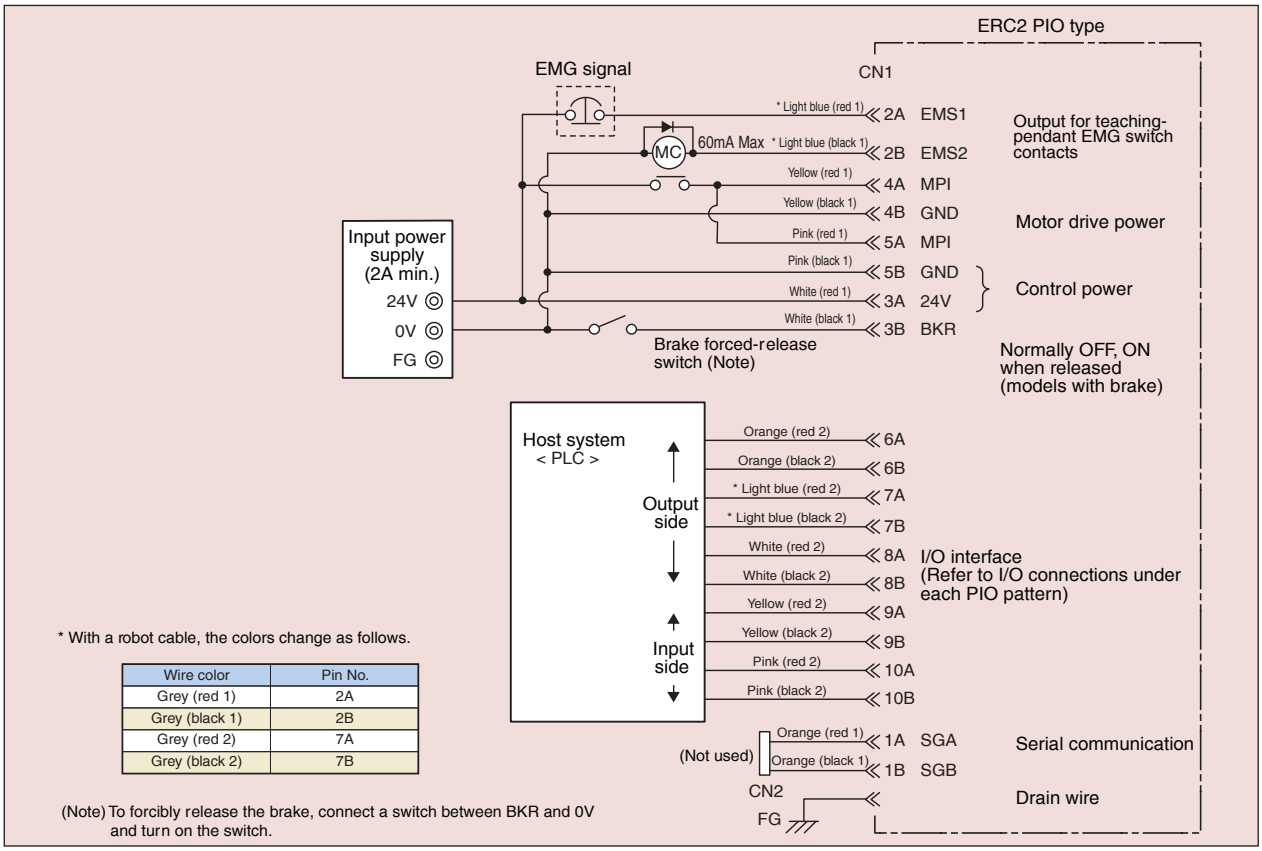
Specification Table

Specification item		Description	
Type		PIO specification (NP/PN)	SIO specification (SE)
Control method		Field-weakening vector control (patent pending)	
Positioning command		Position number specification	Position number specification/direct numerical specification
Position numbers		Maximum 16 points	Maximum 64 points
Backup memory		Position number data and parameters are stored in nonvolatile memory. Serial EEPROM with a rewrite life of 100,000 times.	
PIO		6 dedicated input points / 4 dedicated output points	None
Electromagnetic brake		Built-in circuit, 24VDC ± 10%, 0.15A max.	
2-color LED indicator		Servo ON (green), alarm/motor drive-power cutoff (red)	
I/F power supply (Note 1)		Same as the control power supply (not insulated)	
Serial communication		RS485, 1 channel (terminated externally)	
Absolute function		None	
Forced release of electromagnetic brake		Forcibly released upon connection to 0V (NP) or 24V (PN)	Forcibly released upon connection to 24V
Cable length		I/O cable: 10m max.	
		SIO connector communication cable: 5m max.	
Dielectric strength voltage		DC500V 10MΩ	
EMC		EN55011 Class A Group1 (3m)	
Power-supply voltage		24V±10%	
Power-supply current		2A max.	
Environment	Ambient operating temperature	0~40°C	
	Ambient operating humidity	85% RH or below (non-condensing)	
	Operating ambience	Free from corrosive gases	
Protection class		IP20	

(Note 1) Use an insulated PIO terminal block (optional, refer to p. 302) to insulate the I/O power supply.

I/O Wiring Diagram

PIO Type NP (NPN Specification)

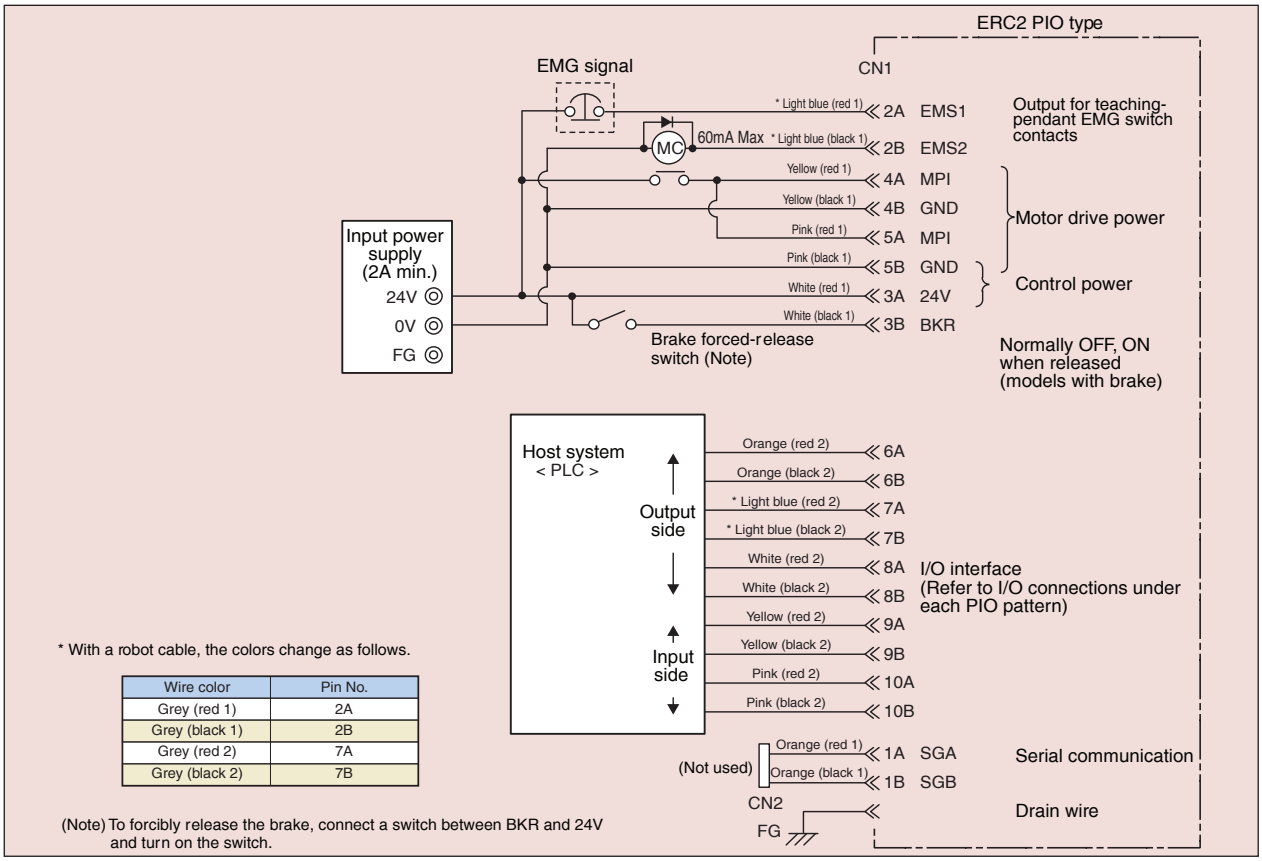


* With a robot cable, the colors change as follows.

Wire color	Pin No.
Grey (red 1)	2A
Grey (black 1)	2B
Grey (red 2)	7A
Grey (black 2)	7B

(Note) To forcibly release the brake, connect a switch between BKR and 0V and turn on the switch.

PIO Type NP (PNP Specification)

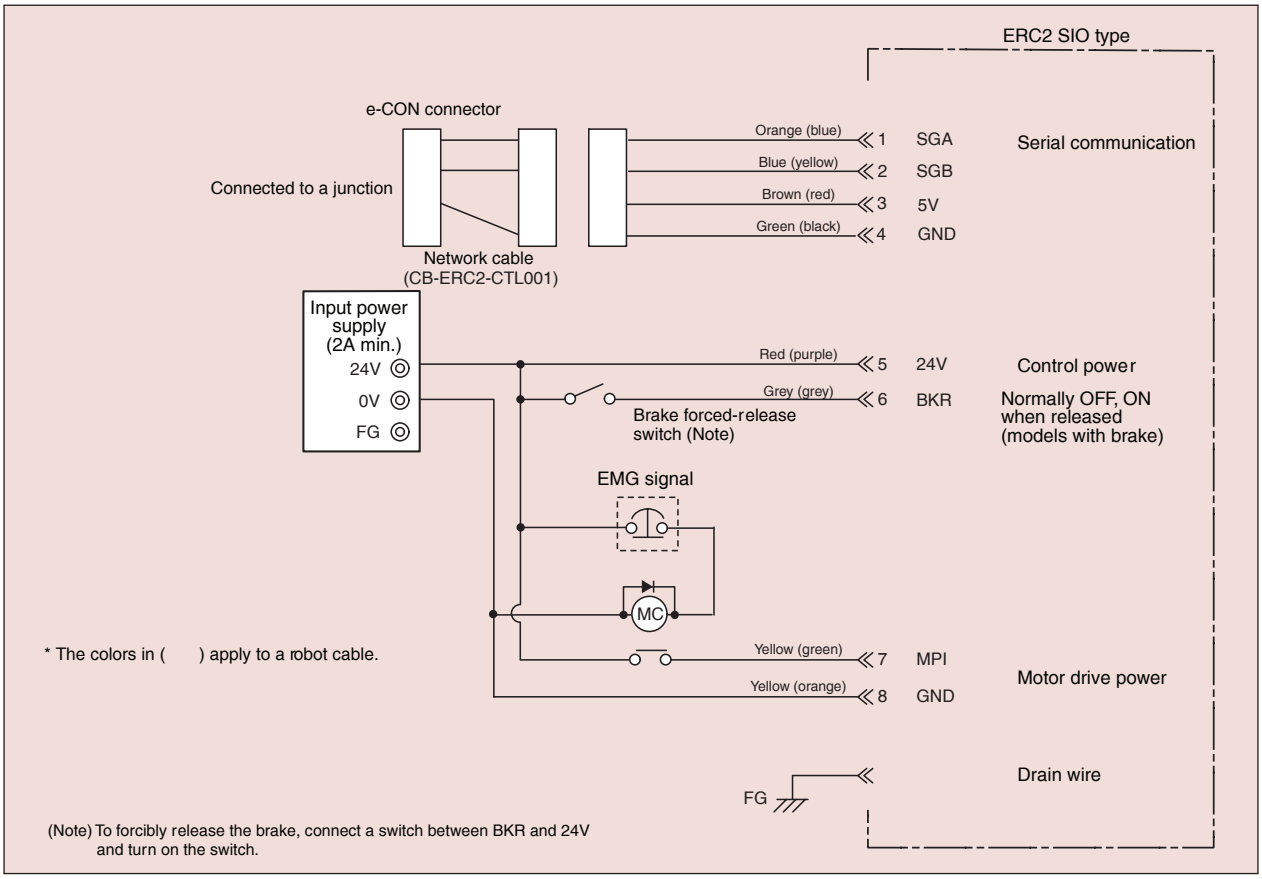


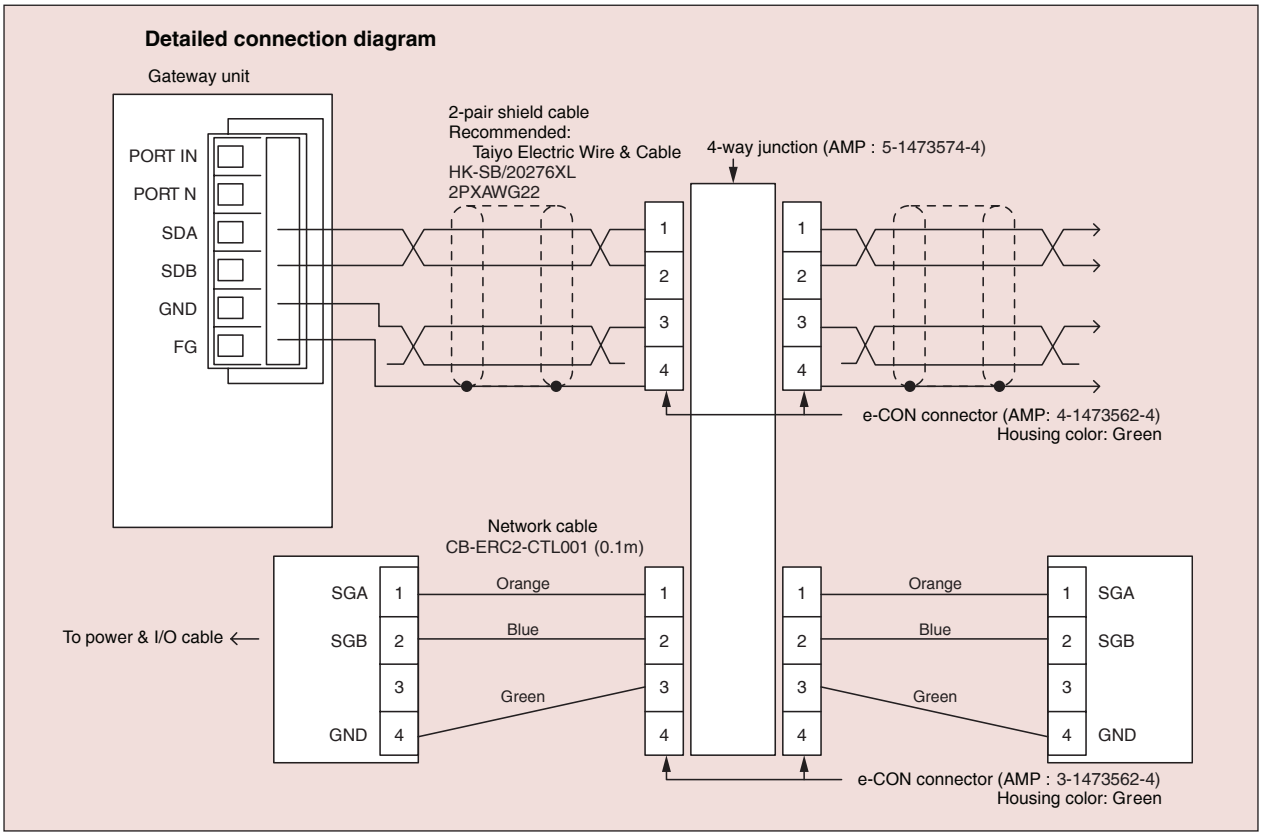
* With a robot cable, the colors change as follows.

Wire color	Pin No.
Grey (red 1)	2A
Grey (black 1)	2B
Grey (red 2)	7A
Grey (black 2)	7B

(Note) To forcibly release the brake, connect a switch between BKR and 24V and turn on the switch.

SIO Type SE

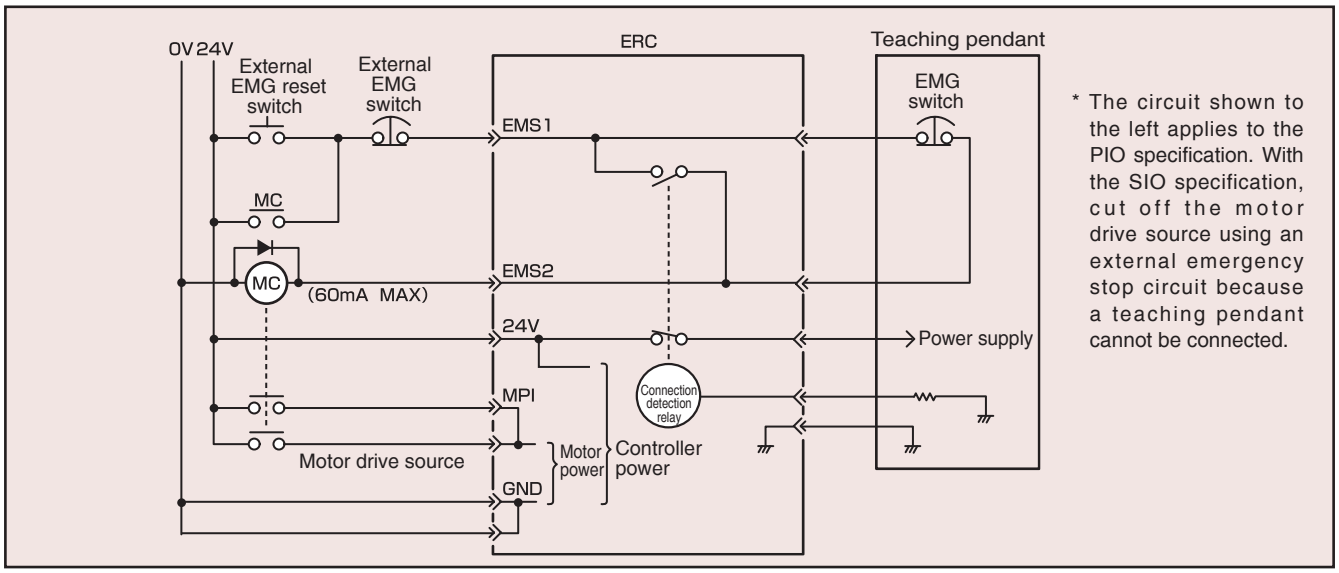

ERC2 SIO type
e-CON connector
Connected to a junction
Network cable
(CB-ERC2-CTL001)
Orange (blue)
Blue (yellow)
Brown (red)
Green (black)
1 SGA
2 SGB
3 5V
4 GND
Serial communication
Input power supply (2A min.)
24V
0V
FG
Red (purple)
Grey (grey)
5 24V
6 BKR
Control power
Normally OFF, ON when released (models with brake)
Brake forced-release switch (Note)
EMG signal
MC
* The colors in ( ) apply to a robot cable.
Yellow (green)
Yellow (orange)
7 MPI
8 GND
Motor drive power
FG
Drain wire
(Note) To forcibly release the brake, connect a switch between BKR and 24V and turn on the switch.


Detailed connection diagram
Gateway unit
PORT IN
PORT N
SDA
SDB
GND
FG
2-pair shield cable
Recommended:
Taiyo Electric Wire & Cable
HK-SB/20276XL
2PXAWG22
4-way junction (AMP : 5-1473574-4)
e-CON connector (AMP: 4-1473562-4)
Housing color: Green
Network cable
CB-ERC2-CTL001 (0.1m)
To power & I/O cable
SGA
SGB
GND
Orange
Blue
Green
e-CON connector (AMP : 3-1473562-4)
Housing color: Green

Emergency Stop Circuit

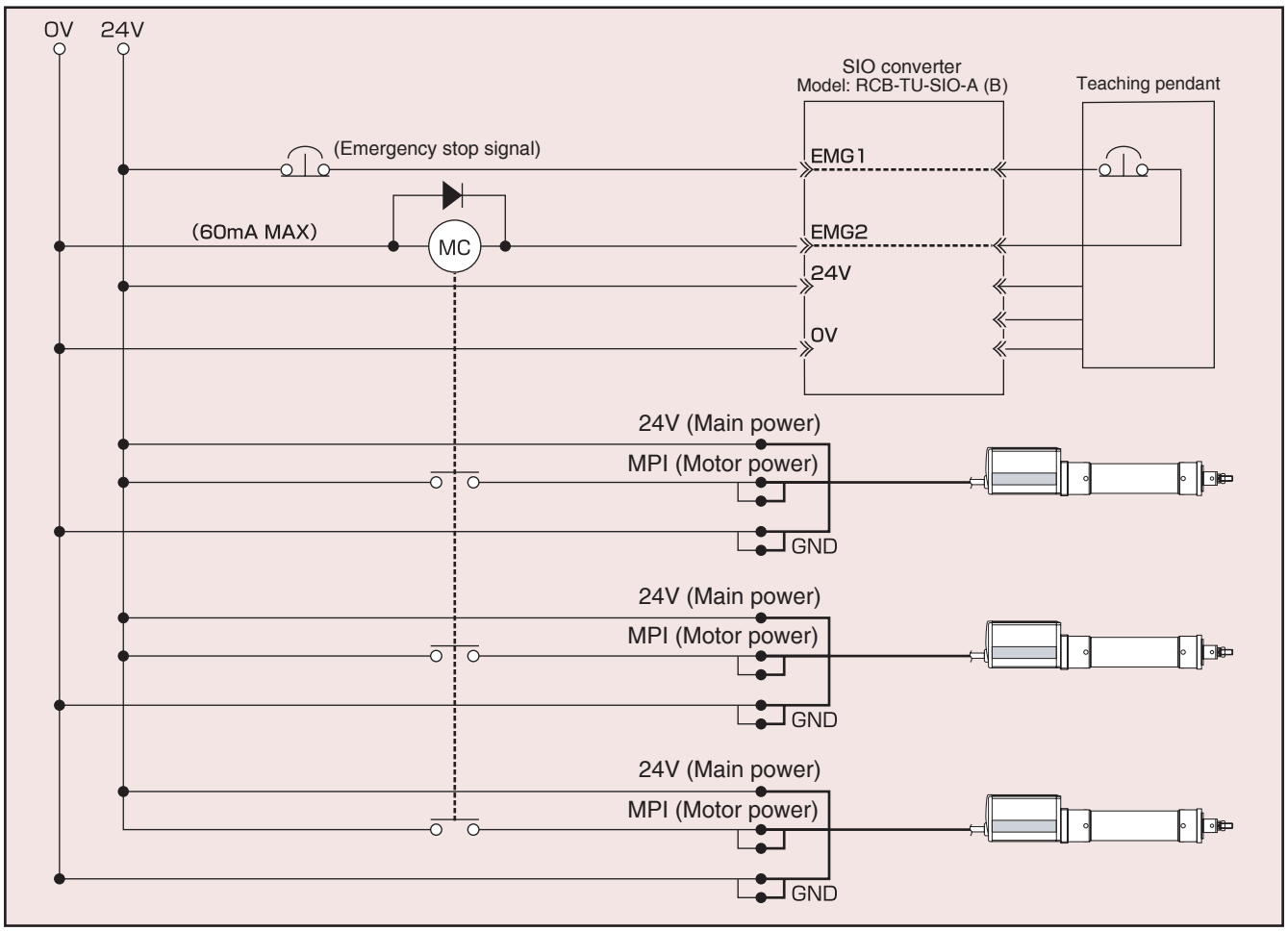
The ERC2 series has no built-in emergency stop circuit, so the customer must provide an emergency stop circuit based on the logic explained below. (The circuit below is simplified for explanation purpose. Provide a ready circuit, etc., according to your specification.)

Single Axis



* The circuit shown to the left applies to the PIO specification. With the SIO specification, cut off the motor drive source using an external emergency stop circuit because a teaching pendant cannot be connected.

Multiple Axes



Options

Insulated PIO Terminal Block

This terminal block is used to insulate the I/O power or simplify the wiring with a PLC.
* When a terminal block is used, the optional power & I/O cable with connectors on both ends must be used.

Features
- The input/output ports are non-polar, so the I/O specification of the PLC can be either NPN or PNP.
- An input/output-signal monitor LED is equipped to check the ON/OFF status of signals.

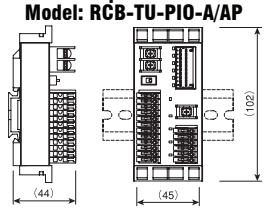
Specifications

Item		Specification
Power-supply voltage		DC24V±10%
Ambient operating temperature, humidity		0~55°C, 85% RH or below (non-condensing)
Input part	Number of input points	6 points
	Input voltage	DC24V±10%
	Input current	7mA/circuit (bipolar)
	Allowable leak current	1mA/point (approx. 2mA at normal temperature)
	Operating voltage (with respect to ground)	Input ON: Min16V (4.5mA) Input OFF: Max5V (1.3mA)
Output part	Number of output points	4 points
	Rated load voltage	DC24V
	Maximum current	60mA/point
	Residual voltage	2V max./60mA
	Short-circuit, overcurrent protection	Fuse resistance (27Ω, 0.1W)

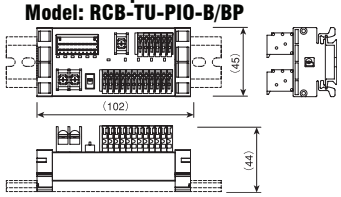
Note

If you are using the ERC2-PN (PNP specification), use the RCB-TU-PIO-AP/BP (compatible with PNP specification).

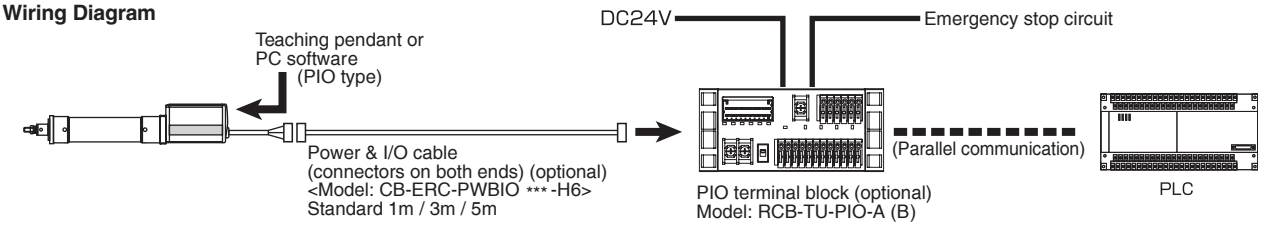
■ Vertical Specification
Model: RCB-TU-PIO-A/AP



■ Horizontal Specification
Model: RCB-TU-PIO-B/BP



Wiring Diagram



SIO Converter

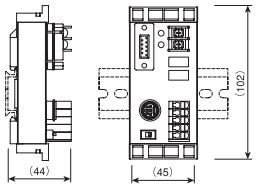
This converter permits RS232 communication by connecting the serial communication line (SGA, SGB) of the power & I/O cable and using a D-sub, 9-pin crossing cable for PC connection.

Features
- The connection port for teaching-pendant or PC cable can be installed at any position away from the actuator.
- Multiple axes can be connected and operated from a PC via serial communication.

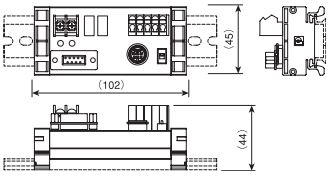
Specifications

Item	Specification
Power-supply voltage	DC24V±10%
Ambient operating temperature, humidity	0~55°C, 85% RH or below (non-condensing)
Terminal resistor	120Ω (built-in)

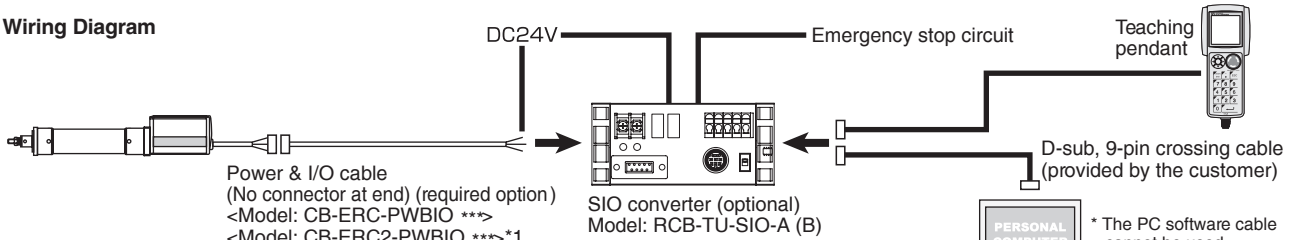
■ Vertical Specification
Model: RCB-TU-SIO-A



■ Horizontal Specification
Model: RCB-TU-SIO-B



Wiring Diagram

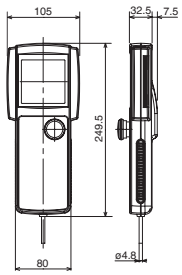
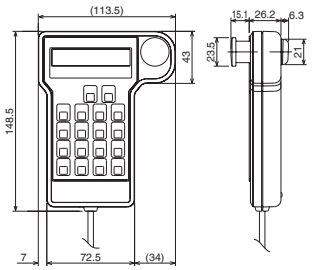
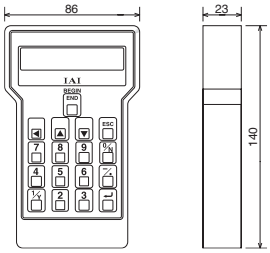


*1 With the SIO specification, a network cable is used to connect to a SIO converter.

Options

■ Teaching Pendant

An input device that provides all functions you need for trial operation and adjustment, such as position data input, test operation, as well as monitoring of current axis positions and input/output signals.

Name	Teaching Pendant (No CE mark) *2)	Simple teaching pendant (No CE mark) *2)	Data setting unit (No CE mark) *2)
Model	RCM-T (standard specification) RCM-TD (with deadman switch *1)	RCM-E	RCM-P
Standard price	—	—	—
External view			
Features	A standard, user-friendly teaching pendant equipped with a large LCD screen. A deadman switch type ensuring added safety is also available.	An economical type offering the same functions as the RCA-T at a substantially lower price.	An affordable data setting unit that provides all editing functions other than those relating to axis operation. * This unit does not support operations relating to axis movement.
Display	21 characters x 16 lines on LCD	16 characters x 2 lines on LCD	16 characters x 2 lines on LCD
Weight	Approx. 550g	Approx. 400g	Approx. 360g
Cable length	5m	5m	5m
Ambient operating temperature, humidity	Temperature: 0~40°C, Humidity: 85% RH or below		
External dimensions			

*1 The deadman switch is a safety switch that cuts off the drive source when released to disable operation.

*2 Teaching pendant CON-T is conforming to ANSI/CE mark (see extra CON-T flyer)

■ PC Software

A software program that helps input position data and perform test operation.
It significantly facilitates debugging operation by offering wide-ranging functions including jogging, inching, step operation and continuous operation.

■ RS232 Communication Type

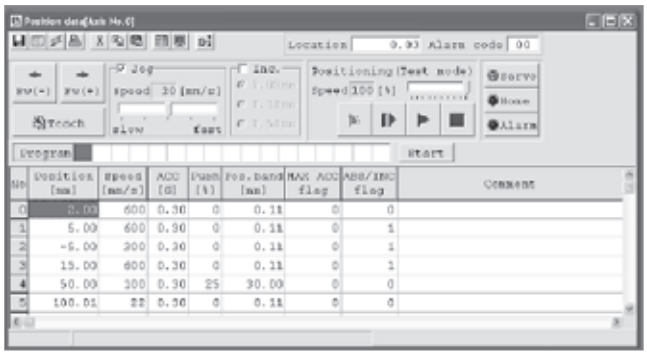
Model RCM-101-MW

<Content>PC software (CD-ROM),
PC cable
(communication cable +
RS232 conversion unit)

■ USB Communication Type

Model RCM-101-USB

<Content>PC software (CD-ROM),
PC cable
(communication cable + USB
conversion unit + USB cable)

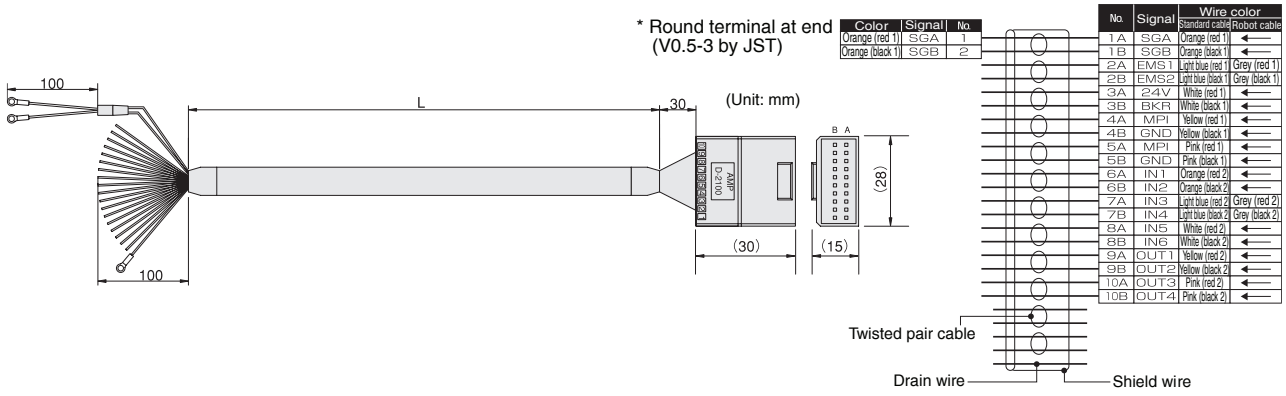


Cables and Spare Parts

Power & I/O Cable / Power & I/O Robot Cable for PIO Type

Model CB-ERC-PWBIO□□□/CB-ERC-PWBIO□□□-RB

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



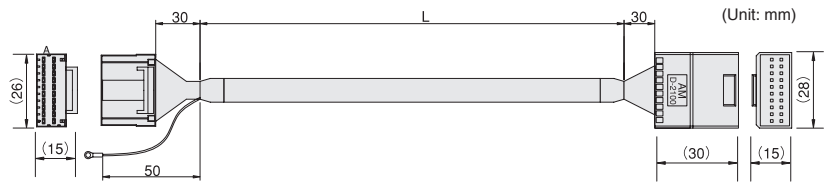
Color	Signal	No.
Orange (red 1)	SGA	1
Orange (black 1)	SGB	2

No.	Signal	Wire color Standard cable	Robot cable
1A	SGA	Orange (red 1)	
1B	SGB	Orange (black 1)	
2A	EMS1	Light blue (red 1)	Grey (red 1)
2B	EMS2	Light blue (black 1)	Grey (black 1)
3A	24V	White (red 1)	
3B	BKR	White (black 1)	
4A	MPI	Yellow (red 1)	
4B	GND	Yellow (black 1)	
5A	MPI	Pink (red 1)	
5B	GND	Pink (black 1)	
6A	IN1	Orange (red 2)	
6B	IN2	Orange (black 2)	
7A	IN3	Light blue (red 2)	Grey (red 2)
7B	IN4	Light blue (black 2)	Grey (black 2)
8A	IN5	White (red 2)	
8B	IN6	White (black 2)	
9A	OUT1	Yellow (red 2)	
9B	OUT2	Yellow (black 2)	
10A	OUT3	Pink (red 2)	
10B	OUT4	Pink (black 2)	

Power & I/O Cable / Power & I/O Robot Cable (Connectors on Both Ends)

Model CB-ERC-PWBIO□□□-H6/CB-ERC-PWBIO□□□-RB-H6

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



Receptacle housing: 1-1318118-9 (AMP)
Receptacle contact: 1318108-1 (AMP)

Signal	No.
SGA	1A
SGB	1B
EMS1	2A
EMS2	2B
24V	3A
BKR	3B
MPI	4A
GND	4B
MPI	5A
GND	5B
IN1	6A
IN2	6B
IN3	7A
IN4	7B
IN5	8A
IN6	8B
OUT1	9A
OUT2	9B
OUT3	10A
OUT4	10B

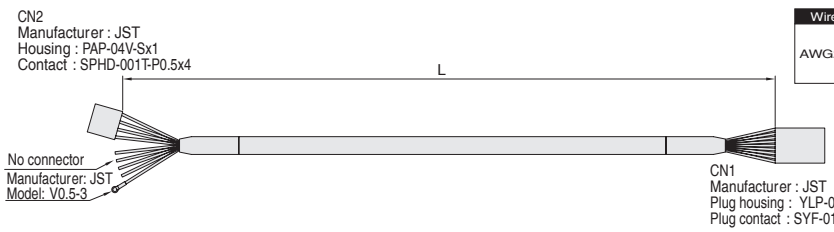
No.	Signal
1A	SGA
1B	SGB
2A	EMS1
2B	EMS2
3A	24V
3B	BKR
4A	MPI
4B	GND
5A	MPI
5B	GND
6A	IN1
6B	IN2
7A	IN3
7B	IN4
8A	IN5
8B	IN6
9A	OUT1
9B	OUT2
10A	OUT3
10B	OUT4

Twisted pair cable
Drain wire
Shield wire

Power & I/O Cable / Power & I/O Robot Cable for SIO Type

Model CB-ERC2-PWBIO□□□/CB-ERC2-PWBIO□□□-RB

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

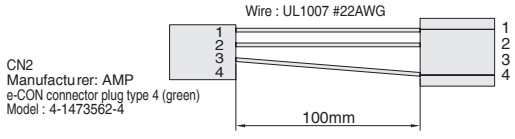


Wire	Color	Signal	No.
AWG26	Orange	SGA	1
	Blue	SGB	2
	Brown	5V	3
	Green	GND	4

No.	Signal	Wire color Standard cable	Robot cable
1	SGA	Orange	Blue
2	SGB	Blue	Yellow
3	5V	Brown	Red
4	GND	Green	Black
5	Control power	Red	Purple
6	Brake	Grey	Grey
7	MPI	Yellow	Green
8	GND	Black	Orange
9	Shield	Shield	Shielded

Network Cable

Model CB-ERC2-CTL001



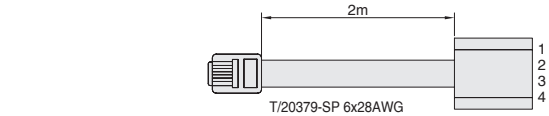
Wire	Color	Signal	No.
CN2 AWG22	Orange	SGA	1
	Blue	SGB	2
	Green	GND	3
		NC	4

No.	Signal	Color	Wire
1	SGA	Orange	CN1 AWG22
2	SGB	Blue	
3	5V	—	
4	GND	Green	

CN1
Manufacturer: JST
Housing : PALR-04VFx1
Contact : SPAL-001T-P0.5x4

PC Communication Cable

Model CB-ERC2-SIO020



Wire	Color	Signal	No.
AWG28	Brown	5V	1
	Yellow	SGA	2
	Red	GND	3
	Orange	SGB	4
	NC	GND	5
	NC	5V	6

No.	Signal	Color	Wire
1	SGA	Yellow	AWG28
2	SGB	Orange	
3	5V	Brown	
4	GND	Red	

Selection Guide (Correlation Diagram of Speed and Load Capacity)

ERC2 Series | Slider type

Select horizontal or vertical installation

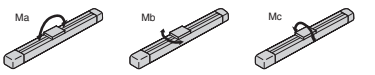
Select the speed type based on the cycle time of the system

Select the target type using the correlation diagrams of speed and load capacity below

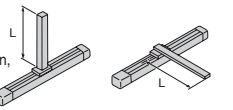
Caution for Use

- If you will be using a slider type and the load installed on the slider will project significantly from the center, consider the load moment and overhang load length.

Load moment
Keep Ma/Mb/Mc load moments within their specified ranges.

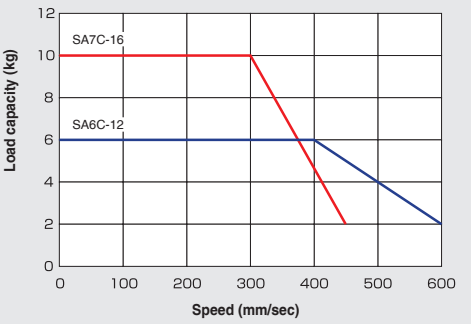
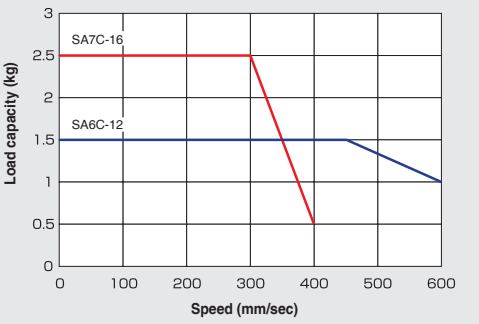
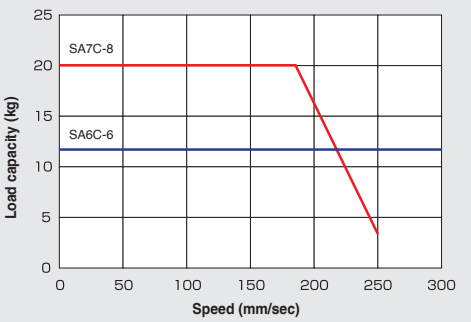
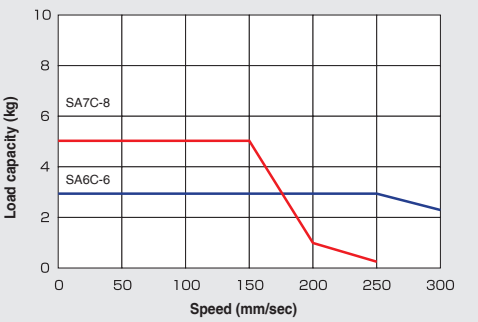
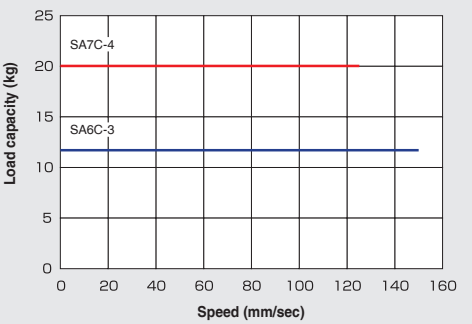
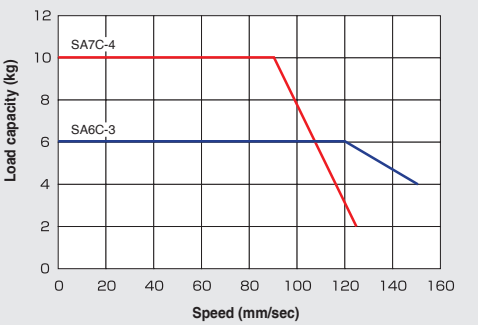


Overhang load length
When the center of gravity of the installed load is L/2. If the load projects in Ma, Mb or Mc direction, keep the overhang load length within the specified range.



- On the SA6 type with a 600 stroke, the maximum speed is limited so as not to reach a critical speed. 600 stroke (lead 12: 515 mm/sec, lead 6: 255 mm/sec, lead 3: 125 mm/sec)

Maximum speed
600 mm/sec
300 mm/sec
150 mm/sec

	Horizontal installation	Vertical installation
High-speed type		
Medium-speed type		
Low-speed type		

(Note) In the above diagrams, the figure after the type code indicates the lead.

ERC2 Series **Standard Rod Type**

Select horizontal or vertical installation

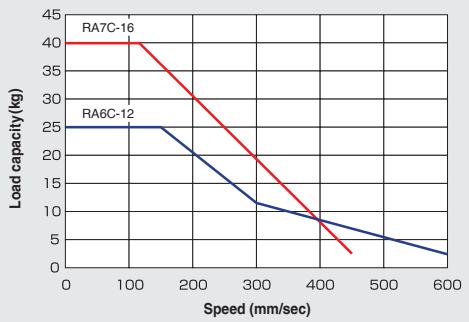
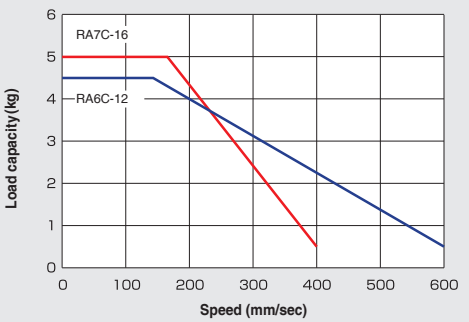
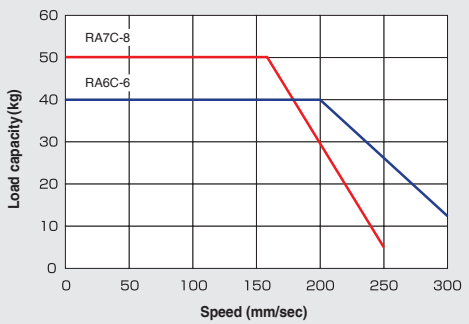
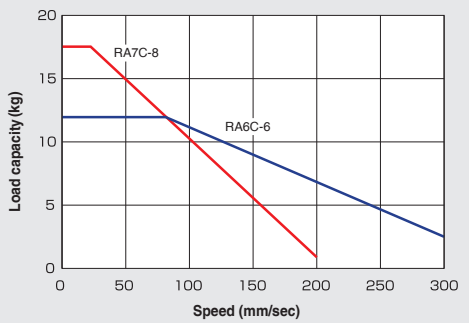
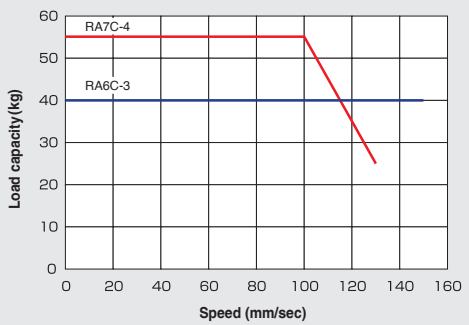
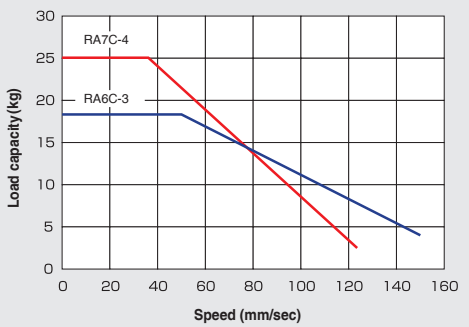
Select the speed type based on the cycle time of the system

Select the target type using the correlation diagrams of speed and load capacity below

Caution for Use

- With rod types, no external force is considered other than the force applied from the moving direction of the rod. If the rod will receive any force in the right-angle direction or rotating direction, the customer should add a guide.
- The figures in the following diagrams under "Horizontal Installation" assume use of an external guide.
- On the RA6 type with a 300 stroke, the maximum speed is limited so as not to reach a critical speed. 300 stroke (lead 12: 500 mm/sec, lead 6: 250 mm/sec, lead 3: 125 mm/sec)

Maximum speed
600 mm/sec
300 mm/sec
150 mm/sec

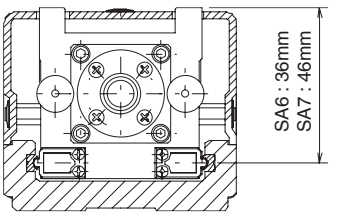
	Horizontal installation	Vertical installation
High-speed type		
Medium-speed type		
Low-speed type		

(Note) In the above diagrams, the figure after the type code indicates the lead.

Selection Guide Correlation (Diagrams of Holding Push Force and Current-Limiting Value)

ERC2 Series — Slider type

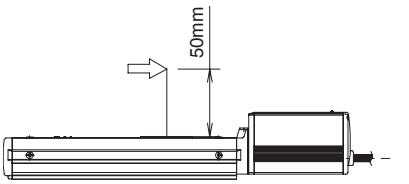
When performing push-motion operation using a slider type, limit the holding push current to prevent the reactive moment generated by the holding push force from exceeding 80% of the rated moment (Ma, Mb) specified in the catalog.
The position where guide moment is applied is illustrated below to facilitate moment calculation. Calculate the moment by considering an offset required at the position where push force is applied.
Since applying an excessive force exceeding the rated moment may damage the guide and shorten the service life of the actuator, set sufficient holding push current by considering a safety factor.



Position where moment is applied

Note
The travel speed is fixed to 20 mm/s during push-motion operation.

Calculation example)
If a holding push force of 100 N is applied at the position shown to the right on the ERC2-SA7C type, the moment received by the guide is calculated as follows: Ma=(46+50)x100
=9600(N•mm)
=9.6(N•m)

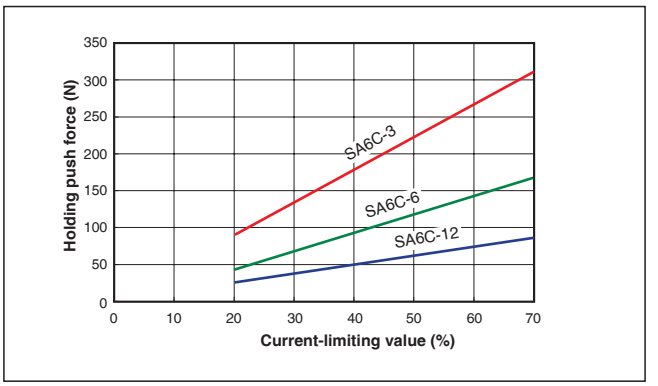


Since the rated moment of the SA7 (Ma) is 13.8 (N-m),
13.8 x 0.8 = 11.04 > 9.6. Accordingly, the requirement is satisfied.
If Mb moment generates as a result of push motion, follow the same procedure to calculate the actual moment based on the overhang load and confirm that it is within 80% of the rated moment.

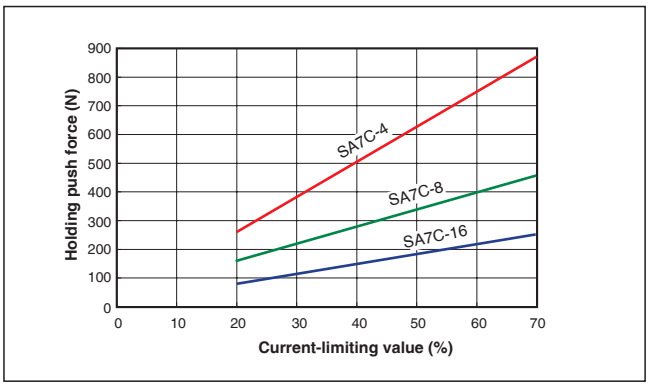
Correlation Diagrams of Holding Push Force and Current-Limiting Value

* The figures in the following diagrams are reference values and may differ slightly from actual values.

SA6C type



SA7C type

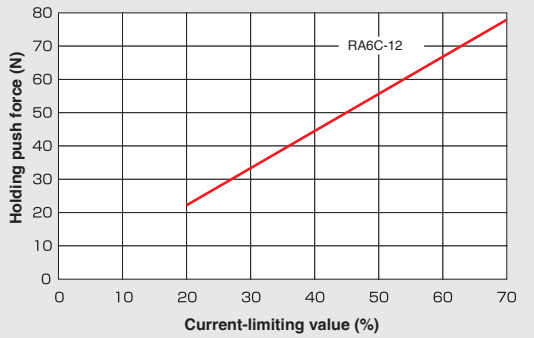
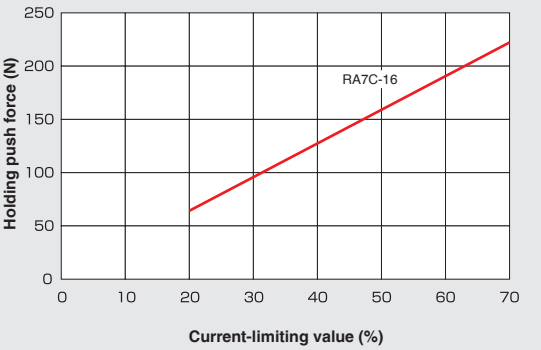
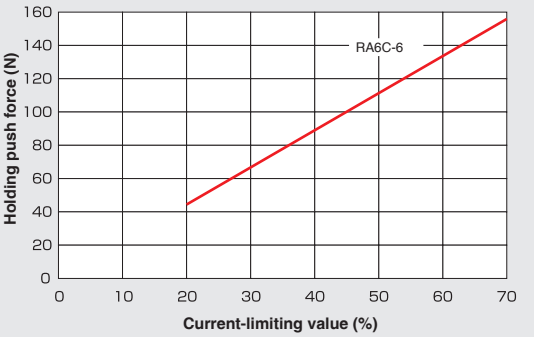
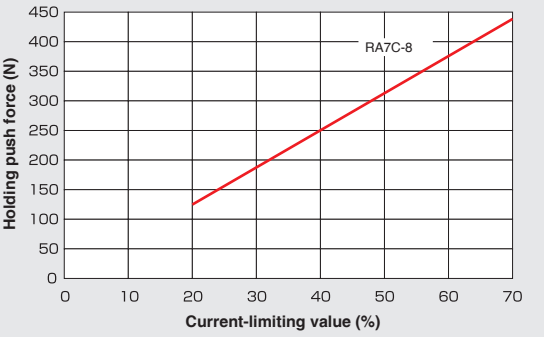
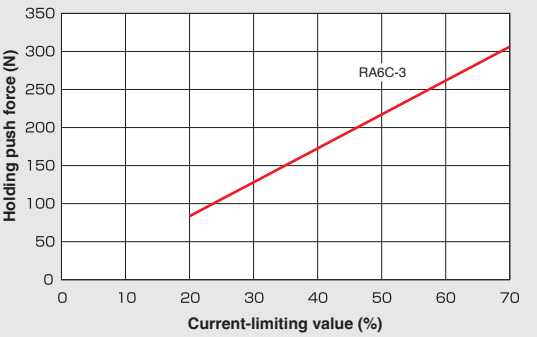
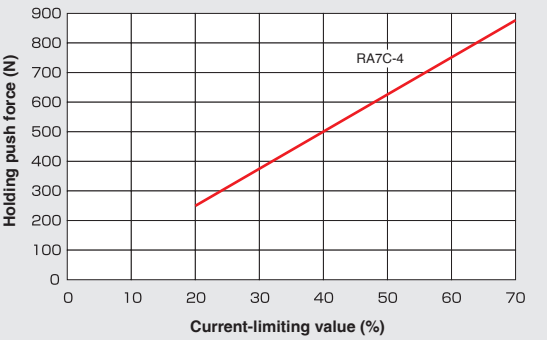


ERC2 Series Rod type

The Holding push force applied in push-motion operation can be changed freely by changing the current-limiting value in the controller.
Since the maximum holding push force varies from one model toanother, use the diagrams below to check the required holding push force and select a type that satisfies the force requirement.

Caution for Use

- The relationships of holding push force and current-limiting value represent reference values and may differ slightly from actual values.
- If the current-limiting value is less than 20%, the holding push force may fluctuate. Keep the current-limiting value to 20% or above.
- The travel speed is fixed to 20 mm/s during push-motion operation.

	RA6C type	RA7C type
High-speed type		
Medium-speed type		
Low-speed type		

(Note) In the above diagrams, the figure after the type code indicates the lead.

ERC2 Series
Extract Cat. No. 0507-E

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