IAI
Quality and Innovation

Low/Medium/High/Ultra-high Thrust Rod Type
Servo Press Models with Load Cell

RCS3/2 RA□R-LCT

High/Ultra-high Payload Rod Type
Conveyor Position Models without Load Cell

RCS3/2 RA13/15/20R

All Models Equipped
with a Battery-less Absolute Encoder as Standard
High-payload Rod Type Also Now Available



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Rod type actuator that can be used in simple pressing. As it is capable of high precision position control, it can easily set the hard push force adjustment and position control that have been difficult with the hydraulic pressure.

1 Servo Press Specifications Also Available

The servo press specification actuator is equipped with a load cell to allow for the force control.

What Is Push-motion Operation?

Similar to an air cylinder, push-motion operation is the function of keeping the rod and slider pushed to the work, etc. Servo press provides superior stop stability during pressing, which makes them optimal for push-motion operation. Also, servo press can be used in a wide variety of applications because it can be used in work operations that require strong push force, such as press fitting and caulking operation.

What Is Force Control?

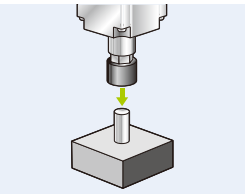
A function that can perform high precision push control output using the feedback data from the dedicated load cell installed in the actuator.

What Is the Servo Press Specification?

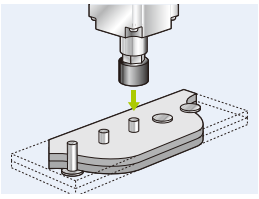
The specification which can perform various push-motion operations by using the press program.
For details, please refer to P. 3.

<Application Examples>

Press-fitting a pin



Riveting work



- Accurate push force can be managed
- Detailed push force setting can be set for each product

2 High Precision Load Control

Equipped with a dedicated load cell at the rod tip to detect the load applied to the pressed object. This provides the high precision load control with the loading repeatability of ±0.5% F.S. (full-scale).

Points

F.S.: Full Scale
Maximum measurable value



3 Extensive Lineup

The servo press specification can be selected from 8 types with the max. push force of 200N~50,000N.

[Servo press specification]

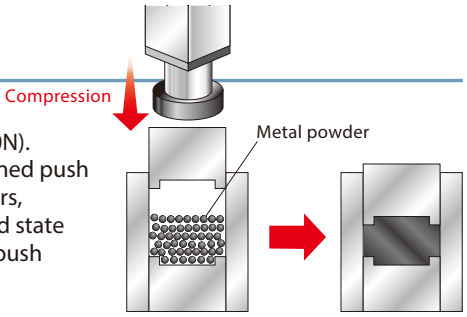
		RCS3-RA4R	RCS3-RA6R	RCS3-RA7R	RCS3-RA8R
					
Stroke (mm)		110~410	115~415	120~520	100~500
Motor (W)		30	60	100	200
Lead (mm)		2.5	1.5	2	2.5
Max. push force (N)*		200	600	1200	2000
Max. payload (kg)	Horizontal	3	10	10	10
	Vertical	3	10	10	10
Max speed (mm/s)		125	75	100	125

		RCS3-RA10R	RCS2-RA13R		RCS3-RA15R	RCS3-RA20R
			1t Type	2t Type		
						
Stroke (mm)		100~500	50~200		100~500	100~500
Motor (W)		400	750		3300	3000
Lead (mm)		2.5	2.5	1.25	3.6	4
Max. push force (N)*		6000	9800	19600	30000	50000
Max. payload (kg)	Horizontal	50	100	200	15	15
	Vertical	50	100	200	220	220
Max speed (mm/s)		125	125	62	240	220

* Max. push force can be achieved only during push mode with 1~10mm/s speed range.

4 Capable of Pushing at Maximum Push Force for Long Periods

RCS3-RA15R/RA20R types of servo press specification achieve the push time of 9s/10s at the maximum push force (30,000N/50,000N). They can be used for applications where the time until a predetermined push force is reached is indefinite such as compression molding of powders, applications where the push force is maintained from the pressurized state until cooling such as hot plate welding, and applications where the push force is maintained for a predetermined period such as the strain relief of workpiece.

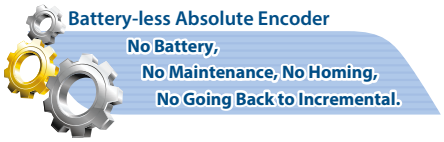


5 Equipped with a Battery-less Absolute Encoder as Standard

Equipped with a Battery-less Absolute Encoder as standard.
There is no need to replace batteries, reducing the maintenance processes.

Advantages of Battery-less Absolute

- The machine will no longer stop due to battery error (voltage drop, etc.).
- There is no need to purchase replacement batteries.
- There is no need to replace batteries, saving time and trouble such as absolute reset.



6 High-payload Rod Type is Also Available

Newly added High-payload Rod type (Position Type without load cell). It can be selected for transport application.

[Rod type]

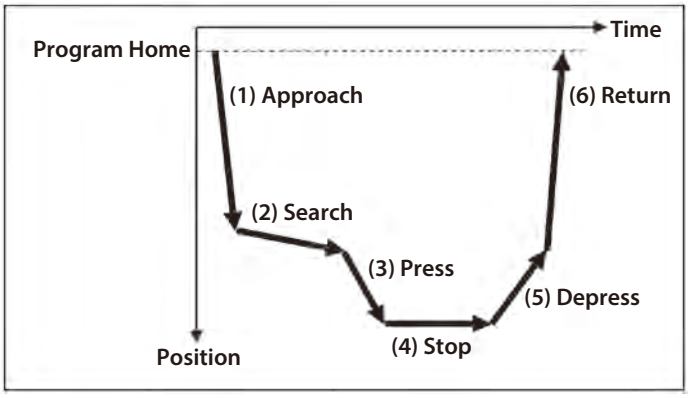
		RCS2-RA13R		NEW RCS3-RA15R	NEW RCS3-RA20R
		1t Type	2t Type		
					
Stroke (mm)		50~200		100~500	100~500
Motor (W)		750		3300	3000
Lead (mm)		2.5	1.25	7.2	10
Max. push force (N)*		9800	19600	15000	20000
Max. payload (kg)	Horizontal	400	500	700	1000
	Vertical	200	300	400	600
Max speed (mm/s)		125	62	400	400

* Max. push force can be achieved only within 5~10mm/s speed range.

Dedicated Software: Press Program

With this Press Program, one of two control methods, "Speed Control" or "Force Control", can be selected.
In addition, one of four stop conditions, "Position", "Distance", "Load", or "Incremental Load", can be selected as the method for stopping.
By utilizing a total of eight types of press methods, it is possible to handle a variety of press motion.

Explanation of Operation



(1)Approach (can be omitted)
Performs high-speed transfer until directly before contacting work

(2)Search (can be omitted)
Detects work contact

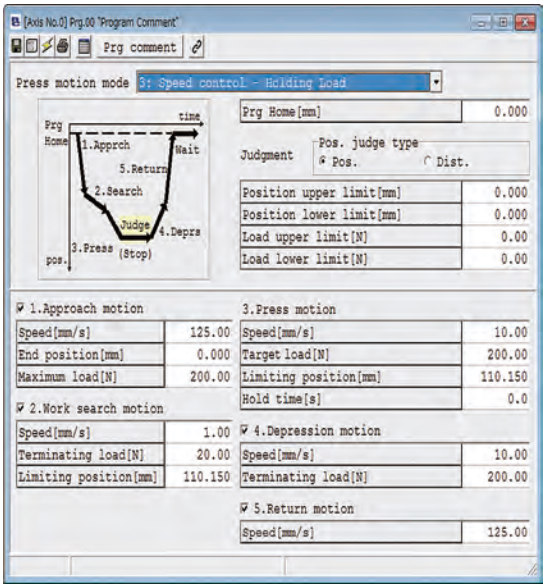
(3)Press (necessary)
Accelerates, then performs pressing work

(4)Stop (can be omitted when set to 0)
Stops at a fixed position or continues to push

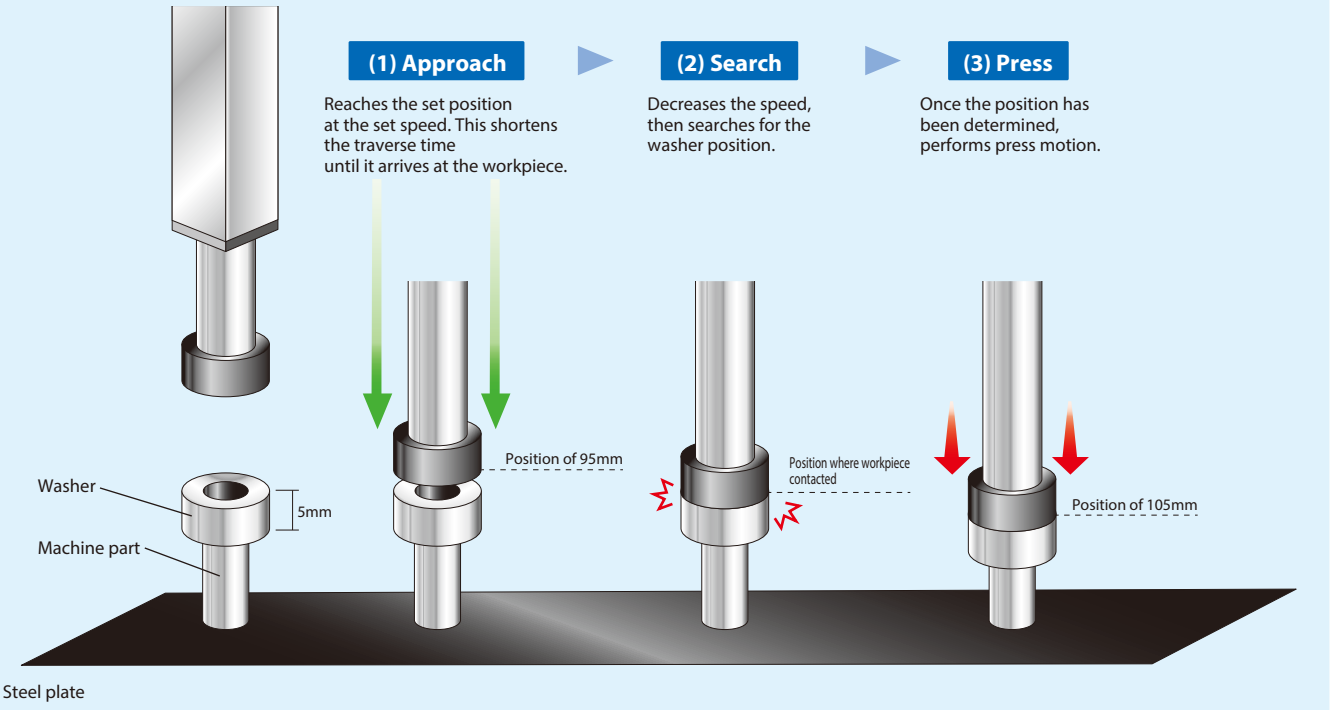
(5)Depress (can be omitted)
Slowly separates from the work

(6)Return (can be omitted)
Returns to the program home position at high speed

Program Screen



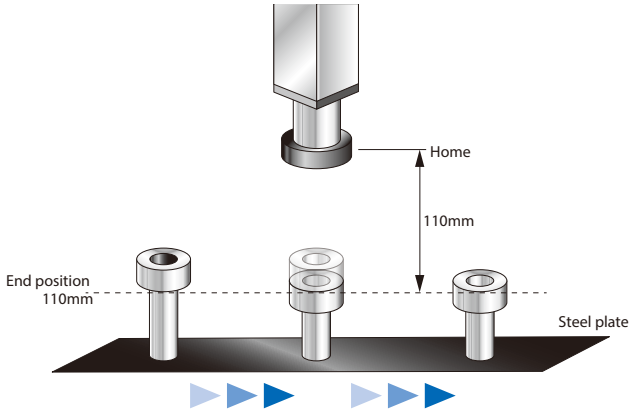
Example of press fitting a machine part into a washer



Mode		Internal control	Stop state	Applications
Speed control After arriving at the target position, stops while maintaining the position at the time of arrival.	Position stop Distance stop Load stop Incremental load stop	Positioning	Positioning stop	Press fitting, riveting, squeezing, etc. (primarily metalworking)
Force control After arriving at the target position, it stops while maintaining the force at the time of arrival.	Position stop Distance stop Load stop Incremental load stop	Push	Continuing push-motion operation	Compressive molding, etc. of powders

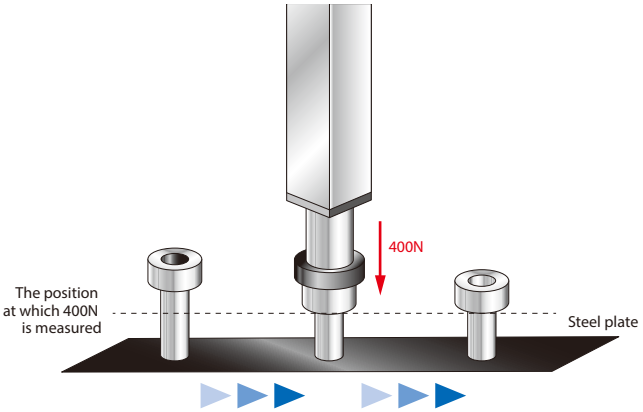
Position stop

Performs pressing work to the specified position.



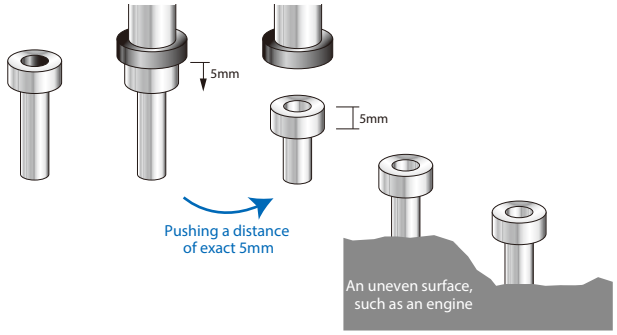
Load stop

Performs pressing work that stops at the position at which the specified load was detected.



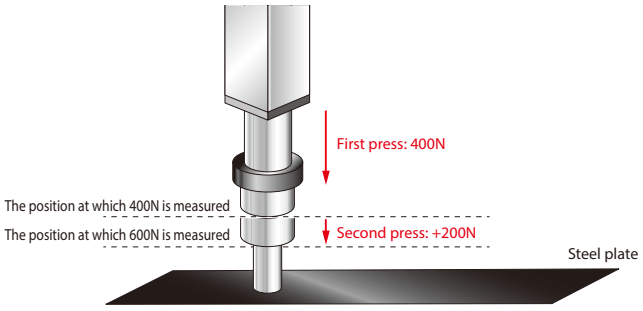
Distance stop

Performs pressing work by moving a specified distance and then stopping.
This is optimal in situations in which the press start position changes.



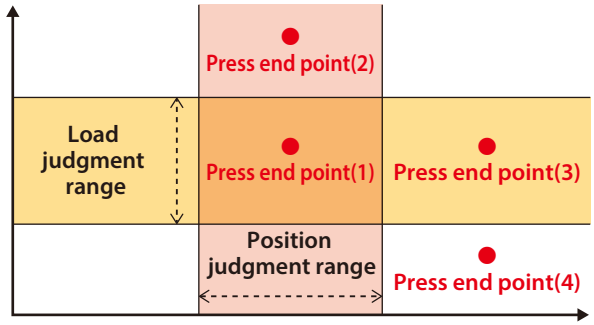
Incremental load stop

Performs pressing work that stops at the position at which the load
(sum of the press start loadand the specified incremental load) has been detected.
* It is possible to perform the operation by linking two programs together.
For details, please refer to the instruction manual.



Explanation of Operation

From the end of press to the end of the stop state, it is possible to perform position judgment and load judgment.



<Judgment Results>

No.	Position	Load
①	OK	OK
②	OK	NG
③	NG	OK
④	NG	NG

- When a result of NG has been detected for either the position or load, the program ends abnormally
- It is also possible to set position only, load only, or neither

RCS3-RA4R (Servo press specification)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 40* mm | 200v AC Servo Motor

■ Model Specification Items

RCS3 — RA4R — WA — 30 — 2.5 — □ — T2 — □ — □

Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA4R	WA: Battery-less Absolute	30: Servo motor 30W	2.5: Lead 2.5mm	110: 110mm ~ 410: 410mm (Every 50mm)	T2: SCON-CB/CGB (For servo press only)	N : None P : 1m S : 3m M : 5m X□□ : Specified length R□□ : Robot cable	Refer to Options table below. * For side-mounted motor type, specify the mount direction (ML/MR).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

CE RoHS

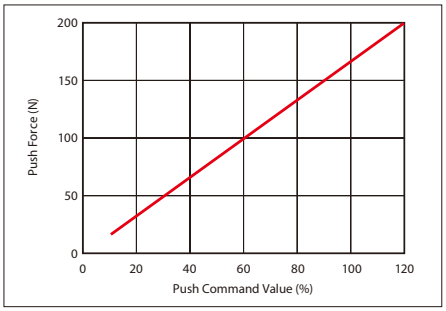
* CE is an available option.

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 12% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) There are no limitations on the continuous push time. The duty ratio is also 100% and continuous operation is possible.
(2) Customer's tooling is to be mounted on the load cell itself. In case any radial or moment load is applied to the load cell, please consider adding the external guides, etc. to offset those side loads.
(3) Please install a support block when front mounting or back mounting a horizontally mounted actuator that is 150st or more. (Refer to page 34 "Notes When Installing")
(4) Servo Press with load cell should not be used for pulling motion. It will damage the load cell.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA4R-WA-30-2.5-①-T2-②-③	30	2.5	125	0.5	3	3	126	200

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 1~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	110~410
2.5	125

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA4R
110	○
160	○
210	○
260	○
310	○
360	○
410	○

② Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)
Robot cable	**R01**(1m) ~**R03**(3m)
	R04(4m) ~**R05**(5m)
	R06(6m) ~**R10**(10m)
	R11(11m)~**R15**(15m)
	R16(16m)~**R20**(20m)

* Please contact IAI for maintenance cables.

③ Options

* Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
CE compliant	**CE**	See P.35
Cable exit direction (Outside)	**CJO**	See P.35
Flange (Front)	**FL**	See P.35
Foot bracket (*1)	**FT**	See P.36
Equipped with load cell (Standard equipment) (*2)	**LCT**	See P.37
Motor side-mounted (left)	**ML**	See P.37
Motor side-mounted (right)	**MR**	See P.37

(*1) Refer to P. 37 for the number of brackets included.
(*2) Please make sure to enter "LCT" in the box of Model Specification Items to select the actuator with load cell option.

Actuator Specifications

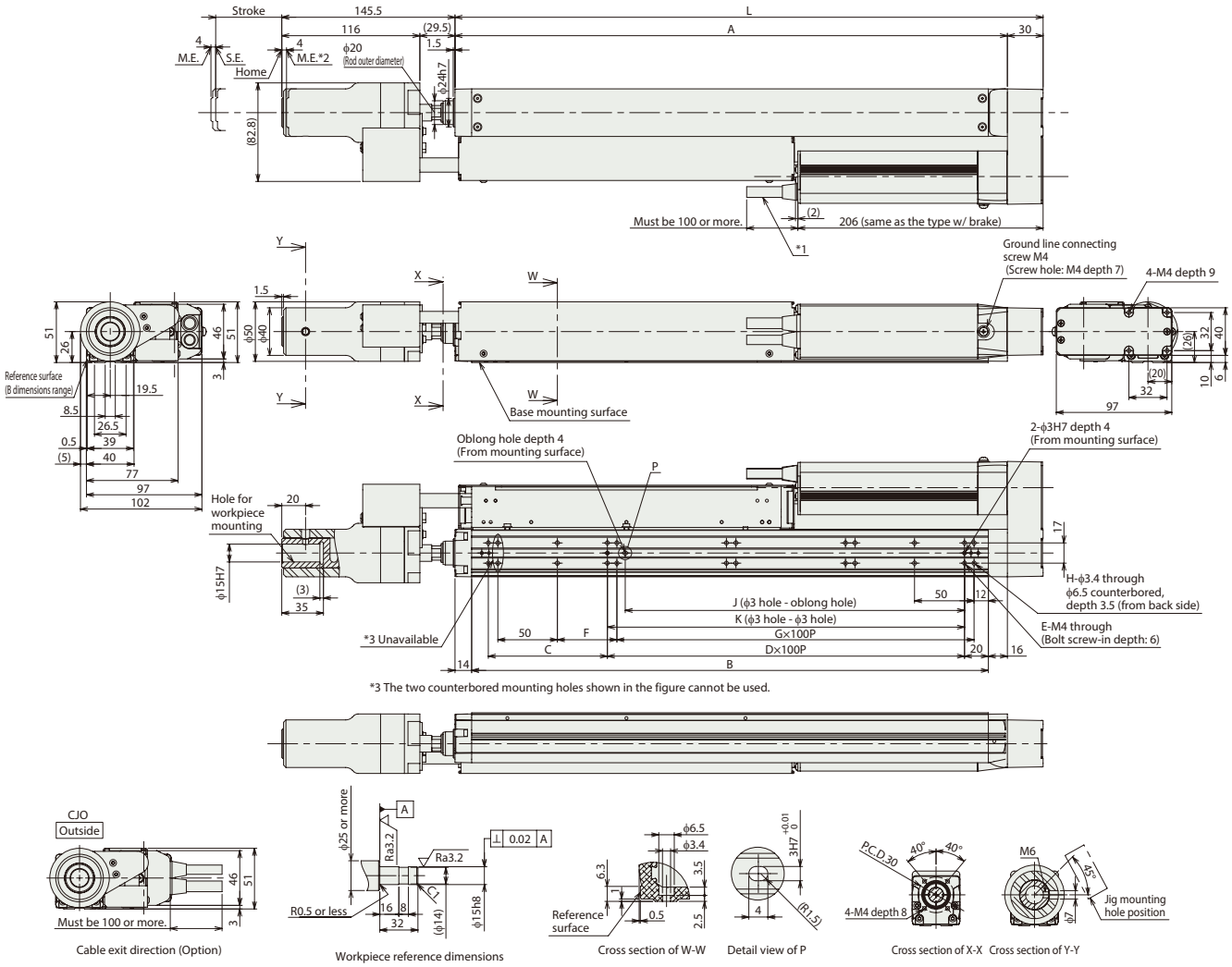
Item	Description
Drive system	Ball screw ϕ8mm rolled C10
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Load cell rated capacity	200N
Loading repeatability (*3)	±0.5% F.S (*4)
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

(*3) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity
(*4) F.S.: Full Scale, the maximum measurable value.

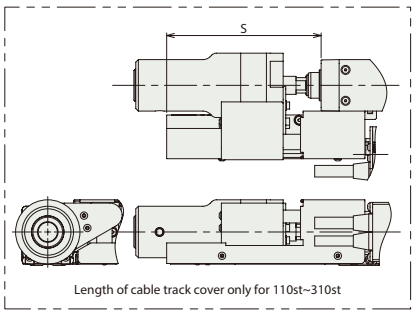
Dimensions

CAD drawings can be downloaded from our website.
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*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end
S.E: Stroke end



*3 The two counterbored mounting holes shown in the figure cannot be used.



Dimensions and Mass by Stroke

Stroke		110	160	210	260	310	360	410
L		244	294	344	394	444	494	544
A		214	264	314	364	414	464	514
B		184	234	284	334	384	434	484
C		50	100	50	100	50	100	50
D		1	1	2	2	3	3	4
E		6	6	8	8	10	10	12
F		100	50	100	50	100	50	100
G		0	1	1	2	2	3	3
H		8	10	10	12	12	14	14
J		85	85	185	185	285	285	385
K		100	100	200	200	300	300	400
S		120	100	75	50	25	–	–
Mass (kg)	Without brake	3.1	3.2	3.4	3.6	3.8	3.9	4.1
	With brake	3.4	3.5	3.7	3.9	4.1	4.2	4.4

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method					Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Press program	Network * Option		
SCON-CB/CGB (For servo press only)		1	Single-phase 100VAC /200VAC	–	–	–	●	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	–	Please contact IAI for more information.

RCS3-RA6R (Servo press specification)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 60* mm | 200V AC Servo Motor

■ Model Specification Items

RCS3 — RA6R — WA — 60 — 1.5 — □ — T2 — □ — □

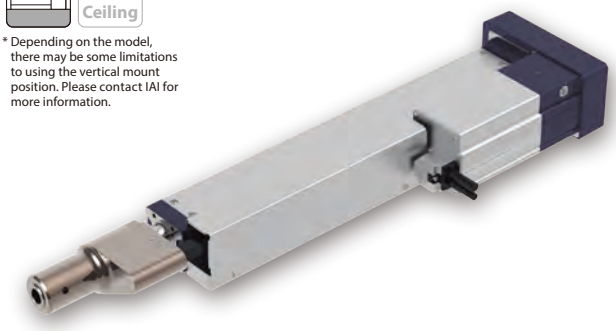
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA6R	WA: Battery-less Absolute	60: Servo motor 60W	1.5: Lead 1.5mm	115: 115mm ~ 415: 415mm (Every 50mm)	T2: SCON-CB/CGB (For servo press only)	N : None P : 1m S : 3m M : 5m X□□ : Specified length R□□ : Robot cable	Refer to Options table below. * Specify cable exit direction (CJT/CJB/CJO). For side-mounted motor type, specify the mount direction (ML/MR).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

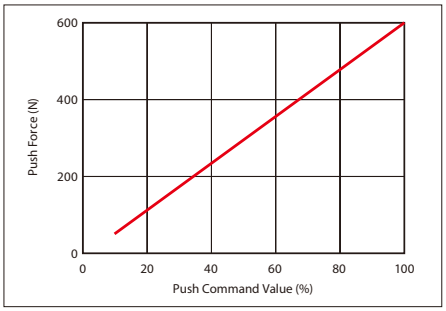
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 10% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force. (Even if there is no push motion) Please refer to P.27 for more information.

(2) Customer's tooling is to be mounted on the load cell itself. In case any radial or moment load is applied to the load cell, please consider adding the external guides, etc. to offset those side loads.

(3) Please install a support block when front mounting or back mounting a horizontally mounted actuator that is 150st or more. (Refer to page 34 "Notes When Installing")

(4) Servo Press with load cell should not be used for pulling motion. It will damage the load cell.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA6R-WA-60-1.5-①-T2-②-③	60	1.5	75	0.3	10	10	566	600

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 1~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	115~415
1.5	75

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA6R
115	○
165	○
215	○
265	○
315	○
365	○
415	○

② Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)
Robot cable	**R01**(1m) ~**R03**(3m)
	R04(4m) ~**R05**(5m)
	R06(6m) ~**R10**(10m)
	R11(11m)~**R15**(15m)
	R16(16m)~**R20**(20m)

* Please contact IAI for maintenance cables.

③ Options

* Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Bottom) (*2)	**CJB**	See P.35
Cable exit direction (Outside)	**CJO**	See P.35
Flange (Front)	**FL**	See P.35
Foot bracket (*1)	**FT**	See P.36
Equipped with load cell (Standard equipment) (*3)	**LCT**	See P.37
Motor side-mounted (left)	**ML**	See P.37
Motor side-mounted (right)	**MR**	See P.37

(*1) Refer to P. 37 for the number of brackets included.
(*2) The foot bracket cannot be chosen when you select the actuator whose stroke is 365mm or less.
(*3) Please make sure to enter "LCT" in the box of Model Specification Items to select the actuator with load cell option.

Actuator Specifications

Item	Description
Drive system	Ball screw ϕ10mm rolled C10
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Load cell rated capacity	600N
Loading repeatability (*4)	±0.5% F.S (*5)
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

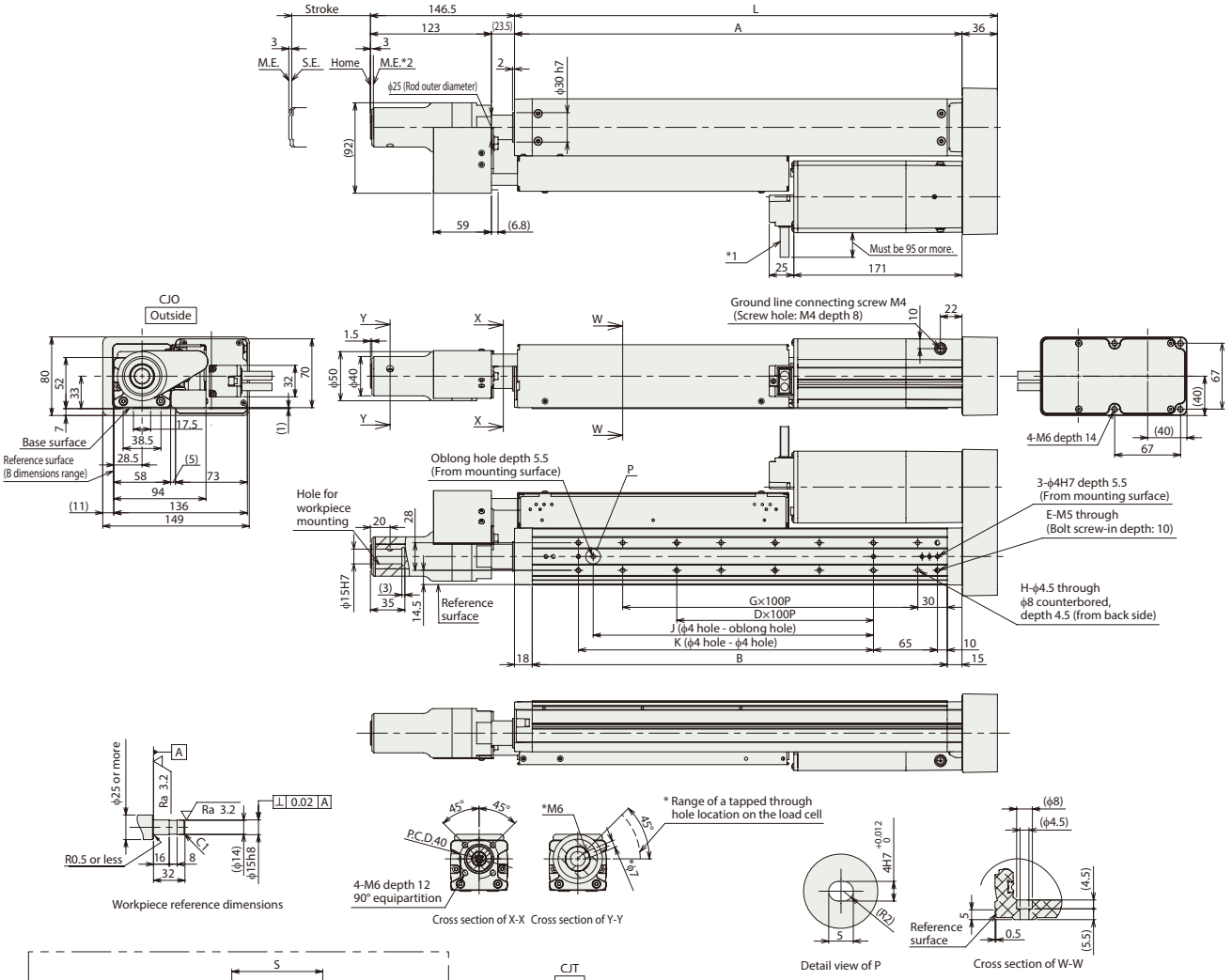
(*4) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity
(*5) F.S.: Full Scale, the maximum measurable value.

Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

2D CAD 3D CAD

*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end
S.E: Stroke end



Dimensions and Mass by Stroke

Stroke		115	165	215	265	315	365	415
L		291	341	391	441	491	541	591
A		255	305	355	405	455	505	555
B		222	272	322	372	422	472	522
D		1	1	2	2	3	3	4
E		6	6	8	8	10	10	12
G		1	2	2	3	3	4	4
H		4	6	6	8	8	10	10
J		85	85	185	185	285	285	385
K		100	100	200	200	300	300	400
S		93	70	49	27	–	–	–
Mass (kg)	Without brake	4.7	4.9	5.2	5.5	5.8	6.1	6.4
	With brake	4.9	5.1	5.4	5.7	6.0	6.3	6.6

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method					Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Press program	Network * Option		
SCON-CB/CGB (For servo press only)		1	Single-phase 100VAC /200VAC	–	–	–	●	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	–	Please contact IAI for more information.

RCS3-RA7R (Servo press specification)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 70* mm | 200V AC Servo Motor

■ Model Specification Items

RCS3 — RA7R — WA — 100 — 2 — ☐ — T2 — ☐ — ☐

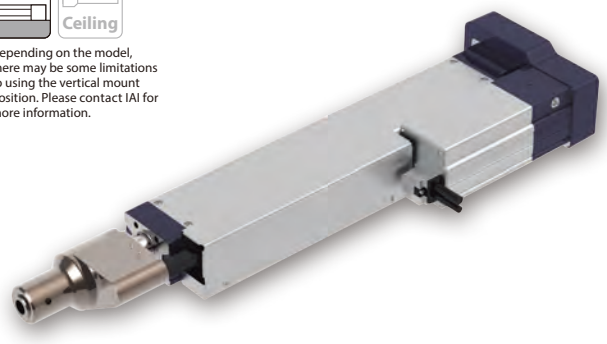
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA7R	WA: Battery-less Absolute	100: Servo motor 100W	2: Lead 2mm	120: 120mm ~ 520: 520mm (Every 50mm)	T2: SCON-CB/CGB (For servo press only)	N : None P : 1m S : 3m M : 5m X☐☐ : Specified length R☐☐ : Robot cable	Refer to Options table below. * Specify cable exit direction (CJT/CJB/CJO). For side-mounted motor type, specify the mount direction (ML/MR).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

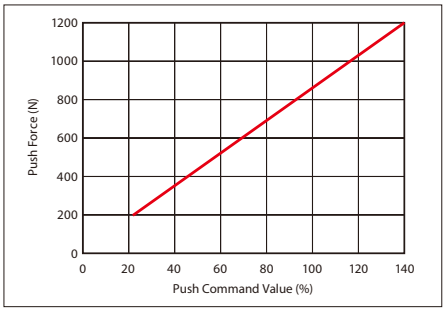
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:

- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 24% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force. (Even if there is no push motion) Please refer to P.27 for more information.

(2) Customer's tooling is to be mounted on the load cell itself. In case any radial or moment load is applied to the load cell, please consider adding the external guides, etc. to offset those side loads.

(3) Please install a support block when front mounting or back mounting a horizontally mounted actuator that is 150st or more. (Refer to page 34 "Notes When Installing")

(4) Servo Press with load cell should not be used for pulling motion. It will damage the load cell.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA7R-WA-100-2-①-T2-②-③	100	2	100	0.3	10	10	849	1200

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 1~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	120~520
2	100

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA7R
120	○
170	○
220	○
270	○
320	○
370	○
420	○
470	○
520	○

② Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)
Robot cable	**R01**(1m) ~**R03**(3m)
	R04(4m) ~**R05**(5m)
	R06(6m) ~**R10**(10m)
	R11(11m)~**R15**(15m)
	R16(16m)~**R20**(20m)

* Please contact IAI for maintenance cables.

③ Options

* Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Bottom)	**CJB**	See P.35
Cable exit direction (Outside)	**CJO**	See P.35
Flange (Front)	**FL**	See P.35
Foot bracket (*1)	**FT**	See P.36
Equipped with load cell (Standard equipment) (*2)	**LCT**	See P.37
Motor side-mounted (left)	**ML**	See P.37
Motor side-mounted (right)	**MR**	See P.37

(*1) Refer to P. 37 for the number of brackets included.
(*2) Please make sure to enter "LCT" in the box of Model Specification Items to select the actuator with load cell option.

Actuator Specifications

Item	Description
Drive system	Ball screw ϕ12mm rolled C10
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Load cell rated capacity	2000N
Loading repeatability (*3)	±0.5% F.S (*4)
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

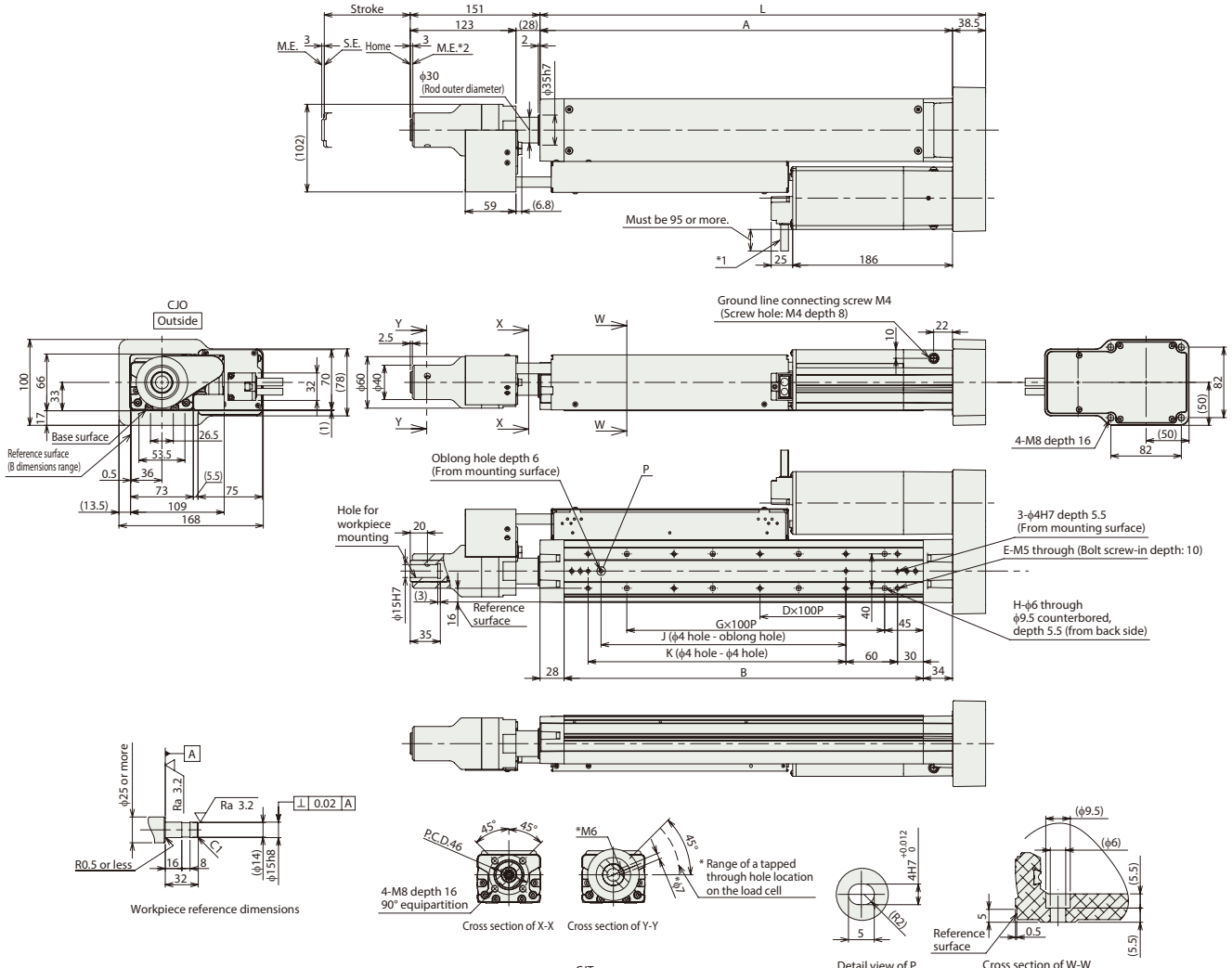
(*3) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity
(*4) F.S.: Full Scale, the maximum measurable value.

Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

2D CAD 3D CAD

*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end
S.E: Stroke end



■ Dimensions and Mass by Stroke

Stroke	120	170	220	270	320	370	420	470	520
L	318.5	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5
A	280	330	380	430	480	530	580	630	680
B	218	268	318	368	418	468	518	568	618
D	1	1	2	2	3	3	4	4	5
E	6	6	8	8	10	10	12	12	14
G	1	2	2	3	3	4	4	5	5
H	4	6	6	8	8	10	10	12	12
J	85	85	185	185	285	285	385	385	485
K	100	100	200	200	300	300	400	400	500
S	83	60	39	17	–	–	–	–	–
Mass (kg) Without brake	6.1	6.5	6.8	7.2	7.5	7.9	8.2	8.6	8.9
Mass (kg) With brake	6.3	6.7	7.0	7.4	7.7	8.1	8.4	8.8	9.1

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method					Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Press program	Network * Option		
SCON-CB/CGB (For servo press only)		1	Single-phase 100VAC /200VAC	–	–	–	●	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	–	Please contact IAI for more information.

RCS3-RA8R (Servo press specification)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 90* mm | 200v AC Servo Motor

■ Model Specification Items

RCS3 — RA8R — WA — 200 — 2.5 — □ — T2 — □ — □

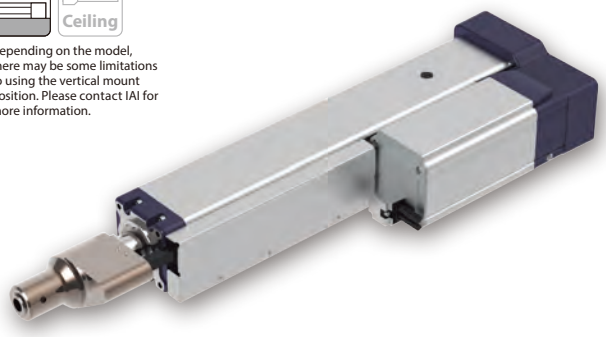
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA8R	WA: Battery-less Absolute	200: Servo motor 200W	2.5: Lead 2.5mm	100: 100mm ~ 500: 500mm (Every 50mm)	T2: SCON-CB/CGB (For servo press only)	N : None P : 1m S : 3m M : 5m X□□ : Specified length R□□ : Robot cable	Refer to Options table below. * Specify cable exit direction (CJT/CJB/CJO). For side-mounted motor type, specify the mount direction (ML/MR).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

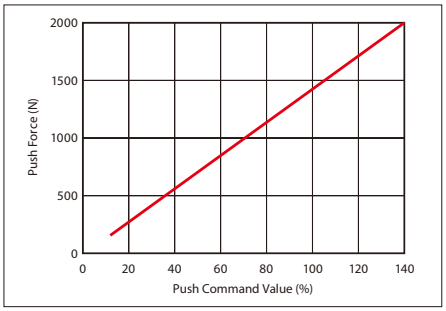
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:

- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 14% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force. (Even if there is no push motion) Please refer to P.27 for more information.

(2) Customer's tooling is to be mounted on the load cell itself. In case any radial or moment load is applied to the load cell, please consider adding the external guides, etc. to offset those side loads.

(3) Please install a support block when front mounting or back mounting a horizontally mounted actuator that is 150st or more. (Refer to page 34 "Notes When Installing")

(4) Servo Press with load cell should not be used for pulling motion. It will damage the load cell.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA8R-WA-200-2.5-①-T2-②-③	200	2.5	125	0.2	10	10	1367	2000

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 1~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	100~500
2.5	125

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA8R
100	○
150	○
200	○
250	○
300	○
350	○
400	○
450	○
500	○

② Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)
Robot cable	**R01**(1m) ~**R03**(3m)
	R04(4m) ~**R05**(5m)
	R06(6m) ~**R10**(10m)
	R11(11m)~**R15**(15m)
	R16(16m)~**R20**(20m)

* Please contact IAI for maintenance cables.

③ Options

* Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Bottom) (*2)	**CJB**	See P.35
Cable exit direction (Outside)	**CJO**	See P.35
Flange (Front)	**FL**	See P.35
Foot bracket (*1)	**FT**	See P.36
Equipped with load cell (Standard equipment) (*3)	**LCT**	See P.37
Motor side-mounted (left)	**ML**	See P.37
Motor side-mounted (right)	**MR**	See P.37

(*1) Refer to P. 37 for the number of brackets included.
(*2) The foot bracket cannot be chosen when you select the actuator whose stroke is 100mm.
(*3) Please make sure to enter "LCT" in the box of Model Specification Items to select the actuator with load cell option.

Actuator Specifications

Item	Description
Drive system	Ball screw ϕ16mm rolled C10
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Load cell rated capacity	2000N
Loading repeatability (*4)	±0.5% F.S (*5)
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

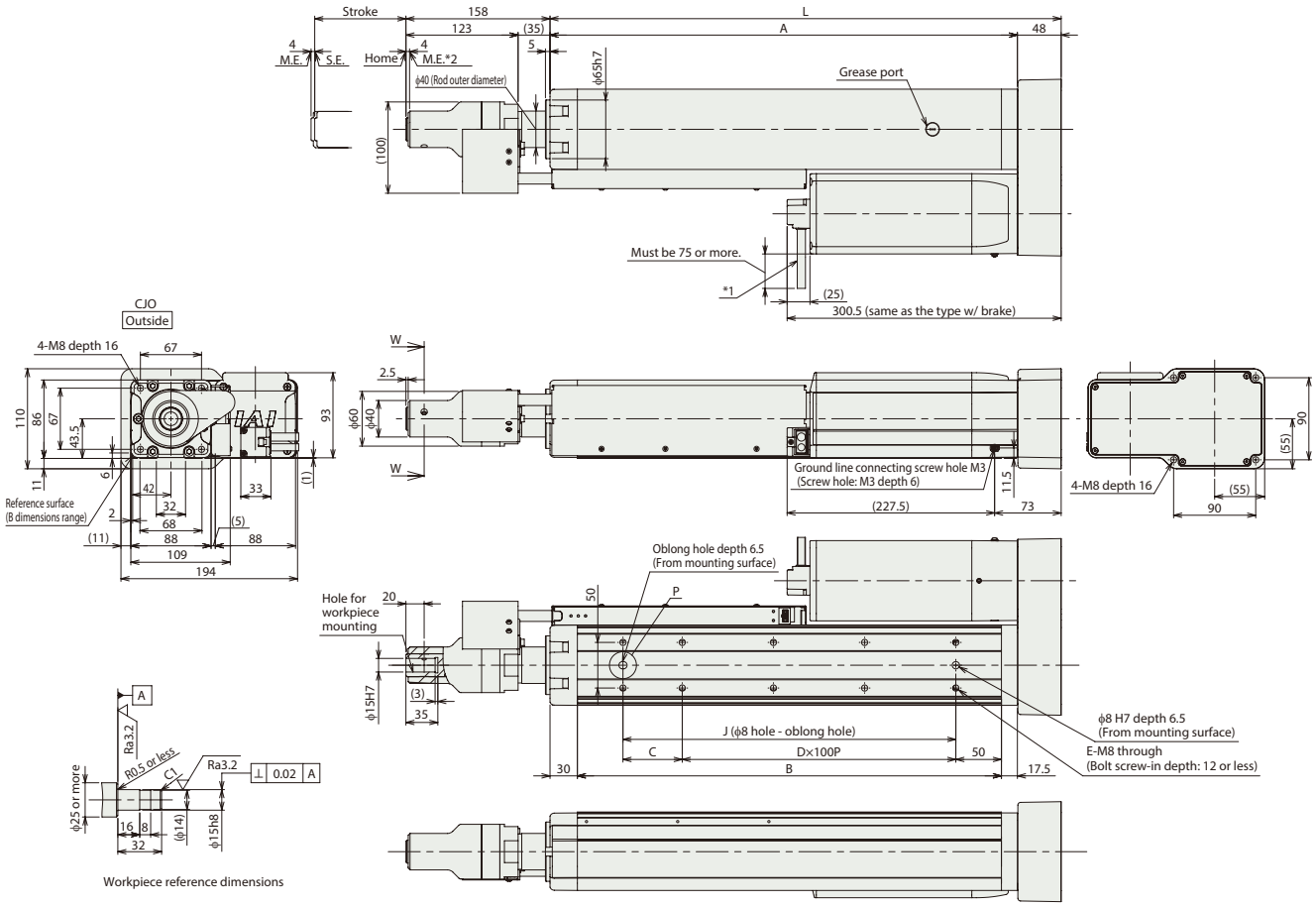
(*4) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity
(*5) F.S.: Full Scale, the maximum measurable value.

Dimensions

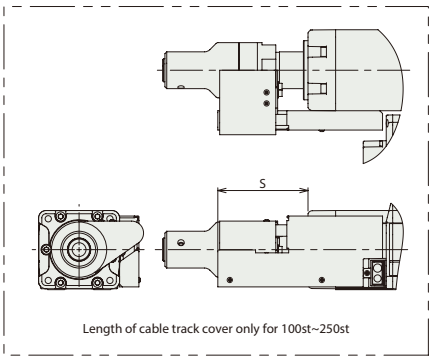
CAD drawings can be downloaded from our website.
www.iai-automation.com

2D CAD 3D CAD

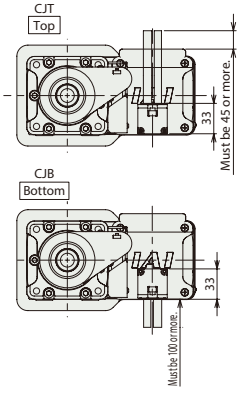
*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end
S.E: Stroke end



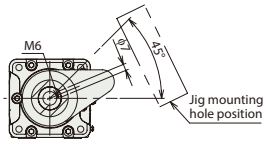
Workpiece reference dimensions



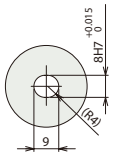
Length of cable track cover only for 100st~250st



Cable exit direction (Option)



Cross section of W-W



Detail view of P

Dimensions and Mass by Stroke

Stroke		100	150	200	250	300	350	400	450	500
L		360.5	410.5	460.5	510.5	560.5	610.5	660.5	710.5	760.5
A		312.5	362.5	412.5	462.5	512.5	562.5	612.5	662.5	712.5
B		265	315	365	415	465	515	565	615	665
C		65	115	65	115	65	115	65	115	65
D		1	1	2	2	3	3	4	4	5
E		6	6	8	8	10	10	12	12	14
J		165	215	265	315	365	415	465	515	565
S		98	63	42	21	–	–	–	–	–
Mass (kg)	Without brake	10.2	10.8	11.3	11.9	12.5	13	13.6	14.1	14.7
	With brake	10.7	11.3	11.8	12.4	13.0	13.5	14.1	14.6	15.2

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method					Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Press program	Network * Option		
SCON-CB/CGB (For servo press only)		1	Single-phase 100VAC /200VAC	–	–	–	●	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	–	Please contact IAI for more information.

RCS3-RA10R

(Servo press specification)

Battery-less absolute | Side-mounted motor | Body width 110 mm | 200V AC servo motor | 400 W

Model Specification ItemsItems

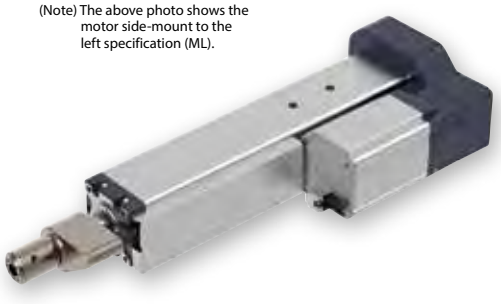
RCS3 – RA10R – WA – 400 – 2.5 – [ ] – T2 – [ ] – [ ]

Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA10R	WA: Battery-less Absolute	400: Servo motor 400W	2.5: 2.5mm	100 ~ 500: 100mm ~ 500mm (Every 50mm)	T2: SCON	N: None P: 1m S: 3m M: 5m X□□: Specified length R□□: Robot cable	Refer to the option table below.

CE RoHS

Horizontal | Vertical | Side | Ceiling

(Note) The above photo shows the motor side-mount to the left specification (ML).



POINT Selection Notes

(1) For push-motion operations, the continuous operation time is determined by the pushing force to be set. Also, make sure that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force. Refer to the "Correlation Diagram between Pushing Force and Current Limit Value."
(2) Customer's tooling is to be mounted on the load cell itself. Install an external guide to avoid radial and moment loads on the load cell.
(3) Use a support stand for front and back mounting of horizontally-mounted product as well as products with 150 stroke or more. (Refer to the "Notes for Installation" on P.1-202)
(4) Cannot be used for operations if tensile load is applied to the load cell.
(5) Precautions are necessary depending on the mounting posture. Refer to P.1-199 for details
(6) Refer to P.1-269 for pushing operations.

Stroke and Max Speed

Lead \ Stroke	100~500
2.5	125

(Unit: mm/s)

Stroke

Stroke (mm)	RCS3-RA10R
100	○
150	○
200	○
250	○
300	○
350	○
400	○
450	○
500	○

Options

* Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
Brake	**B**	5-69
Cable exit direction (top) (Note 1)	**CJT**	5-69
Cable exit direction (bottom) (Notes 1 & 2)	**CJB**	5-69
Cable exit direction (outside) (Note 1)	**CJO**	5-69
Flange (front)	**FL**	5-69
Foot bracket (Notes 2 & 3)	**FT**	5-70
With load cell (equipped standard) (Note 4)	**LCT**	5-71
Motor side-mounted (left) (Note 5)	**ML**	5-71
Motor side-mounted (right) (Note 6)	**MR**	5-71

(Note 1) Make sure to specify one of the codes in the option column of the model specification items.
(Note 2) The foot bracket cannot be chosen for the actuator with 100mm stroke.
(Note 3) Refer to P.5-71 for the quantity of brackets included.
(Note 4) Make sure to specify in the option column of the model specification items.
(Note 5) Make sure to specify either code in the option column of the model specification items.

Cable length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~ **X10**(10m)
	X11(11m) ~ **X15**(15m)
	X16(16m) ~ **X20**(20m)
Robot cable	**R01**(1m) ~ **R03**(3m)
	R04(4m) ~ **R05**(5m)
	R06(6m) ~ **R10**(10m)
	R11(11m) ~ **R15**(15m)
	R16(16m) ~ **R20**(20m)

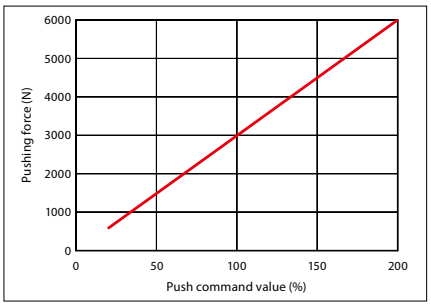
Main specifications

Item		Description	Description
Lead		Ball screw lead (mm)	2.5
Horizontal	Payload	Max. payload (kg)	50
	Acceleration/deceleration	Max. speed (mm/s)	125
		Rated acceleration/deceleration (G)	0.2
		Max. acceleration/deceleration (G)	0.2
Vertical	Payload	Max. payload (kg)	50
	Speed/Acceleration/deceleration	Max. speed (mm/s)	125
		Rated acceleration/deceleration (G)	0.2
		Max. acceleration/deceleration (G)	0.2
Thrust force		Rated thrust force (N)	2713
		Max. pushing force (N)	6000
		Pushing max. speed (mm/s)	10
Brake		Brake specification	non-exciting electromagnetic brake
		Brake holding-force (kgf)	50
Stroke		Min. stroke (mm)	100
		Max. stroke (mm)	500
		Stroke pitch (mm)	50

Item	Description
Driving method	Ball screw φ20mm Rolled C10
Positioning repeatability	±0.01mm
Loading repeatability (Note 6)	±0.5% F.S (Note 7)
Load cell rated capacity	6000N
Lost motion	0.1mm or less
Rod	φ40mm Material: Aluminum, hard alumite treatment
Rod non-rotational precision (Note 8)	±0.1 degrees
Ambient operating temperature and humidity	0-40°C, 85%RH or less (non-condensing)
Degree of protection	IP30
Vibration resistance and shock resistance	4.9m/s²
International standards	CE Marking, RoHS
Motor type	AC servo motor
Encoder type	Battery-less absolute
Number of encoder pulses	16384 pulse/rev

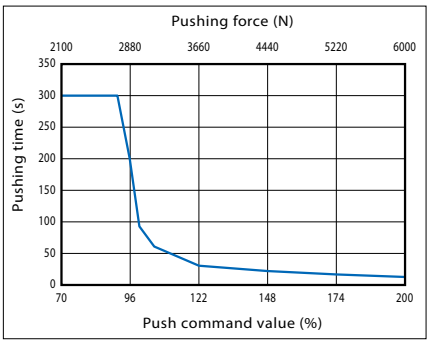
(Note 6) Ratio (in percentage) of the load variations caused by repeated operations to the load cell rated capacity.
(Note 7) FS: Full Scale. the maximum measurable value.
(Note 8) Displacement angle on rod tip (initial guided value) when static allowable torque is applied on the rod tip that is fully retracted into the actuator.

Correlation Diagram of Push Force and Current Limit Value



Caution: The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly. The push command value should be 20% or more because the push force will be unstable when the push command value is low.

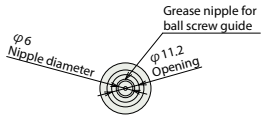
Push command value (%)	Max. push time (s)
70 or less	Continuous pushing possible
71~90	300
95	210
100	95
105	70
110	56
115	46
120	39
125	34
130	30
135	26
140	24
145	21
150	19
155	17
160	16
165	14
170	13
175	12
180	11
185	10
190	9
195	9
200	8



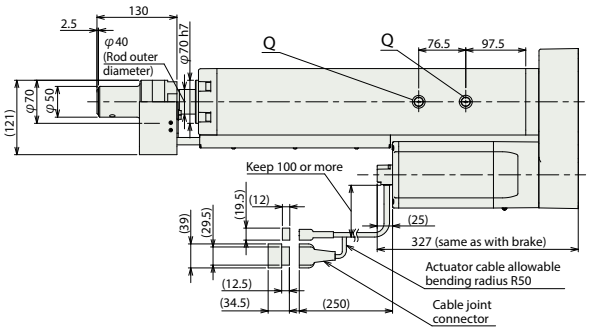
*1 Angle between the jig mounting holes.
(Note) Connect motor-encoder cable to the cable joint connector. Refer to P.1-105 for the details of the cable.
(Note) When the slider is returning to its home position, be careful of interference with surrounding objects, as it will travel until it reaches the ME.
*2 This angle is not controlled (Rod center <-> M5 hole). Contact IAI for details.

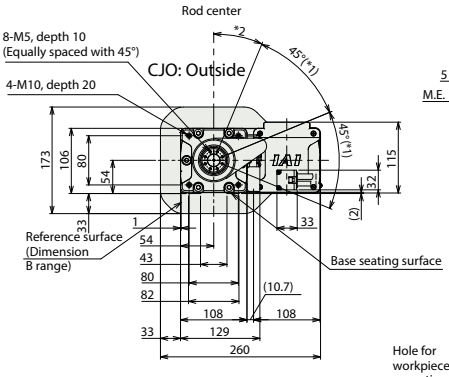
CAD drawings can be downloaded from our website.
www.iai-automation.com

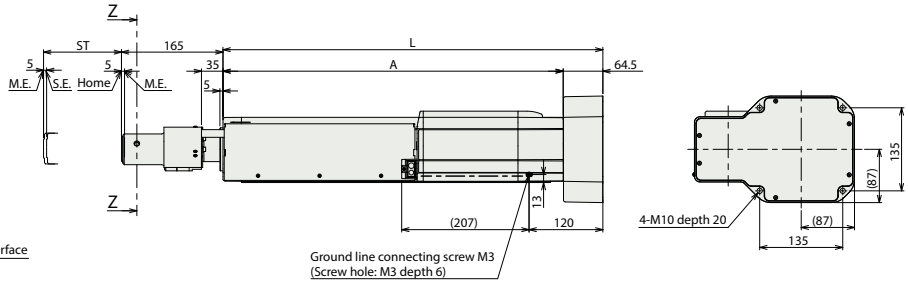
ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end

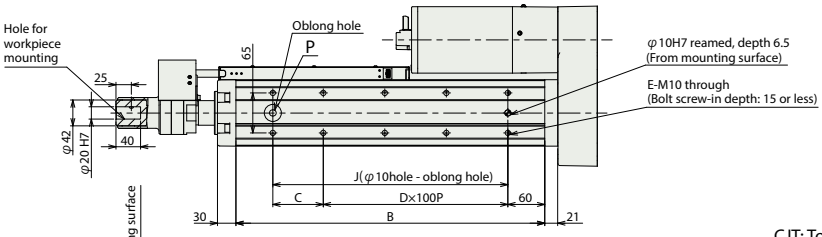


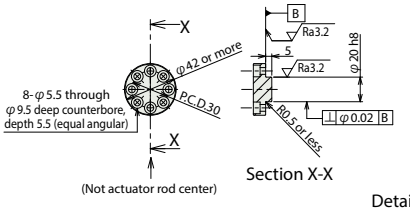
Details of inside Q part
Grease port





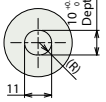


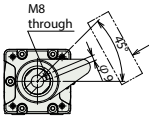




(Not actuator rod center)

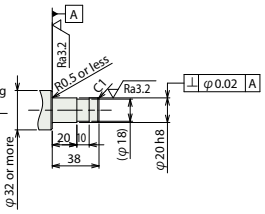
Reference dimension for customer's load cell tip mounting jig (not included with actuator)



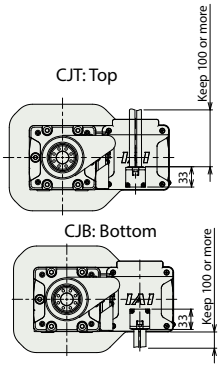


Detail drawing P
Detail of base oblong hole

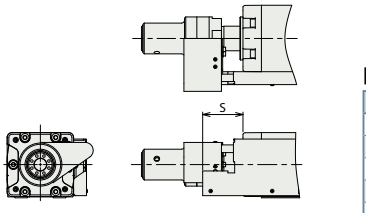
Section Z-Z



Reference dimensions for customer's load cell tip mounting jig (Effective only when the jig weight is 15kg or less)



Cable exit direction (option)



Length of cable track cover only for 100st~200st

Dimensions and Mass by Stroke

Stroke	100	150	200	250	300	350	400	450	500
L	417.5	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5
A	353	403	453	503	553	603	653	703	753
B	302	352	402	452	502	552	602	652	702
C	82	132	82	132	82	132	82	132	82
D	1	1	2	2	3	3	4	4	5
E	6	6	8	8	10	10	12	12	14
J	182	232	282	332	382	432	482	532	582
S	65.5	41.5	11.5	—	—	—	—	—	—

Mass by stroke

Stroke		100	150	200	250	300	350	400	450	500
Mass (kg)	With brake	17.1	17.9	18.7	19.5	20.4	21.2	22.0	22.9	23.7
	Without brake	17.6	18.4	19.2	20.0	20.9	21.7	22.5	23.4	24.2

Applicable Controllers

Actuators shown on this page are operable with the following controllers. Select an optimal type that best suits your application.

Name	External view	Number of max. connectable axes	Power supply voltage	Control method													Number of max. positioning points	Reference page
				Positioner	Pulse train	Program	Network *option											
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM	
SCON-CB/CGB		1	Singlephase 200VAC	●	●	—	●	●	●	●	●	●	●	●	●	●	—	—	512 (768 for the use of network)	7-187
SCON-CB/CGB (for press programs)		1		—	—	● (Press program)	●	●	●	●	●	●	—	●	●	●	—	—	—	7-203

(Note) Refer to P.7-17 for network abbreviations such as DV and CC.
(Note) To connect with the R unit (RCON/RSEL), an additional expandable unit (RCON-EXT) and a SCON are necessary separately. Not connectable for press programs (SCON-CB-F).

RCS2-RA13R

(Servo press specification)

Battery-less absolute | Side-mounted motor | Body width 130 mm | 200V AC servo motor | 750 W

Model Specification ItemsItems

RCS2 – RA13R – WA – 750 – [ ] – [ ] – T2 – [ ] – [ ]

Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
		WA: Battery-less Absolute	750: Servo motor 750W	2.5: 2.5mm 1.25: 1.25mm	100 ~ 200: 50mm ~ 200mm (Every 50mm)	T2: SCON	N: None P: 1m S: 3m M: 5m X□□: Specified length R□□: Robot cable	Refer to the option table below.

Horizontal | Vertical | Side | Ceiling

(Note) The above photo shows the side-mounted to the top with the cable exit direction top specification (MT1).



POINT Selection Notes

(1) For push-motion operations, the continuous operation time is determined by the pushing force to be set. Also for the normal operations, make sure that the continuous operational thrust force considering load and duty is less than the allowable continuous operational thrust force, and that the duty is less than 50%. Refer to the "Correlation Diagram of Push Force and Current Limit Value."
(2) The value of payload is when operating at an acceleration of 0.02G for lead 2.5 and 0.01G for lead 1.25. The value listed above is the upper limit of acceleration.
(3) Customer's tooling is to be mounted on the load cell itself. Install an external guide to avoid radial and moment loads on the load cell. The value of the horizontal payload assumes that there is an external guide and that the rod is not subjected to external force other than in the moving direction.
(4) For the brake option, a brake box (See P.5-60) is required in addition to the main unit and controller.
(5) Cannot be used for operations when tensile load is applied to the load cell.
(6) Precautions are necessary depending on the installation posture.
(7) The horizontal payload in the "main specifications" shows in the case of using an external guide.

Stroke and Max Speed

Lead \ Stroke	50	100	150	200
2.5	85	120	125	
1.25	62			

(Unit: mm/s)

Stroke

Stroke (mm)	1t Type (Lead 2.5)	2t Type (Lead 1.25)
50	○	○
100	○	○
150	○	○
200	○	○

Option

* Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
Brake (with brake box)	**B**	5-69
Brake (without brake box) (Note 1)	**BN**	5-69
Flange (front) (Note 2)	**FL**	5-69
Foot bracket (Notes 3 & 6)	**FT**	5-70
With load cell (with cable track for wiring) (Notes 2 & 4)	**LCT**	5-71
With load cell (without cable track for wiring) (Note 4)	**LCN**	5-71
Motor side-mounted (top) (Note 5)	**MT1/MT2/MT3**	5-72
Motor side-mounted (right) (Notes 5 & 6)	**MR1/MR2**	5-72
Motor side-mounted (left) (Notes 5 & 6)	**ML1/ML3**	5-72

(Note 1) A cable must be purchased separately when the brake (without brake box) "BN" is selected and used as the second axis of the brake box. Refer to P.7-206 for details.
(Note 2) The load cell option (with cable track for wiring) "LCT" and the flange option "FL" cannot be selected at the same time.
(Note 3) Refer to P.5-71 for the quantity of brackets included.
(Note 4) Make sure to specify either code in the option column of the model specification items.
(Note 5) Make sure to specify either code in the option column of the model specification items.
(Note 6) FT cannot be selected together with MR1/MR2/ML1/ML3.

Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~ **X10**(10m)
	X11(11m) ~ **X15**(15m)
	X16(16m) ~ **X20**(20m)
Robot cable	**R01**(1m) ~ **R03**(3m)
	R04(4m) ~ **R05**(5m)
	R06(6m) ~ **R10**(10m)
	R11(11m) ~ **R15**(15m)
	R16(16m) ~ **R20**(20m)

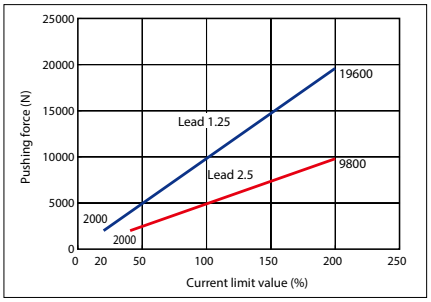
Main specifications

Item			Description	
Lead		Ball screw lead (mm)	2.5	1.25
Horizontal	Payload	Max. payload (kg)	100	200
	Acceleration/deceleration	Max. speed (mm/s)	125	62
		Rated acceleration/deceleration (G)	0.02	0.01
		Max. acceleration/deceleration (G)	0.02	0.01
Vertical	Payload	Max. payload (kg)	100	200
	Speed/Acceleration/deceleration	Max. speed (mm/s)	125	62
		Rated acceleration/deceleration (G)	0.02	0.01
		Max. acceleration/deceleration (G)	0.02	0.01
Thrust force		Rated thrust force (N)	5106	10211
		Max. pushing force (N)	9800	19600
		Pushing max. speed (mm/s)	10	10
Brake		Brake specification	Non-exciting electromagnetic brake	
		Brake holding-force (kgf)	100	200
Stroke		Min. stroke (mm)	50	50
		Max. stroke (mm)	200	200
		Stroke pitch (mm)	50	50

Item	Description
Driving method	Ball screw φ32mm, Rolled C10
Positioning repeatability	±0.01mm
Loading repeatability (Note 7)	±0.5% F.S (Note 8)
Load cell rated capacity	20000N
Lost motion	0.2mm or less
Rod	φ50mm ball spline
Rod non-rotational precision (Note 9)	±0.1 degrees
Ambient operating temperature and humidity	0-40°C, 85%RH or less (non-condensing)
Degree of protection	IP30
Vibration resistance and shock resistance	4.9m/s^2
International standards	CE marking, RoHS
Motor type	AC servo motor
Encoder type	Battery-less absolute
Number of encoder pulses	16384 pulse/rev

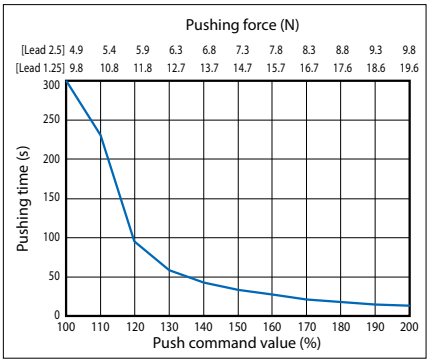
(Note 7) Ratio (in percentage) of the load variations caused by repeated operations to the load cell rated capacity.
(Note 8) FS: Full Scale. the maximum measurable value.
(Note 9) Displacement angle on rod tip (initial guided value) when static allowable torque is applied on the rod tip that is fully retracted into the actuator.

Correlation Diagram of Push Force and Current Limit Value



(Note) The pushing force is a guide value. Allow some deviations from the actual value. There could be some dispersions in pushing force when the current limit value is low. Use 20% or higher for lead 1.25 and 41% or higher for 2.5 lead.

Push command value (%)	Max. push time (s)
70 or less	Continuous pushing possible
71~100	300
110	230
120	95
130	58
140	43
150	33
160	27
170	21
180	18
190	15
200	13

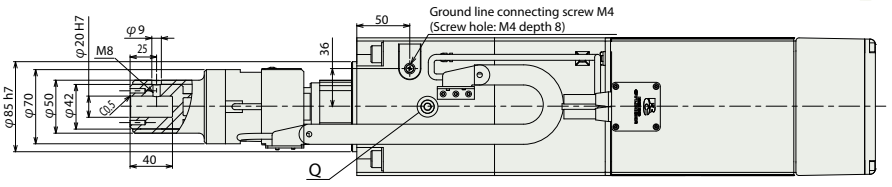


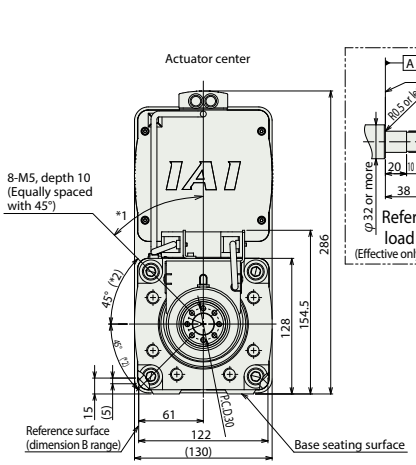
Without Brake

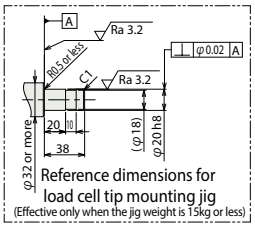
*1 This angle is not controlled (Rod center <-> M5 hole). Contact IAI for details.
*2 Angle between the jig mounting holes.
(Note) A motor-encoder cable is connected to the cable joint connector. Refer to P.1-105 for the details of the cable.
(Note) When the slider is returning to its home position, be careful of interference with surrounding objects, as it will travel until it reaches the ME.
(Note) The orientation of width across flats varies depending on the product.
(Note) The brake box is always included for the with-brake specification (option code -B). When only an actuator with brake specification is needed, select the option code -BN.
(Note) The brake box needs power supply of DC24V (max. 1A).

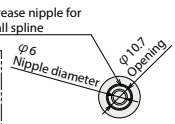
ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end

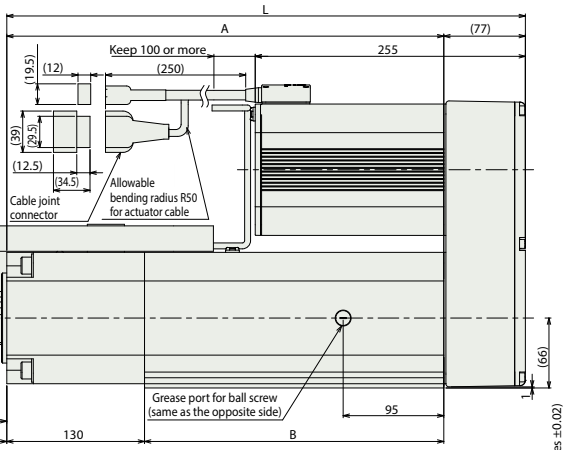
CAD drawings can be downloaded from our website.
www.iai-automation.com
2D CAD 3D CAD

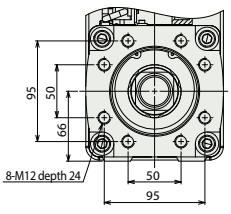




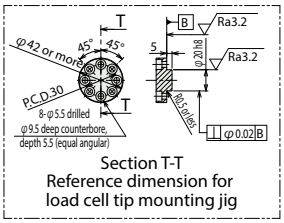


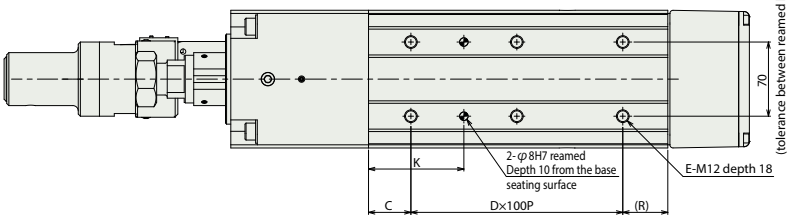




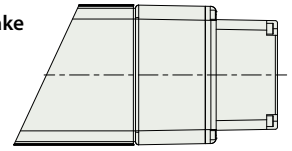


Section Z-Z

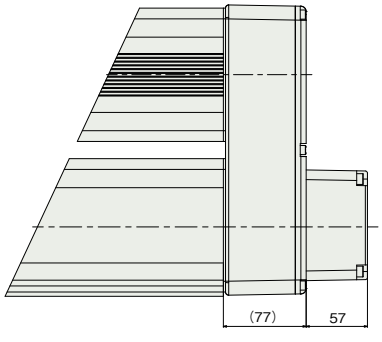


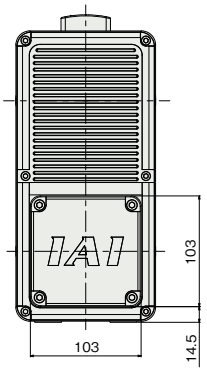


With Brake



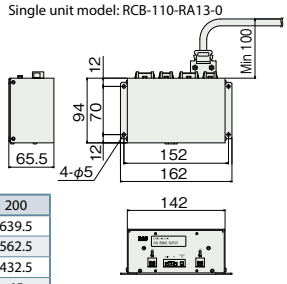
(Note) The brake box is always included for the with-brake specification (option code -B). When only an actuator with brake specification is needed, select the option code -BN.
(Note) The brake box needs power supply of DC24V (max. 1A).





Brake box (included)

Single unit model: RCB-110-RA13-0



Dimensions by stroke

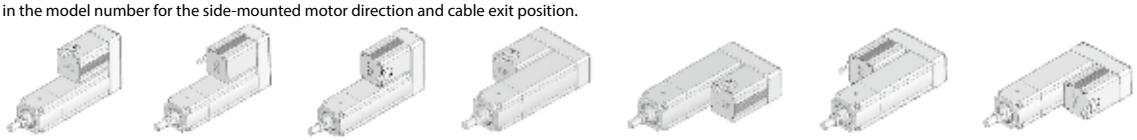
Stroke	50	100	150	200
L	489.5	539.5	589.5	639.5
A	412.5	462.5	512.5	562.5
B	282.5	332.5	382.5	432.5
C	40	65	40	65
D	2	2	3	3
E	6	6	8	8
K	90	115	90	115
R	42.5	67.5	42.5	67.5

Mass by stroke

	Stroke	50	100	150	200
Mass (kg)	With brake	38.5	39.5	40.5	41.5
	Without brake	40.5	41.5	42.5	43.5

Motor side-mounted direction/Cable exit direction (option)

Be sure to select a symbol in the model number for the side-mounted motor direction and cable exit position.



Option Code	MT1	MT2	MT3	MR1	ML1	MR2	ML3
Side-mounted motor direction	Top (standard)	Top	Top	Right side	Left side	Right side	Left side
Cable exit position	Top (standard)	Right side	Left side	Top	Top	Right side	Left side

Applicable Controllers

Actuators shown on this page are operable with the following controllers. Select an optimal type that best suits your application.

Name	External view	Max. number of positioning points	Power supply voltage	Control method													Max. number of positioning points	Reference page
				Positioner	Pulse train	Program	Network *option											
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM	
SCON-CB/CGB		1	Single phase 200VAC	●	●	–	●	●	●	●	●	●	●	●	●	●	–	–	512 (768 for the use of network)	Please contact IAI for more information.
SCON-CB/CGB (for press programs)		1		–	–	● (Press program)	●	●	●	●	●	●	–	●	●	●	–	–	–	

(Note) To connect with the R unit (RCON/RSEL), an additional expandable unit (RCON-EXT) and a SCON are necessary separately. Not connectable for press programs (SCON-CB-F).

RCS3-RA15R (Servo press specification)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 150* mm | 200V AC Servo Motor

Model Specification Items

RCS3 — RA15R — WA — 3300 — 3.6 — □ — T3 — □ — □

Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA15R	WA: Battery-less Absolute	3300: Servo motor 3300W	3.6: Lead 3.6mm	100: 100mm ~ 500: 500mm (Every 100mm)	T3: SCON-CGB (For servo press only)	N : None P : 1m S : 3m M : 5m X□□ : Specified length	Refer to Options table below. * Make sure to specify MT (Side-mounted motor on top).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

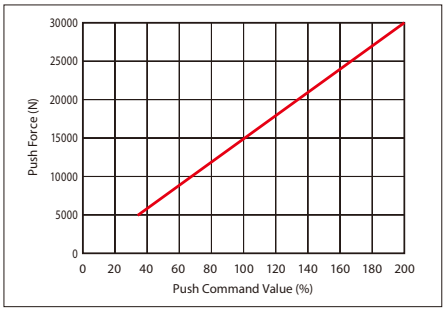
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



Correlation Diagram of Push Force and Current Limit Value



Caution:

- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 34% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force. (Even if there is no push motion) Please refer to P.28 for more information.

(2) Customer's tooling is to be mounted on the load cell itself. In case any radial or moment load is applied to the load cell, please consider adding the external guides, etc. to offset those side loads.

(3) Please install a support block when front mounting a horizontally mounted actuator. (Refer to page 34 "Notes When Installing")

(4) Servo Press with load cell should not be used for pulling motion. It will damage the load cell.

(5) The maximum payload for vertical mounting is 220kg when using the M5 tapped mounting hole at the tip of the load cell. When using the M8 tapped mounting hole on the side of the load cell tip and fixing with a setscrew, the payload should be 15 kg or less. Use either the M8 or M5 tapped mounting hole but not both.

Actuator Specifications

Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA15R-WA-3300-3.6-①-T3-②-③	3300	3.6	240	0.1	15	220	15577	30000

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 1~10mm/s speed range.

Stroke and Max Speed

Lead (mm) \ Stroke (mm)	100~500
3.6	240

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA15R
100	○
200	○
300	○
400	○
500	○

② Cable Length

Type	Cable Code
Standard (Robot cable)	**P**(1m)
	S(3m)
	M(5m)
Specified length (Robot cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)

* Please refer to P.49 for maintenance cables.
* Robot cable specification is standard.

③ Options

* Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Right)	**CJR**	See P.35
Cable exit direction (Left)	**CJL**	See P.35
Equipped with load cell (Standard equipment) (*1)	**LCT**	See P.37
Side-mounted motor direction (Top)	**MT**	See P.37

(*1) Please make sure to enter "LCT" in the box of Model Specification Items to select the actuator with load cell option.

Actuator Specifications

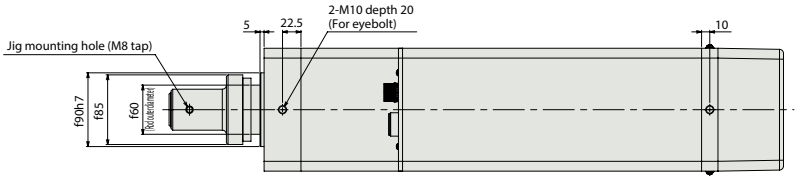
Item	Description
Drive system	Ball screw ϕ36mm ground
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Load cell rated capacity	50000N
Loading repeatability (*2)	±0.5% F.S (*3)
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

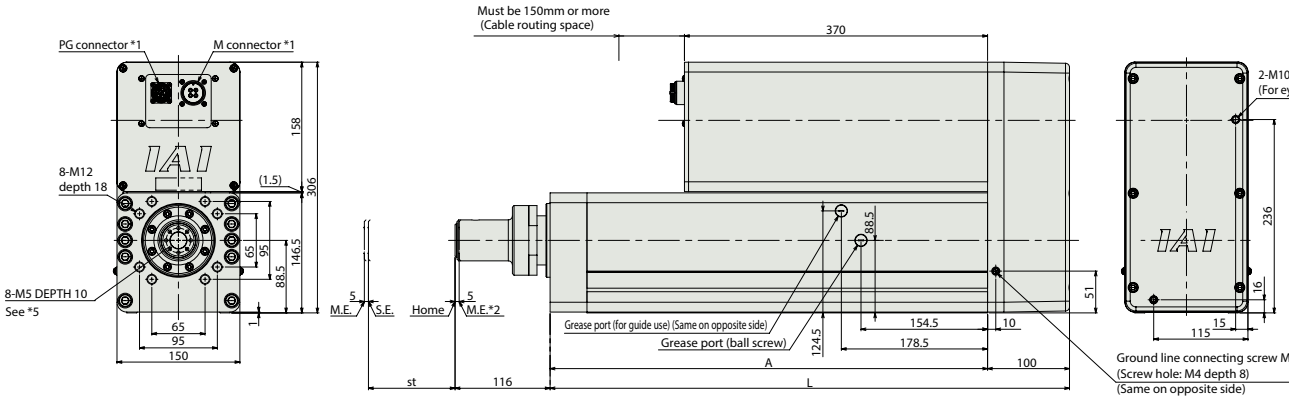
(*2) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity
(*3) F.S.: Full Scale, the maximum measurable value.

Dimensions

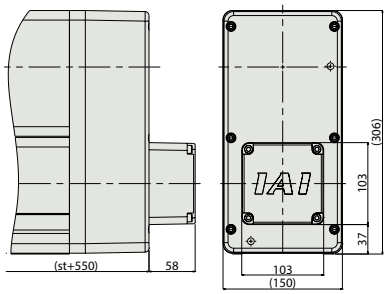
CAD drawings can be downloaded from our website.
www.iai-automation.com

*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end
S.E: Stroke end

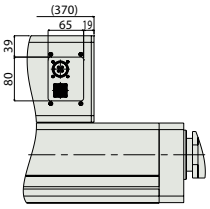




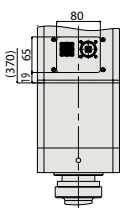
■ Dimensions with Brake



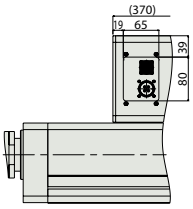
Cable exit direction: Right (CJR)



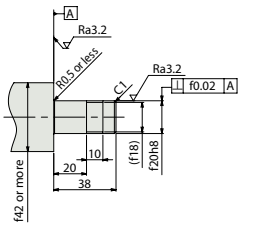
Cable exit direction: Top (CJT)



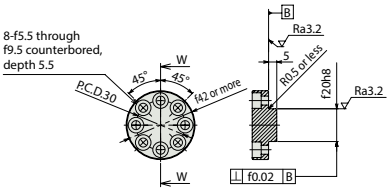
Cable exit direction: Left (CJL)



■ Dimensions of Load Cell Unit

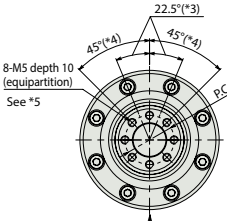


Load cell tip mounting jig reference size
(Effective only when the jig weight is 15kg or less)



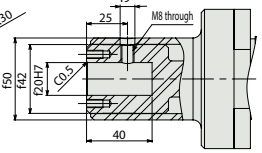
Cross section of W-W

Load cell tip mounting jig reference size



Load cell unit center line
(not actuator center line)

*3 Jig mounting hole range (M8 tap)
*4 Angle from jig mounting hole



Load cell tip mounting size

*5 This load cell unit center line and servo press (actuator) center line are not controlled to be aligned.
Each servo press unit has different angle between servo press center line and this load cell unit center line.
Load cell mounting holes orientation cannot be guaranteed.
Contact IAI for detail.

■ Dimensions and Mass by Stroke

Stroke		100	200	300	400	500
L		534	634	734	834	934
A		434	534	634	734	834
Mass (kg)	Without brake	61	64.9	68.7	72.6	76.5
	With brake	63	66.9	70.7	74.6	78.5

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method					Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Press program	Network * Option		
SCON-CGB (For servo press only)		1	Three-phase 200VAC	–	–	–	●	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, POWERLINK	–	Please contact IAI for more information.

RCS3-RA20R (Servo press specification)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 200* mm | 200V AC Servo Motor

■ Model Specification Items

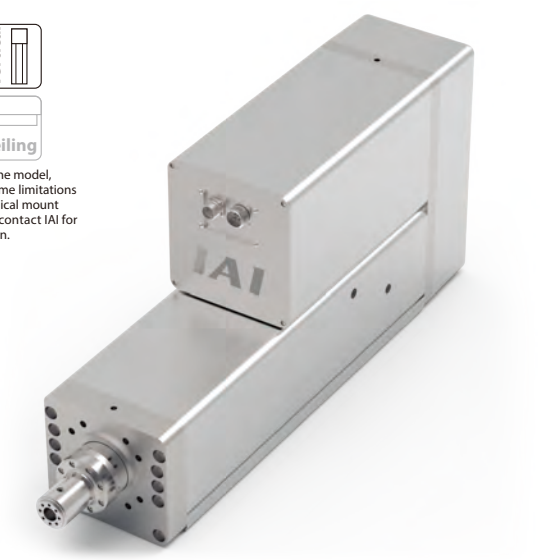
RCS3	RA20R	WA	3000	4	□	T3	□	□
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
		WA: Battery-less Absolute	3000: Servo motor 3000W	4: Lead 4mm	100: 100mm ~ 500: 500mm (Every 100mm)	T3: SCON-CGB (For servo press only)	N : None P : 1m S : 3m M : 5m X□□ : Specified length	Refer to Options table below. * Make sure to specify MT (Side-mounted motor on top).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

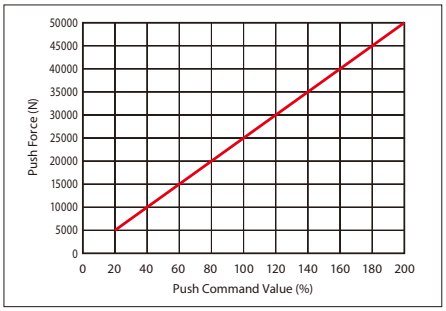
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 20% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force. (Even if there is no push motion) Please refer to P.28 for more information.

(2) Customer's tooling is to be mounted on the load cell itself. In case any radial or moment load is applied to the load cell, please consider adding the external guides, etc. to offset those side loads.

(3) Please install a support block when front mounting a horizontally mounted actuator. (Refer to page 34 "Notes When Installing")

(4) Servo Press with load cell should not be used for pulling motion. It will damage the load cell.

(5) The maximum payload for vertical mounting is 220kg when using the M5 tapped mounting hole at the tip of the load cell. When using the M8 tapped mounting hole on the side of the load cell tip and fixing with a setscrew, the payload should be 15 kg or less. Use either the M8 or M5 tapped mounting hole but not both.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA20R-WA-3000-4-①-T3-②-③	3000	4	220	0.1	15	220	25902	50000

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 1~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	100~500
4	220

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA20R
100	○
200	○
300	○
400	○
500	○

② Cable Length

Type	Cable Code
Standard (Robot cable)	**P**(1m)
	S(3m)
	M(5m)
Specified length (Robot cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)

* Please refer to P.49 for maintenance cables.
* Robot cable specification is standard.

③ Options * Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Right)	**CJR**	See P.35
Cable exit direction (Left)	**CJL**	See P.35
Equipped with load cell (Standard equipment) (*1)	**LCT**	See P.37
Side-mounted motor direction (Top)	**MT**	See P.37

(*1) Please make sure to enter "LCT" in the box of Model Specification Items to select the actuator with load cell option.

Actuator Specifications

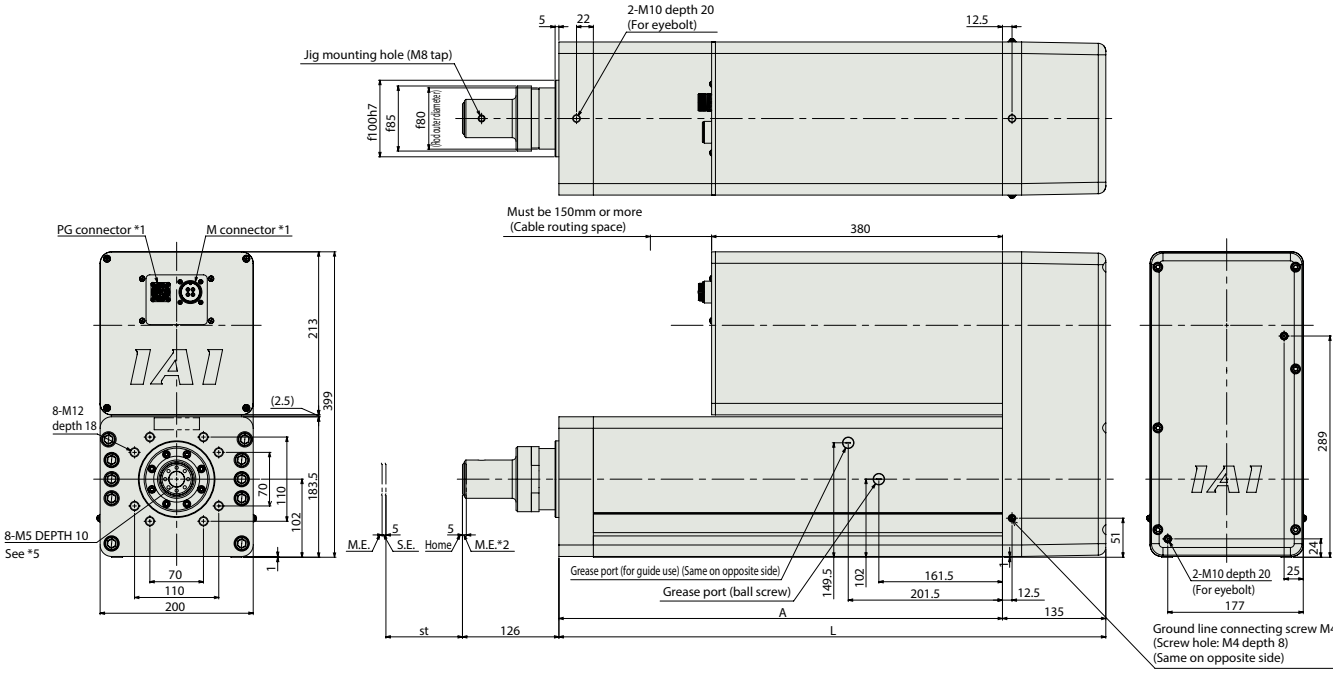
Item	Description
Drive system	Ball screw ϕ40mm ground
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Load cell rated capacity	50000N
Loading repeatability (*2)	±0.5% F.S (*3)
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

(*2) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity
(*3) F.S.: Full Scale, the maximum measurable value.

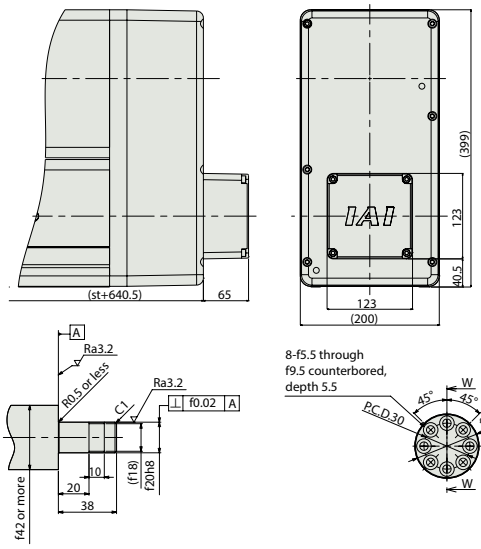
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

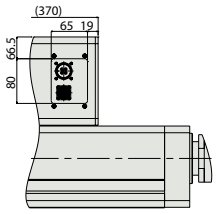
*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end
S.E: Stroke end



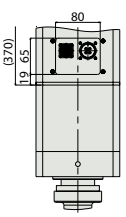
■ Dimensions with Brake



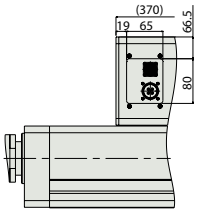
Cable exit direction: Right (CJR)



Cable exit direction: Top (CJT)



Cable exit direction: Left (CJL)

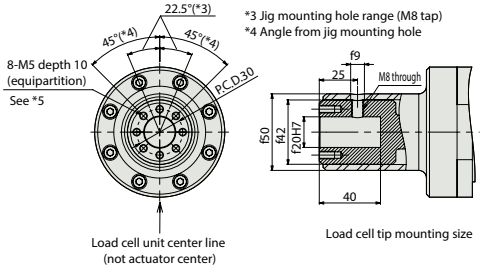


Load cell tip mounting jig reference size
(Effective only when the jig weight is 15kg or less)

Load cell tip mounting jig reference size

Cross section of W-W

■ Dimensions of Load Cell Unit



Load cell unit center line
(not actuator center)

Load cell tip mounting size

*5 This load cell unit center line and servo press (actuator) center line are not controlled to be aligned. Each servo press unit has different angle between servo press center line and this load cell unit center line.
Load cell mounting holes orientation cannot be guaranteed.
Contact IAI for detail.

■ Dimensions and Mass by Stroke

Stroke		100	200	300	400	500
L		614.5	714.5	814.5	914.5	1014.5
A		479.5	579.5	679.5	779.5	879.5
Mass (kg)	Without brake	93.3	99.6	105.8	112.1	118.4
	With brake	96.3	102.6	108.8	115.1	121.4

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method					Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Press program	Network * Option		
SCON-CGB (For servo press only)		1	Three-phase 200VAC	–	–	–	●	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	–	Please contact IAI for more information.

RCS2-RA13R High-Payload Rod Type (Position Type without Load Cell)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 130* mm | 200V AC Servo Motor

Model Specification Items

RCS2 — RA13R — WA — 750 — ☐ — ☐ — ☐ — T2 — ☐ - ☐

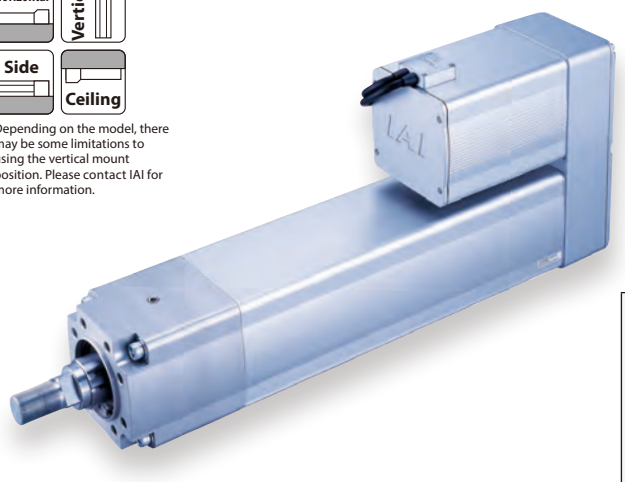
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS2	RA13R	WA: Battery-less Absolute	750: Servo motor 750W	2.5:2.5mm 1.25:1.25mm	50: 50mm ｚ 200: 200mm (Every 50mm)	T2:SCON SSEL XSEL-P/Q XSEL-RA/SA	N : None P : 1m S : 3m M : 5m X☐☐ : Specified length R☐☐ : Robot cable	Refer to Options table below. * One of motor mount direction type needs to be selected from MT1/MT2/MT3/MR1/MR2/ML1/ML3.

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

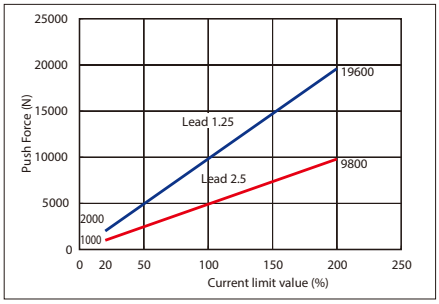
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and current limit value is strictly for reference purposes. Actual numbers may vary slightly.
- The current limit value should be 20% or more because the push force will be unstable when the current limit value is low.
- The travel speed during push-motion operation is fixed at 10mm/s.
  Please note that the graph shows push-motion at 10mm/s, and the push force will decrease as the speed changes.
- Depending on the operating conditions, the push force may decrease due to the temperature rise of the motor

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force and that the duty cycle is 50% or less. Please refer to the Selection Guidelines (P.28) for more information.
(2) The value of payload is when operating at an acceleration of 0.02G for lead 2.5 and 0.01G for lead 1.25. The value listed above is the upper limit of acceleration.
(3) Estimated allowable duty varies depending on operating conditions (payload, acceleration/deceleration, etc.). Please refer to P. 31 for more information.
(4) The value of the horizontal payload assumes that there is an external guide and that the rod is not subjected to external force other than in the moving direction.
(5) Loads can be applied to the rod tip. Please refer to P.33 for more information.
(6) For the brake option, a brake box (see P.22) is required in addition to the main unit and controller.

Actuator Specifications

Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)	Stroke (mm)
RCS2-RA13R-WA-750-2.5-①-T2-②-③	750	2.5	0.02	400	200	5106	9800	50~200 (Every 50mm)
RCS2-RA13R-WA-750-1.25-①-T2-②-③		1.25	0.01	500	300	10211	19600	

Legend: ① Stroke ② Cable Length ③ Option

* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 5~10mm/s speed range.

Stroke and Max Speed

Lead (mm) \ Stroke (mm)	50	100	150	200
2.5	85	120	125	
1.25	62			

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS2-RA13R 1t Type (Lead 2.5)	RCS2-RA13R 2t Type (Lead 1.25)
50	○	○
100	○	○
150	○	○
200	○	○

② Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)
Robot cable	**R01**(1m) ~**R03**(3m)
	R04(4m) ~**R05**(5m)
	R06(6m) ~**R10**(10m)
	R11(11m)~**R15**(15m)
	R16(16m)~**R20**(20m)

* Please contact IAI for maintenance cables.

③ Options * Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake (With brake box)	**B**	See P.35
Brake (Without brake box)	**BN** (*1)	See P.35
Flange	**FL**	See P.36
Foot Bracket	**FT** (*2)	See P.37
Motor top side-mounted	**MT1/MT2/MT3**	See P.38
Motor right side-mounted	**MR1/MR2** (*2)	See P.38
Motor left side-mounted	**ML1/ML3** (*2)	See P.38

(*1) Option: When selecting the brake (without brake box) "BN" and using it as the second axis of the brake box, a cable must be separately purchased.
Please refer to P.42 for more information.
(*2) Option: MR1/MR2/ML1/ML3 and FT cannot be selected together.

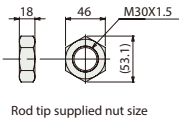
Actuator Specifications

Item	Description
Drive system	Ball screw ϕ32mm rolled C10
Positioning repeatability	±0.01mm
Backlash	0.2mm or less
Rod diameter	ϕ50mm (ball spline)
Allowable moment load to rod	120N·m Please see P.33
Ambient operating temp. & humidity	0~40°C, 85% RH or less (non-condensing)

Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

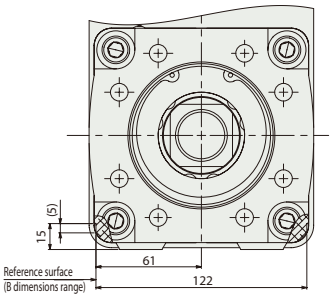
*1. Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2. While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end S.E.: Stroke end
*3. The direction of width across flats varies depending on the product. Those flats cannot be used for vertical or horizontal reference plane.



Rod tip supplied nut size

Notes

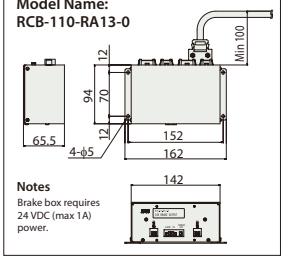
The specification with brake (option model name "-B") always comes with a brake box.
To purchase only the actuator body with brake, select the option model name "-BN".



Brake box (accessory)

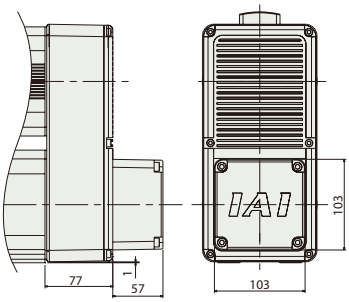
(Accessories for brake equipped specification)

Model Name:
RCB-110-RA13-0



Notes
Brake box requires 24 VDC (max 1A) power.

■ Dimensions with Brake



■ Dimensions and Mass by Stroke

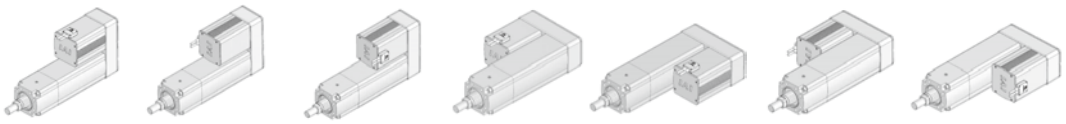
RCS2-RA13R
*** The brake option has a 57mm longer total length and 2kg heavier weight.**

Stroke	50	100	150	200
L	489.5	539.5	589.5	639.5
A	412.5	462.5	512.5	562.5
B	282.5	332.5	382.5	432.5
C	40	65	40	65
D	2	2	3	3
E	6	6	8	8
T	90	115	90	115
U	42.5	67.5	42.5	67.5
Mass (kg)	33	34	35	36

Side-mounted motor direction / Cable exit position (Option)

Notes

Be sure to select a symbol in the model number for the side-mounted motor direction and cable exit position.



Option Code	MT1	MT2	MT3	MR1	ML1	MR2	ML3
Side-mounted motor direction	Top (standard)	Top	Top	Right side	Left side	Right side	Left side
Cable exit position	Top (standard)	Right side	Left side	Top	Top	Right side	Left side

Applicable Controllers

The RCS2 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Network * Option		
SCON-CB/CGB		1	Single-phase 200VAC	●	●	–	DeviceNet, CC-Link, PROFIBUS, CompoNet, MECHATROLINK, EtherCAT, EtherNet/IP, PROFINET	512 (768 for network spec.)	Please contact IAI for more information.
SCON-LC/LCG		1		–	–	●		512 (768 for network spec.)	
SSEL-CS		2		●	–	●		20000	
XSEL-P/Q/RA/SA		8	Three-phase 200VAC	–	–	●	Note: The type of compatible networks will vary depending on the controller. Please refer to the reference page for more information.	55,000 (Depending on the type)	

RCS3-RA15R High-Payload Rod Type (Position Type without Load Cell)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 150* mm | 200V AC Servo Motor

■ Model Specification Items

RCS3 — RA15R — WA — 3300 — 7.2 — ☐ — T3 — ☐ — ☐

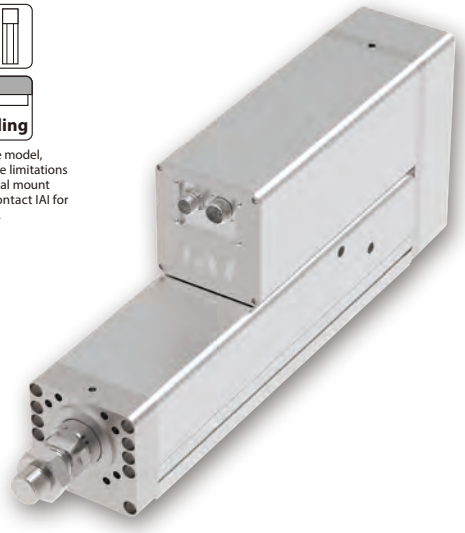
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA15R	WA: Battery-less Absolute	3300: Servo motor 3300W	7.2: Lead 7.2mm	100: 100mm ~ 500: 500mm (Every 100mm)	T3:SCON-CGB	N : None P : 1m S : 3m M : 5m X☐☐ : Specified length	Refer to Options table below. * Make sure to add MT (Side-mounted motor direction on top)

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

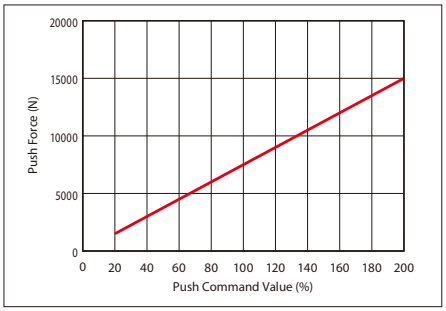
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 20% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, the estimated allowable duty varies depending on operating conditions (payload and speed). Please refer to P.31 for more information.

(2) Please install a support block when front mounting a horizontally mounted actuator.
(Refer to page 34 "Notes When Installing")

(3) Loads can be applied to the rod tip. Please refer to P.33 for more information.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA15R-WA-3300-7.2-①-T3-②-③	3300	7.2	400	0.2	700	400	7789	15000

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 5~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	100~500
7.2	400

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA15R
100	○
200	○
300	○
400	○
500	○

② Cable Length

Type	Cable Code
Standard type (Robot cable)	**P**(1m)
	S(3m)
	M(5m)
Specified length (Robot cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)

* Please refer to P.49 for maintenance cables.
* Robot cable specification is standard.

③ Options * Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Right)	**CJR**	See P.35
Cable exit direction (Left)	**CJL**	See P.35
Side-mounted motor direction (Top)	**MT**	See P.37

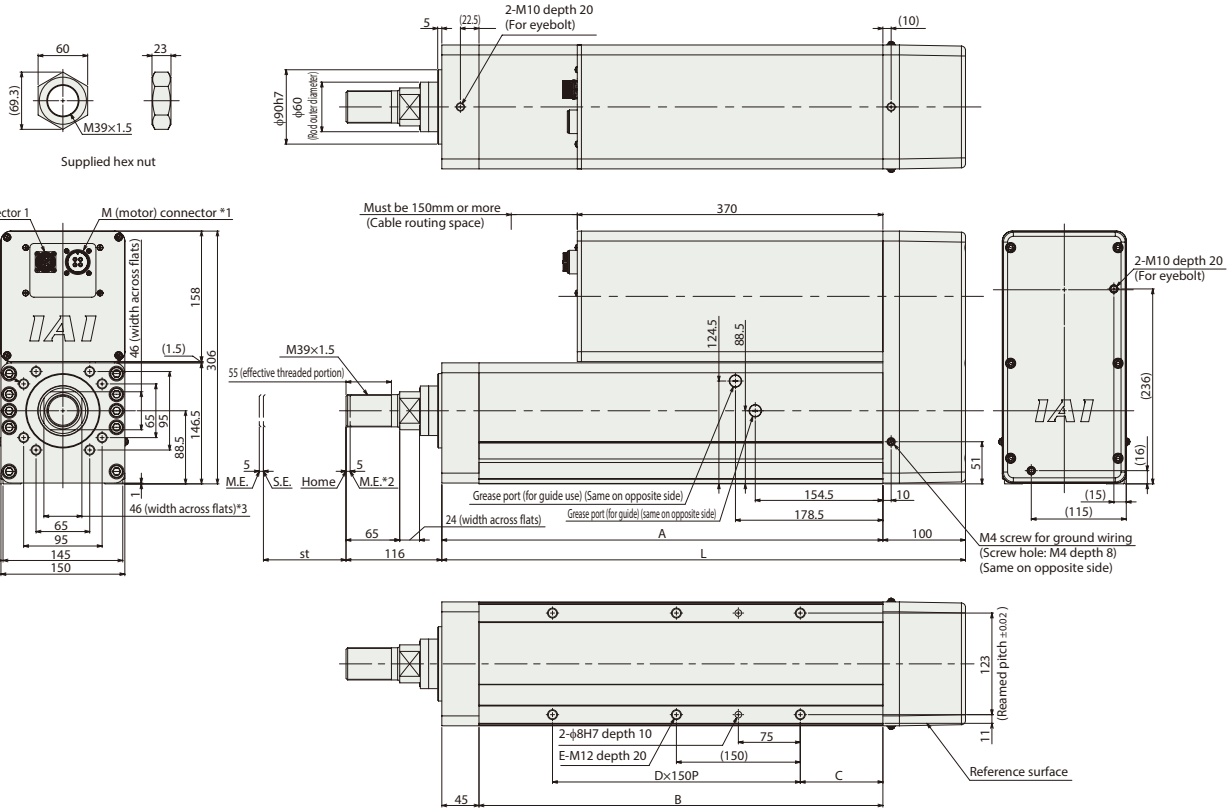
Actuator Specifications

Item	Description
Drive system	Ball screw ϕ36mm ground
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Allowable moment load to rod	Please see P. 33
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

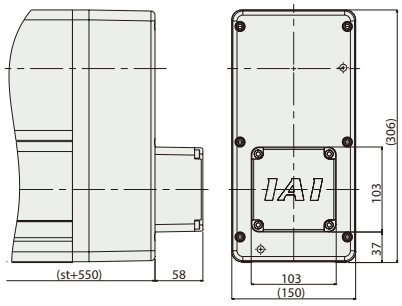
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

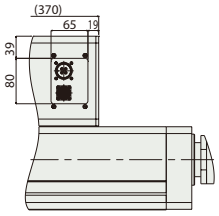
*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end S.E.: Stroke end
*3 The direction of width across flats varies depending on the product. Those flats cannot be used for vertical or horizontal reference plane.



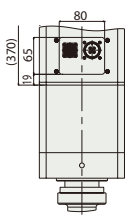
■ Dimensions with Brake



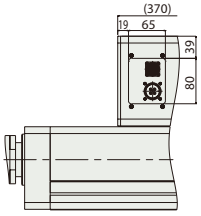
Cable exit direction: Right (CJR)



Cable exit direction: Top (CJT)



Cable exit direction: Left (CJL)



■ Dimensions and Mass by Stroke

Stroke		100	200	300	400	500
L		534	634	734	834	934
A		434	534	634	734	834
B		389	489	589	689	789
C		50	100	70	50	100
D		2	2	3	4	4
E		6	6	8	10	10
Mass (kg)	Without brake	60	63.9	67.7	71.6	75.5
	With brake	62	65.9	69.7	73.6	77.5

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Network * Option		
SCON-CGB (for Position Controller)		1	Three-phase 200VAC	●	–	–	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	512 (768 for network spec.)	See P.40

RCS3-RA20R High-Payload Rod Type (Position Type without Load Cell)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 200* mm | 200V AC Servo Motor

■ Model Specification Items

RCS3 — RA20R — WA — 3000 — 10 — □ — T3 — □ — □

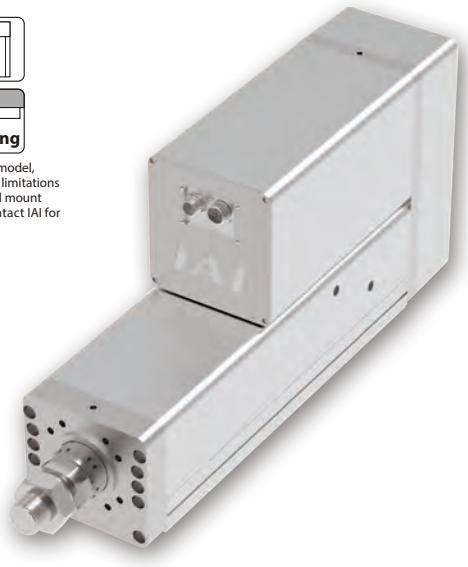
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS3	RA20R	WA: Battery-less Absolute	3000: Servo motor 3000W	10: Lead 10mm	100: 100mm ~ 500: 500mm (Every 100mm)	T3:SCON-CGB	N : None P : 1m S : 3m M : 5m X□□ : Specified length	Refer to Options table below. * Make sure to specify MT (Side-mounted motor on top).

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

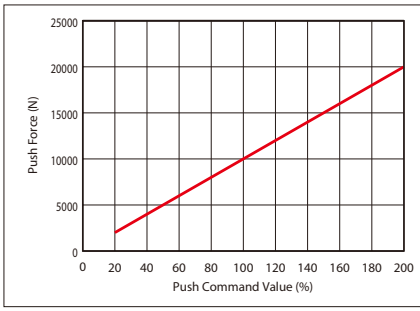
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



■ Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and push command value are strictly for reference purposes. Actual numbers may vary slightly.
- The push command value should be 20% or more because the push force will be unstable when the push command value is low.

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, the estimated allowable duty varies depending on operating conditions (payload and speed). Please refer to P.31 for more information.

(2) Please install a support block when front mounting a horizontally mounted actuator.
(Refer to page 34 "Notes When Installing")

(3) Loads can be applied to the rod tip. Please refer to P.33 for more information.

Actuator Specifications

■ Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. speed (mm/s)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)
RCS3-RA20R-WA-3000-10-①-T3-②-③	3000	10	400	0.2	1000	600	10361	20000

Legend: ① Stroke ② Cable Length ③ Option
* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 5~10mm/s speed range.

■ Stroke and Max Speed

Lead (mm) \ Stroke (mm)	100~500
10	400

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS3-RA20R
100	○
200	○
300	○
400	○
500	○

② Cable Length

Type	Cable Code
Standard type (Robot cable)	**P**(1m)
	S(3m)
	M(5m)
Specified length (Robot cable)	**X06**(6m) ~**X10**(10m)
	X11(11m)~**X15**(15m)
	X16(16m)~**X20**(20m)

* Please refer to P.49 for maintenance cables.
* Robot cable specification is standard.

③ Options * Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake	**B**	See P.35
Cable exit direction (Top)	**CJT**	See P.35
Cable exit direction (Right)	**CJR**	See P.35
Cable exit direction (Left)	**CJL**	See P.35
Side-mounted motor direction (Top)	**MT**	See P.37

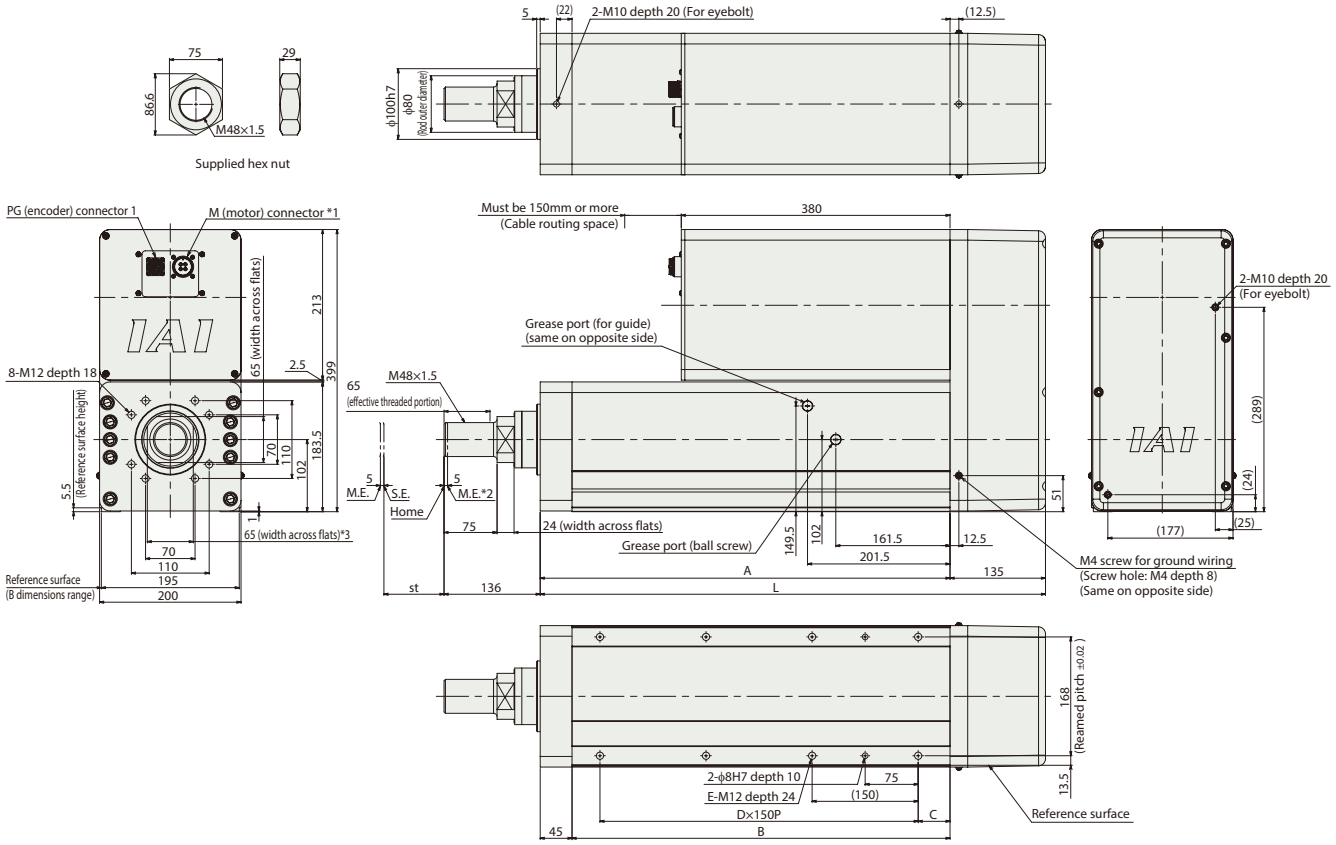
Actuator Specifications

Item	Description
Drive system	Ball screw ϕ40mm ground
Positioning repeatability	±0.01mm
Lost motion	0.1mm or less
Allowable moment to rod	Please see P. 33
Ambient operating temp. & humidity	0°C~40°C, 85% RH or less (non-condensing)

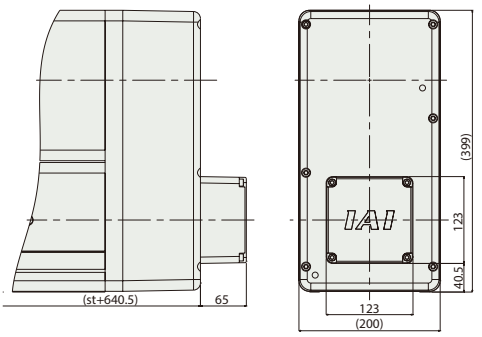
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

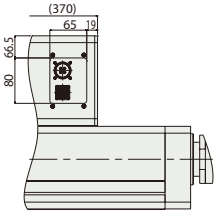
*1 Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2 While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end S.E.: Stroke end
*3 The direction of width across flats varies depending on the product. Those flats cannot be used for vertical or horizontal reference plane.



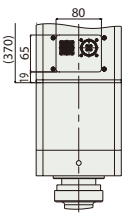
■ Dimensions with Brake



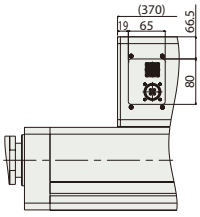
Cable exit direction: Right (CJR)



Cable exit direction: Top (CJT)



Cable exit direction: Left (CJL)



■ Dimensions and Mass by Stroke

Stroke		100	200	300	400	500
L		614.5	714.5	814.5	914.5	1014.5
A		479.5	579.5	679.5	779.5	879.5
B		434.5	534.5	634.5	734.5	834.5
C		70	45	100	70	120
D		2	3	3	4	4
E		6	8	8	10	10
Mass (kg)	Without brake	93.3	99.6	105.8	112.1	118.4
	With brake	96.3	102.6	108.8	115.1	121.4

Applicable Controllers

The RCS3 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Network * Option		
SCON-CGB (for Position Controller)		1	Three-phase 200VAC	●	–	–	DeviceNet, MECHATROLINK, CC-Link, EtherCAT, PROFIBUS, EtherNet/IP, CompoNet, PROFINET	512 (768 for network spec.)	See P.40

Operating Conditions

RCS3/RCS2 Series Servo press specification (with load cell)

When using the actuator, the following three conditions must be satisÿed.

Condition 1. The push time must be the determined time or less
Condition 2. The continuous operational thrust force of a single cycle must be the allowable continuous operational thrust force or less
Condition 3. In a single cycle, push-motion operation must occur only once

Selection method

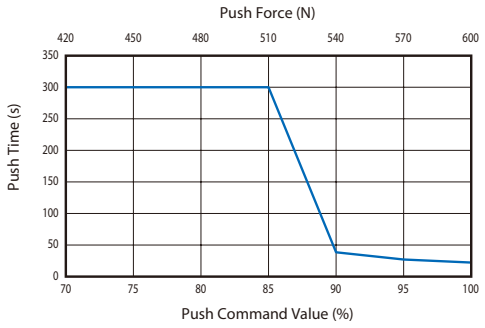
Condition 1. Push time

The maximum push time of each push command value is determined in the tables below. When using the actuator, please make sure that the push time is the time indicated in the tables below or less.
Please be aware that using the actuator beyond the time indicated in the tables below may cause the actuator to malfunction.
Note that there are no limitations on the continuous push time for RA4R.

RCS3

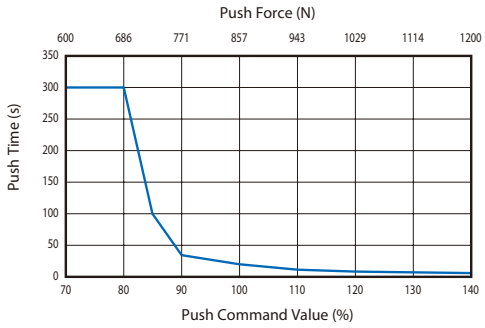
RA6R

Push Command Value (%)	Maximum Push Time (s)
70 or less	Continuous pushing available
71~85	300
90	38
95	27
100	21



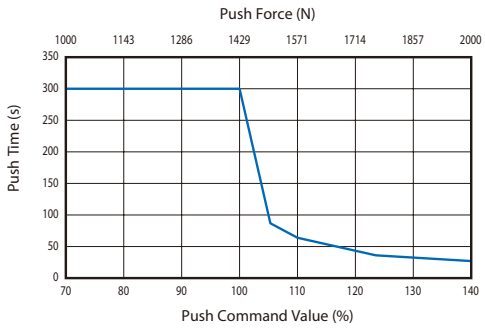
RA7R

Push Command Value (%)	Maximum Push Time (s)
70 or less	Continuous pushing available
71~80	300
85	94
90	33
95	24
100	18
105	15
110	12
115	11
120	9
125	8
130	7
135	6
140	5



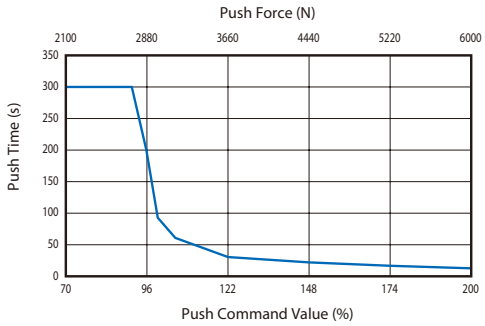
RA8R

Push Command Value (%)	Maximum Push Time (s)
70 or less	Continuous pushing available
71~100	300
105	92
110	67
115	54
120	44
125	38
130	33
135	29
140	25



RA10R

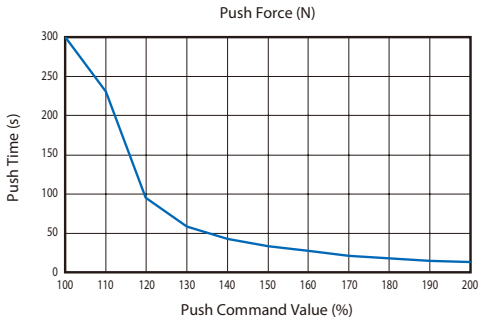
Push Command Value (%)	Maximum Push Time (s)
70 or less	Continuous pushing available
71~90	300
95	210
100	95
105	70
110	56
115	46
120	39
125	34
130	30
135	26
140	24
145	21
150	19
155	17
160	16
165	14
170	13
175	12
180	11
185	10
190	9
195	9
200	8



RCS2

RA13R

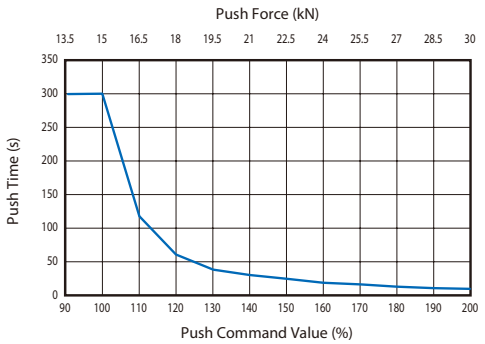
Push Command Value (%)	Maximum Push Time (s)
70 or less	(Continuous pushing is possible)
71~100	300
110	230
120	95
130	58
140	43
150	33
160	27
170	21
180	18
190	15
200	13



RCS3

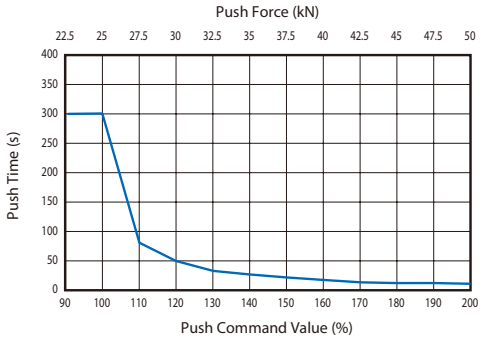
RA15R

Push Command Value (%)	Maximum Push Time (s)
90 or less	Continuous pushing available
91~100	300
110	118
120	58
130	40
140	30
150	25
160	20
170	16
180	13
190	10
200	9



RA20R

Push Command Value (%)	Maximum Push Time (s)
90 or less	Continuous pushing available
91~100	300
110	80
120	50
130	36
140	28
150	22
160	18
170	15
180	13
190	11
200	10

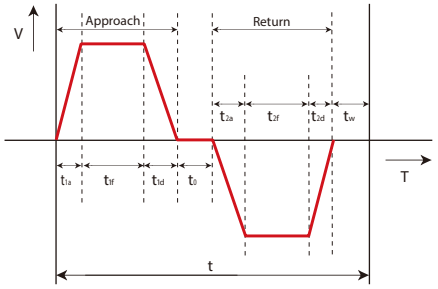


Operating Conditions

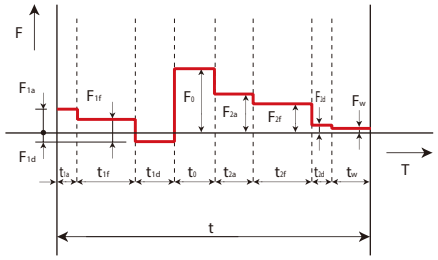
RCS3/RCS2 Series Servo press specification (with load cell)

Condition 2. Continuous operational thrust force

Please consider that the load and duty cycle of a single continuous operational thrust force Ft must be smaller than the allowable continuous operational thrust force of the actuator. Also, push-motion operation is performed only once during a single cycle.



If the operation patterns on the left are rewritten so that thrust becomes the vertical axis



t : Operation time per cycle (s)	t_{2a} : Acceleration time 2
t_{1a} : Acceleration time 1	t_{2f} : Constant rate of traverse time 2
t_{1f} : Constant rate of traverse time 1	t_{2d} : Deceleration time 2
t_{1d} : Deceleration time 1	t_w : Wait time
t_0 : Push-motion operation time	

F_{1a} : Thrust necessary for acceleration 1	F_{2a} : Thrust necessary for acceleration 2
F_{1f} : Thrust necessary for constant traverse 1	F_{2f} : Thrust necessary for constant traverse 2
F_{1d} : Thrust necessary for deceleration 1	F_{2d} : Thrust necessary for deceleration 2
F_0 : Thrust necessary for push-motion operation	F_w : Thrust necessary for waiting

The continuous operational thrust force Ft of a single cycle is calculated with the following formula.

$$Ft = \sqrt{\frac{F_{1a}^2 \times t_{1a} + F_{1f}^2 \times t_{1f} + F_{1d}^2 \times t_{1d} + F_0^2 \times t_0 + F_{2a}^2 \times t_{2a} + F_{2f}^2 \times t_{2f} + F_{2d}^2 \times t_{2d} + F_w^2 \times t_w}{t}}$$

- F_{1a}/F_{2a}/F_{1d}/F_{2d} vary according to the direction of operation, so please calculate them with the formulas shown below.

In the case of horizontal use (acceleration/deceleration)		
Horizontal use	For constant traverse	$F_{1a} = F_{1d} = F_{2a} = F_{2d} = (M+m) \times d + F_S$
Horizontal use	In the wait state	$F_{1f} = F_{2f} = f + F_S$
Vertical use	In the case of acceleration during descent	$F_W = 0$
Vertical use	In the case of constant traverse during descent	$F_{1a} = (M+m) \times 9.8 - (M+m) \times d + F_S$
Vertical use	In the case of deceleration during descent	$F_{1f} = (M+m) \times 9.8 + \alpha\ (*1) + F_S$
Vertical use	In the case of acceleration during ascent	$F_{1d} = (M+m) \times 9.8 + (M+m) \times d + F_S$
Vertical use	In the case of constant traverse during ascent	$F_{2a} = (M+m) \times 9.8 + (M+m) \times d + F_S$
Vertical use	In the case of deceleration during ascent	$F_{2f} = (M+m) \times 9.8 + \alpha\ (*1) + F_S$
Vertical use	In the wait state	$F_{2d} = (M+m) \times 9.8 - (M+m) \cdot d + F_S$
		$F_W = (M+m) \times 9.8$

M: Weight of moving part (kg)
m: Weight of load (kg)
d: Directive acceleration/deceleration setting (m/s²)
α: Thrust taking into account the driving resistance of the external guide
f: Driving resistance with an external guide or similar component installed (N)
Fs: Calculate the thrust for each speed from the table below for RA15R and 20R only

*1 When an external guide or similar component is installed, it is necessary to take into account the driving resistance f.

Actuator
Mass of moving part:
RA6R: 2.5kg
RA7R: 3.5kg
RA8R: 4kg
RA10R: 5kg
RA13R: 9kg
RA15R: 10kg
RA20R: 18kg

RCS3-RA15R		RCS3-RA20R	
Speed [mm/s]	Fs[N]	Speed [mm/s]	Fs[N]
0~180	0	0~40	0
181~190	625	41~50	1875
191~200	1250	51~60	3750
201~210	1875	61~70	5625
211~220	2500	71~80	7500
221~230	3125	81~90	9375
231~240	3750	91~100	11250
		101~110	13125
		111~120	15000
		121~130	16875
		131~140	18750
		141~150	20625
		151~160	22500
		161~170	24375
		171~180	26250
		181~220	27500

● t□a is the acceleration time, but the calculation methods of a ① trapezoid pattern and a ② triangle pattern are different.

The difference between a trapezoid pattern and a triangle pattern can be determined by whether the arrival speed of operation of the traverse distance at the set speed is larger or smaller than the set speed.

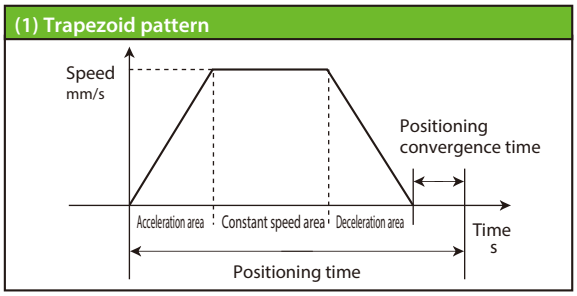
Arrival speed (Vmax) = $\sqrt{\text{traverse distance (m)} \times \text{set acceleration (m/s}^2\text{)}}$

Set speed < arrival speed → ① trapezoid pattern

Set speed > arrival speed → ② triangle pattern

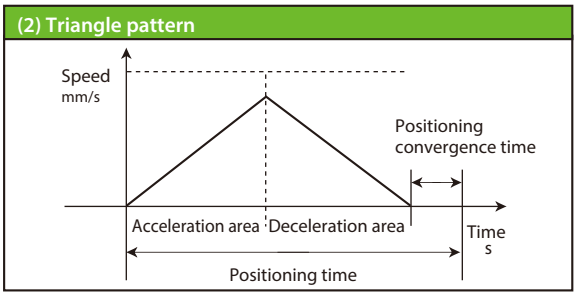
① In the case of a trapezoid pattern

t□a = Vs/a Vs: Set speed (m/s) a: Directive acceleration (m/s²)



② In the case of a triangle pattern

t□a = Vt/a Vt: Arrival speed (m/s) a: Directive acceleration (m/s²)



● t□f is the constant traverse speed. Please calculate this to calculate the constant traverse distance.

t□f = Lc/V Lc: Constant traverse distance (m) V: Directive speed (m/s)

* Constant traverse distance = traverse distance - acceleration distance - deceleration distance Acceleration distance (deceleration distance) = $V^2/2a$

● t□d is the deceleration time, but if acceleration and deceleration are the same, then it is the same as the acceleration time.

t□d =V/a V: The set speed (trapezoid pattern) or arrival speed (triangle pattern) (m/s) a: Directive deceleration (m/s²)

[RCS3-RA15R/RA20R only]

● Calculate the average speed. The average speed can be found with the following equation.

$$v_t = \frac{0.5 \cdot v_1 \cdot t_{1a} + v_1 \cdot t_{1f} + 0.5 \cdot v_1 \cdot t_{1d} + 0.5 \cdot v_2 \cdot t_{2a} + v_2 \cdot t_{2f} + 0.5 \cdot v_2 \cdot t_{2d}}{t}$$

v_1: Constant speed when approaching

v_2: Constant speed when returning (trapezoid pattern)

Arrival speed (triangle pattern)

Next, calculate the final continuous operational thrust from the calculated continuous operational thrust Ft and average speed vt.

$$F = F_t + v_t \cdot K$$

Select coefficient K from the table below.

Model	Coefficient K
RA15R	150
RA20R	412.5

Confirm that the calculated continuous operational thrust Ft (F calculated by the above formula for RA15R and 20R) is smaller than the allowable continuous operational thrust. The allowable continuous operational thrust force of this product is as follows.

Model	Allowable continuous operational thrust force [N]
RA6R-LCT	420
RA7R-LCT	600
RA8R-LCT	1000
RA10R-LCT	2100
RA13R-LCT/LCN(*2)	Lead 2.5 5100
	Lead 1.25 10200
RA15R-LCT	13500
RA20R-LCT	22500

*2 For RA13R, please limit the duty cycle to 50% or less.

If the conditions cannot be satisfied, please adopt measures such as shortening the push time or extending the wait time.

Operating Conditions

RCS3/RCS2 Series Rod type (without load cell)

RCS2

RA13R **Servo press compatible** **The same conditions as the rod type with load cell.**
Please refer to P.27~30.

RCS3

When using the actuator, the following two conditions must be satisfied.

Condition 1. The push time must be the determined time or less
Condition 2. The operating duty must not exceed the allowable duty according to the operating conditions (payload and speed)
Condition 3. In a single cycle, push-motion operation must occur only once

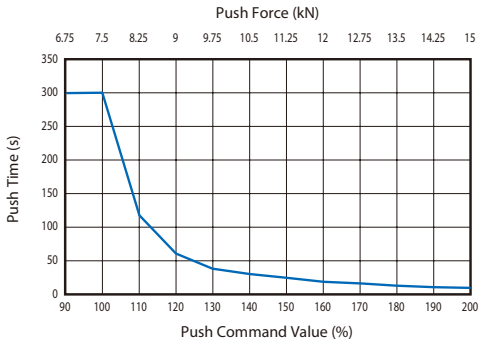
Selection method

Condition 1. Push time

The maximum push time of each push command value is determined in the tables below. When using the actuator, please make sure that the push time is the time indicated in the tables below or less.
Please be aware that using the actuator beyond the time indicated in the tables below may cause the actuator to malfunction.

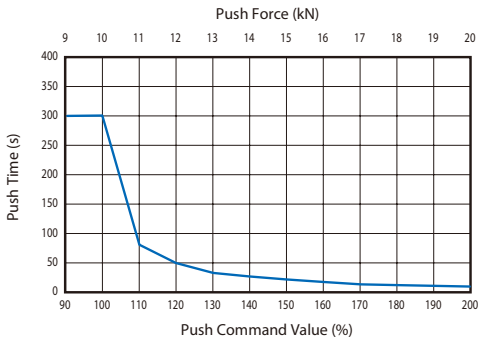
RA15R

Push Command Value (%)	Maximum Push Time (s)
90 or less	Continuous pushing available
91~100	300
110	118
120	58
130	40
140	30
150	25
160	20
170	16
180	13
190	10
200	9



RA20R

Push Command Value (%)	Maximum Push Time (s)
90 or less	Continuous pushing available
91~100	300
110	80
120	50
130	36
140	28
150	22
160	18
170	15
180	13
190	11
200	10



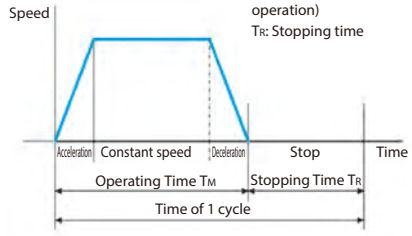
Condition 2. Duty

Duty cycle is the percentage of the actuator's active operation time in each cycle.
The duty cycle varies depending on the operation conditions (payload and speed).
According to the combination of the maximum speed and payload within one cycle, check the guidelines for the allowable duty cycle with the graph below and operate at or below the allowable value.

[Duty Cycle]
Duty cycle is the percentage of the actuator's active operation time in each cycle.

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

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



<Example>
If the speed and payload change during reciprocating motion, check using the larger value.

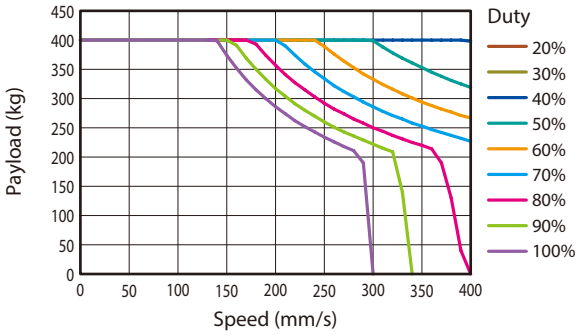
	Forward	Return
Speed	Low	High
Payload	High	Low

Using this combination of values, check with the following graph.

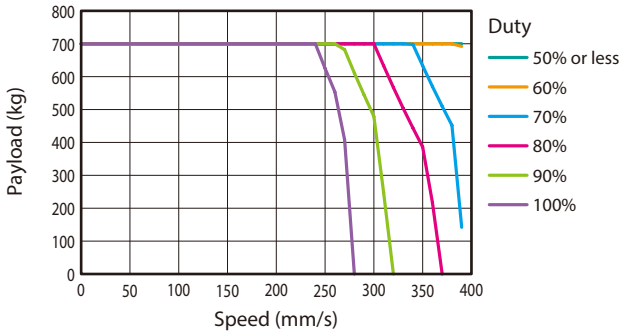
RCS3

RA15R

[Vertical mount]



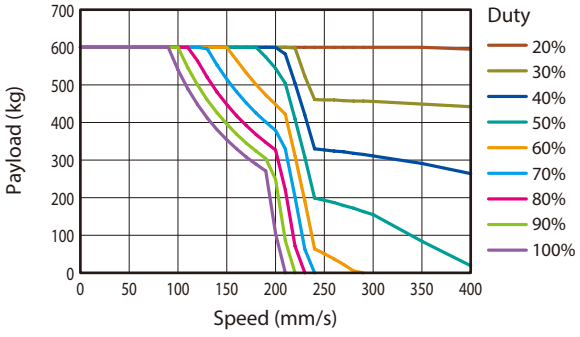
[Horizontal mount]



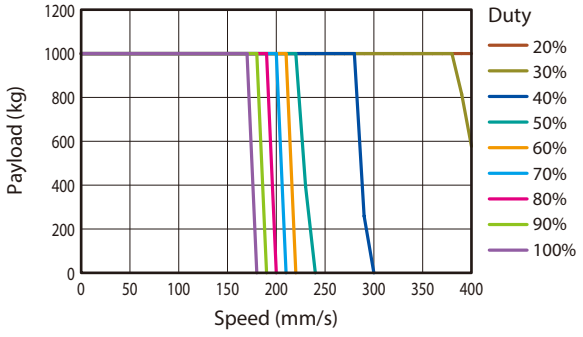
* The above graph is the case with two external regenerative resistors installed.
The number of regenerative resistance units (RESU-35T) can be reduced according to the payload, speed and duty.
Contact our sales personnel for details.

RA20R

[Vertical mount]



[Horizontal mount]



* The above graph is the case with two external regenerative resistors installed.
The number of regenerative resistance units (RESU-35T) can be reduced according to the payload, speed and duty.
Contact our sales personnel for details.

Moment Selection Guide

RCS3/RCS2 Series Rod type (without load cell)

RCS2

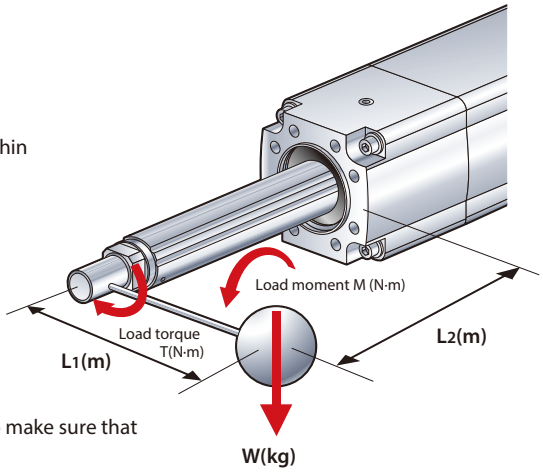
RA13R

Loads can be applied to the rod within the range of the conditions determined by the following formula.

Loads can be applied to the rod of RCS2-RA13R (without load cell) within the range of the conditions determined by the following formula.

$M+T \leq 120(N \cdot m)$
Load moment $M = Wg \times L_2$
Load torque $T = Wg \times L_1$

* g = Gravitational acceleration 9.8
* L_1 = Distance from the rod center to the center of gravity of the workpiece
* L_2 = Distance from the actuator mounting surface to the center of gravity of the workpiece + 0.07



If the above conditions are not satisfied, use an external guide, etc., to make sure that no load is applied to the rod.

RCS3

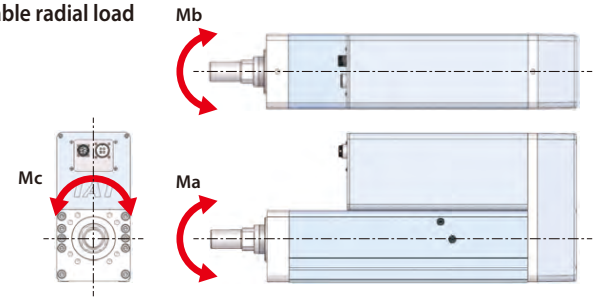
RCS3-RA15R/RA20R: Loads can be applied to the rod within the range of the following two conditions.

Condition 1. **The radial load acting must not exceed the maximum allowable radial load**

Condition 2. **The applied moment must satisfy the following formula**

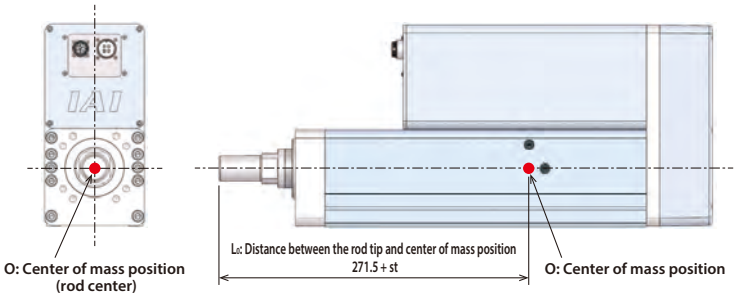
$M \geq Ma + Mb + K \cdot Mc$

M: Allowable moment (see table below)
Ma, Mb, Mc: Load moment (see figure at right)
K: Uniform coefficient
RCS3-RA15R: 0.36
RCS3-RA20R: 0.37



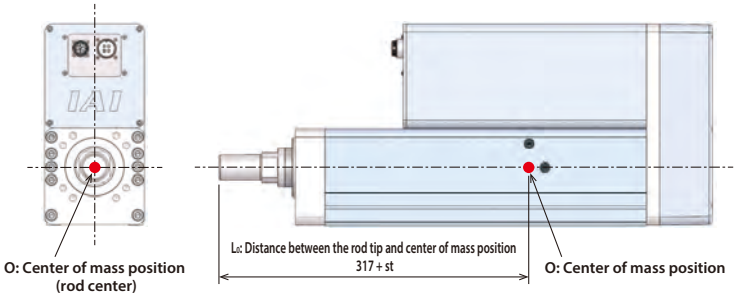
■ RCS3-RA15R

Stroke (mm)	100	200	300	400	500
Maximum allowable radial load (N)	392				
Allowable moment (Nm)	140	135	130	125	120



■ RCS3-RA20R

Stroke (mm)	100	200	300	400	500
Maximum allowable radial load (N)	540				
Allowable moment (Nm)	230	220	210	200	190



Mounting Orientation of the Actuator

Some mounting orientations cannot be used or require caution depending on the actuator model.
Check the mounting orientation for each model in the table below.

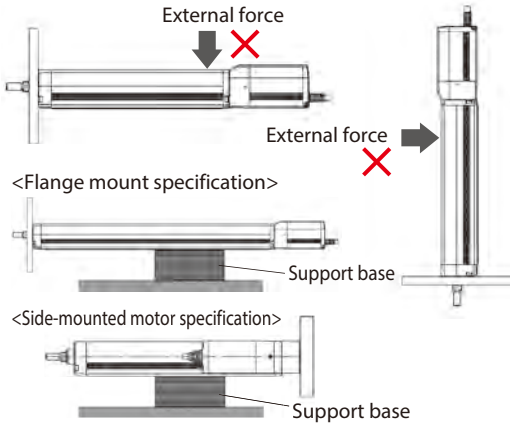
○: Can be mounted ×: Cannot be mounted

Classification	Series	Type	Horizontal mounting on flat surface	Vertical mounting	Side mounting	Ceiling mounting
Servo press specification	RCS3	RA4	○	○	○	×
		RA6				
		RA7				
		RA8				
		RA10				
		RA15	○	○	×	×
		RA20				
	RCS2	RA13	○	○	○	○
Rod type (without load cell)	RCS3	RA15	○	○	○	○
		RA20				
	RCS2	RA13				

Notes When Installing

When installing the front bracket or flange (optional), please be careful that no external force acts on the actuator.
(External force may cause malfunctions or damage to parts.)

Please install a support block when front mounting or back mounting a horizontally mounted actuator that is 150st or more. However, adding a support block even for less than 150st is recommended, since vibration might occur depending on the operational and installation conditions and damage the actuator.



Options

Brake

Model **B/BN** (without brake box)

Description When the actuator is mounted vertically, this works as a holding mechanism that prevents the slider from falling and damaging any attachments when the power or servo is turned off.

CE Compliant

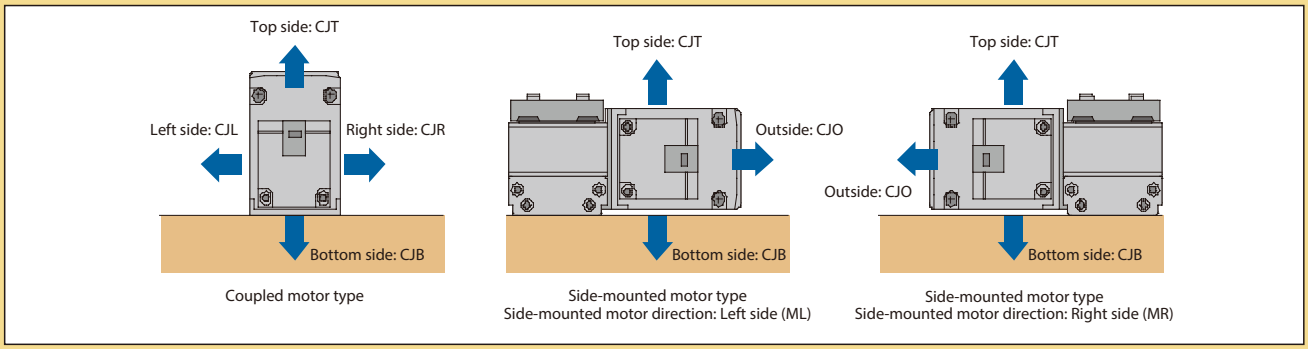
Model **CE**

Description If CE is required and the selected model is not CE complied, please specify this option. For detail, please contact IAI.

Cable Exit Direction

Model **CJT / CJR / CJL / CJB / CJO**

Description This option allows you to change the exit direction of the motor-encoder cable to top, bottom, left, or right.

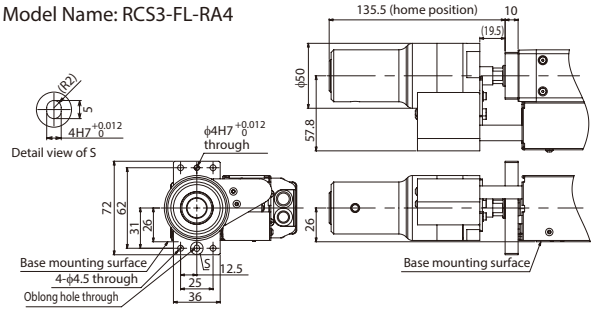


Flange (Front)

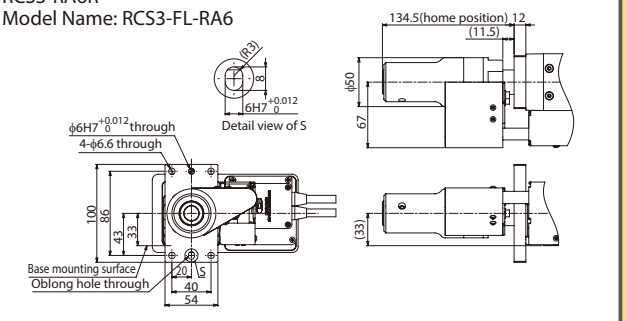
Model **FL**

Description A bracket that attaches to the actuator body with bolts.

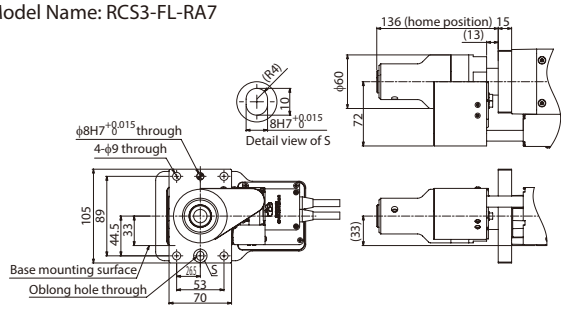
RCS3-RA4R
Model Name: RCS3-FL-RA4



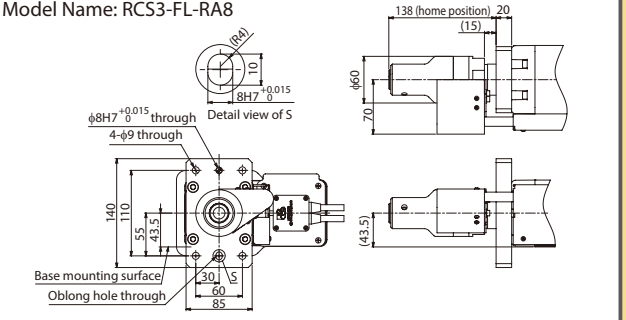
RCS3-RA6R
Model Name: RCS3-FL-RA6



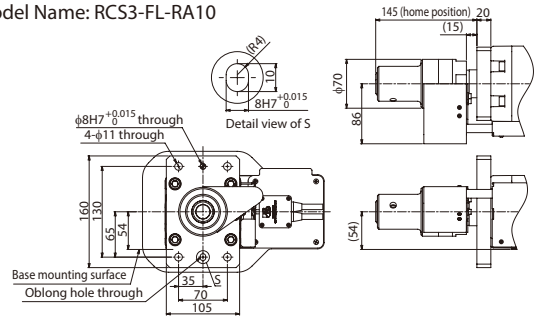
RCS3-RA7R
Model Name: RCS3-FL-RA7



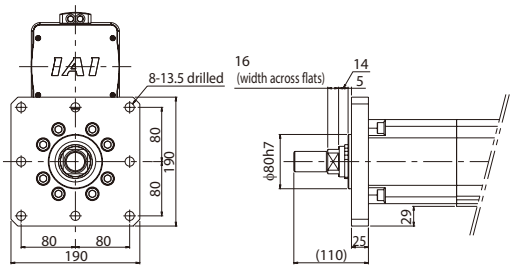
RCS3-RA8R
Model Name: RCS3-FL-RA8



RCS3-RA10R
Model Name: RCS3-FL-RA10



RCS2-RA13R
Model Name: RCS2-FL-RA13

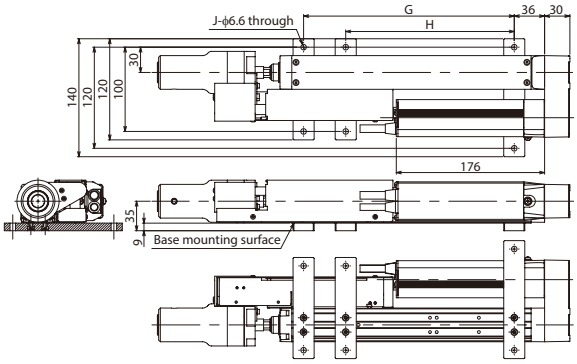


Foot Bracket

Model **FT**

Description This is a bracket used to fix the actuator with bolts from the top side. (Bolts are tightened from the top, not from the bottom)
The actuator body may be twisted or deformed if insufficient number of mounting foot brackets are used. Actuator life could also be shortened.
* Refer to the installation dimensions in the actuator drawing for the installation pitch between the foot brackets.

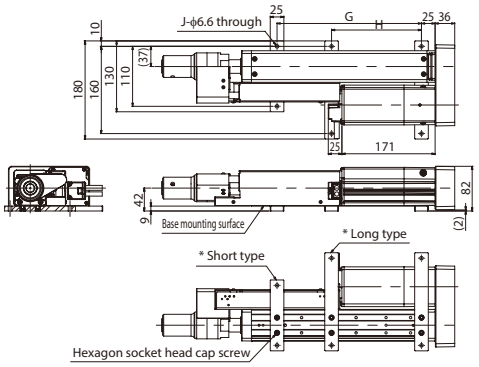
RCS3-RA4R
Model name: Short type: RCS3-FT-RA4-1 (Note 1)
Long type: RCS3-FT-RA4-2 (Note 1)



Foot Bracket Standard Mounting Position

Stroke	110	160	210	260	310	360	410
G	150	200	250	300	350	400	450
H	0	0	200	200	200	200	200
J	4	4	6	6	6	6	6

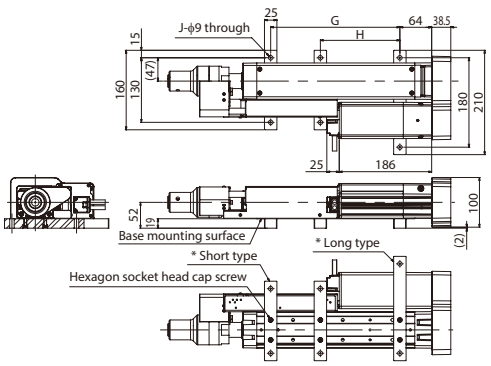
RCS3-RA6R
Model name: Short type: RCS3-FT-RA6-1 (Note 1)
Long type: RCS3-FT-RA6-2 (Note 1)



Foot Bracket Standard Mounting Position

Stroke	115	165	215	265	315	365	415
G	165	165	265	265	365	365	465
H	0	0	165	165	165	165	265
J	4	4	6	6	6	6	6

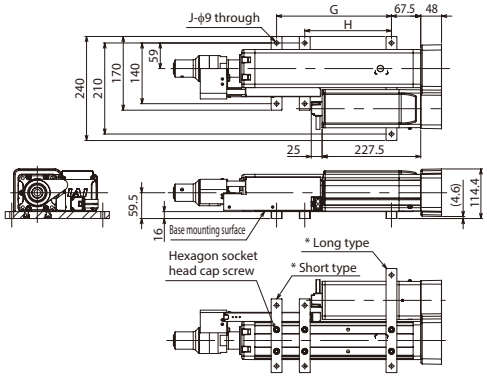
RCS3-RA7R
Model name: Short type: RCS3-FT-RA7-1 (Note 1)
Long type: RCS3-FT-RA7-2 (Note 1)



Foot Bracket Standard Mounting Position

Stroke	120	170	220	270	320	370	420	470	520
G	160	160	260	260	360	360	460	460	560
H	0	0	160	160	160	160	260	260	260
J	4	4	6	6	6	6	6	6	6

RCS3-RA8R
Model name: Short type: RCS3-FT-RA8-1 (Note 1)
Long type: RCS3-FT-RA8-2 (Note 1)

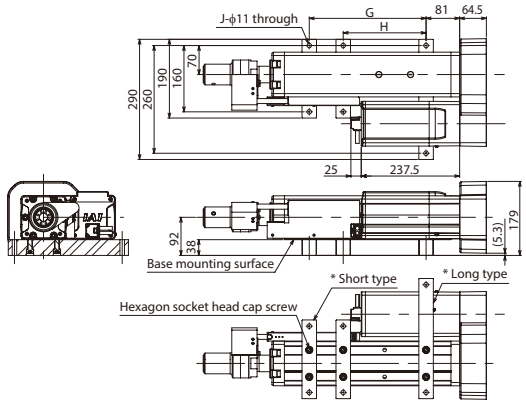


Foot Bracket Standard Mounting Position

Stroke	100	150	200	250	300	350	400	450	500
G	165	215	265	315	365	415	465	515	565
H	0	0	200	200	200	200	200	300	300
J	4	4	6	6	6	6	6	6	6

(Note 1) 2 hexagonal socket head bolts enclosed

RCS3-RA10R
Model name: Short type: RCS3-FT-RA10-1 (Note 1)
Long type: RCS3-FT-RA10-2 (Note 1)

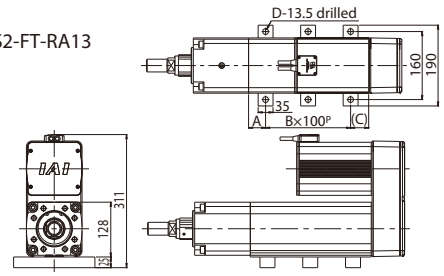


Foot Bracket Standard Mounting Position

Stroke	100	150	200	250	300	350	400	450	500
G	182	232	282	332	382	432	482	532	582
H	0	0	200	200	200	200	200	300	300
J	4	4	6	6	6	6	6	6	6

(Note 1) 2 hexagonal socket head bolts enclosed

RCS2-RA13R
Model Name: RCS2-FT-RA13



Stroke	50	100	150	200
A	40	65	40	65
B	2	2	3	3
C	42.5	67.5	42.5	67.5
D	6	6	8	8

● Quantities Enclosed

The following number of foot brackets and bolts is enclosed when the foot bracket option (Model: FT) is selected at the time of the actuator purchase.

Model	Stroke (mm)	Foot Bracket	Quantities Enclosed	Number of Bolts Enclosed
RCS3-RA4R	110	Long type	2	4
	160	Short type	1	4
		Long type	1	
	210~410	Short type	2	6
		Long type	1	
RCS3-RA6R	115~165	Long type	2	4
	215~415	Short type	1	6
		Long type	2	
RCS3-RA7R	120~170	Short type	1	4
		Long type	1	
	220~520	Short type	2	6
		Long type	1	
RCS3-RA8R	100	Long type	2	4
	150	Short type	1	4
		Long type	1	
	200~500	Short type	2	6
		Long type	1	
RCS3-RA10R	100	Long type	2	4
	150	Short type	1	4
		Long type	1	
	200~500	Short type	2	6
		Long type	1	
RCS2-RA13R	50~100	-	3	6
	150~200		4	8

With Load Cell

Model **LCT / LCN**

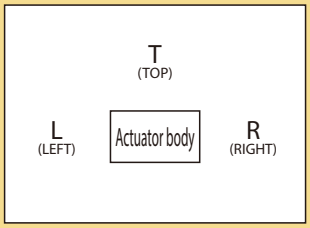
Description This is an option for installing a load cell on the rod tip of RCS3 Series and RCS2-RA13R (ultra-high thrust actuator) for servo press, and operating with force control. When using as a servo press, be sure to specify.
LCT is equipped with a cable track for load cell wiring, while the LCN specification has no cable track and is to be wired by the customer.
(LCN is dedicated for RCS2-RA13R.)

Caution When operating RCS2-RA13R with force control, only the SCON-CB controller can be used.

Side-mounted Motor Direction

Model **ML / MR / MT**

Description This allows you to specify the direction of the side-mounted motor type.
As viewed from the motor side of the actuator, side-mounting to left is ML, right is MR, and top is MT.

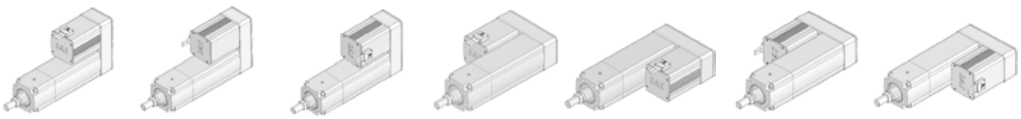


Side-mounted Motor Direction / Cable Exit Position

Model **MT□ / MR□ / ML□**

Description The combination of side-mounted motor direction and cable exit direction can be specified.

Notes
Be sure to select a symbol in the model number for the side-mounted motor direction and cable exit position.



Option Code	MT1	MT2	MT3	MR1	ML1	MR2	ML3
Side-mounted motor direction	Top (standard)	Top	Top	Right side	Left side	Right side	Left side
Cable Exit Position	Top (standard)	Right side	Left side	Top	Top	Right side	Left side

Note

*If a Load Cell Calibration Certificate is required by the load cell vendor, there is an extra charge and it must be ordered on the same PO as the actuator.
Ordering the certificate after purchasing the actuator will require sending the load cell back to Japan.

Controller Reference Page List

Please see the catalogs below for more details on the applicable controllers.

	Model name		Controller	Reference catalog
Servo press specification (with load cell)	RCS3	RA4R	SCON-CB/CGB <Servo press specification>	Please contact IAI America for details.
		RA6R		
		RA7R		
		RA8R		
		RA10R		
		RA15R		
		RA20R		
	RCS2	RA13R		

Rod (Position) type (without load cell)	RCS3	RA15R	SCON-CGB	This catalog	P. 40
		RA20R			
	RCS2	RA13R	SCON-CB/CGB	Please contact IAI America for details.	
			SCON-LC/LCG		
			SSEL-CS		
			XSEL-P/Q/RA/SA		

SCON-CB

<Sero press specification>



Servo Press dedicated controller (SCON-CB F)

(*1) (*2)

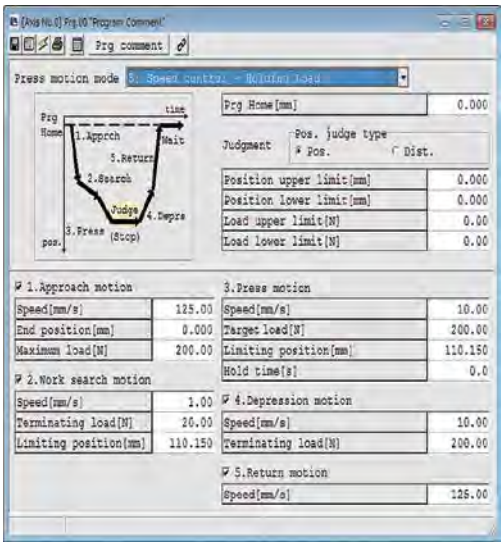
(*1) MECHATROLINK-I/II connection specification is not compliant with CE Marking.
(*2) 3000 and 3300W types are not compliant with UL standard.

Features

1 Equipped Dedicated Press Program

There are 9 types of press-operation modes to choose from

Speed control After arriving at the target position, stops while maintaining the position at the time of arrival.	Position stop
	Distance stop
	Load stop
	Incremental load stop
Force control After arriving at the target position, stops while maintaining the force at the time of arrival.	Position stop/Position stop2
	Distance stop
	Load stop
	Incremental load stop



Simple program input

Simply operate the program by inputting the values into the screen for each press-operation mode that you are using.
Also, because the input increment for position is 0.001mm, it is now possible to input more precise settings.
This allows the user to make more microscopic adjustments in the positioning process.

A judgment function has also been added

Setting the judgment range with the press program judges whether or not the position and load fall within the speciÿed range.

2 Assignment of I/O Signals Specialized for the Servo Press Functions

The assignment of servo press dedicated I/O signals is completely di¯erent than the for mer PIO pattern.

3 Predictive Maintenance Functions

- A function that issues a warning when a motor overload is detected has been included
  Monitoring changes in the temperature of the motor makes it possible to detect abnormalities before the occurrence of a breakdown or a malfunction.
- Improvement of monitoring functions
  Similar to the trigger function of an oscilloscope, it is now possible to acquire the waveforms of the current position, current speed, etc. from the instant the state of the selected signal changes. Also, it is possible to acquire the signal states of positioning completion, alarms, etc.
- A function that integrates the number of cycles with the distance covered makes it possible to check maintenance timing.
- The calendar function makes it possible to keep a timetable of the alarms that have been generated.

from gc2022 vol8 ce9002-1.1a

4 Supports the Safety Function STO/SS1-t <Optional function>

Supports the STO (Safe Torque O°) / SS1-t (Safe Stop 1 - time controlled) function.
The STO / SS1-t function is to shut o° the energy supply to the motor by an elec tric circuit in the controller.
For the SCON-CB, two speciÿcations are available; STO and SS1-t speciÿcation.
For applications of the vertical axis, SS1-t speciÿcation that has a long reaction time can prevent workpiece from dropping due to the time lag of brake operation when the safety torque shut o° func tion is activated.

SpeciÿcationsDescription	Remarks
STO	Reacting to input signals, the energy supply to the motor is shut o° af ter a reaction time (8ms or shorter) by shut-o° circuit in the controller .	
SS1-t	Reacting to input signals, brake is applied and the energy supply to the motor is shut o° af ter a reaction time (500ms or shorter) by shut-o° circuit in the controller .	This braking operation is not included in the safety function.

The energy supply to the servo motor can be shut o° safely by connec ting an external safety-related device and the I/O connector for safety function.

I/O connector for safety function (for STO/SS1-t speciÿcation only)



In addition, the STO/SS1-t function is compliant with the following safety standards:

- ISO/EN ISO 13849-1 category 3 Ple
- IEC 61508 SIL3
- IEC/EN61800-5-2
- IEC/EN62061 SIL CL3

(Note) An engineer with expert knowledge in relevant safety standards should read and understand the descriptions stated in the instruction manual before designing a safety system using this function. Beware of potential injuries and failures.

List of Models

Model number		SCON-CB/CGB									
External view											
I / O type		Standard speciÿcation	Network connection speciÿcation (option) (*2)								
		PIO connection speciÿcation (*1)	DeviceNet	CC-Link	CC-Link IE Field	PROFIBUS-DP	CompoNet	MECHATROLINK	EtherCAT	EtherNet/IP	PROFINET
			DeviceNet connection speciÿcation	CC-Link connection speciÿcation	CC-Link IE Field connection speciÿcation	PROFIBUS-DP connection speciÿcation	CompoNet connection speciÿcation	MECHATRO LINK- I / II connection speciÿcation	EtherCAT connection speciÿcation	EtherNet/IP connection speciÿcation	PROFINET IO connection speciÿcation
I/O type model number		NP/PN	DV	CC	CIE	PR	CN	ML	EC	EP	PRT
Supported encoder type		Battery-less absolute									
SCON-CB	30W	○	○	○	○	○	○	○	○	○	○
	60W・100W	○									
	200W	○									
	400W	○									
	750W	○									
	3000W	○									
	3300W	○									

(*1) Pulse-train control is not available.
(*2) Communication with PIO or pulse-train is not available.

○ : Available

Model

SCON – [Type] – [Motor Type] [Encoder Type] F – [I/O Type] – [I/O Cable Length] – [Power Supply Voltage] – [Safety type]

Series

Type

CB	Standard
CGB	Safety category compliant type

* Only CGB can be selected for RCS3-RA15R/20R.

Motor Type

30D	30W	400	400W
60	60W	750S	750W
100	100W	3000	3000W
200	200W	3300	3300W

(Example) 60: 60 W servo motor compatible

Encoder Type

WAI	Battery-less absolute

F

F	For servo press only (Note 1)

(Note 1) If you do not use the press program, it will be blank.
(Excluding 3000 W, 3300 W)

I / O Type

NP	PIO NPN (standard)
PN	PIO PNP
DV	DeviceNet connection
CN	CompoNet connection
CC	CC-Link connection
CIE	CC-Link IE Field connection speciÿcation
ML	MECHATROLINK-I/II (Note 1)
PR	PROFIBUS-DP
EC	EtherCAT
EP	EtherNet/IP
PRT	PROFINET IO

(Note 1) Please be sure to check P8-18 for the caution when selecting.

I/O Cable Length

0	No cable
2	2m (standard)
3	3m
5	5m

* When a ÿeld network speciÿcation is selected, the I/O cable length is "O".

Power Supply Voltage

1	Single phase AC100V
2	Single phase AC200V
3	Three phase AC200V

* Please check the power supply voltage that can be selected on the page of the actuator.

Safety type

Not speciÿed	Standard type
STO	STO type
SS	SS1-t type

* Only the standard type is selectable for RCS3-RA15R/20R.

Note

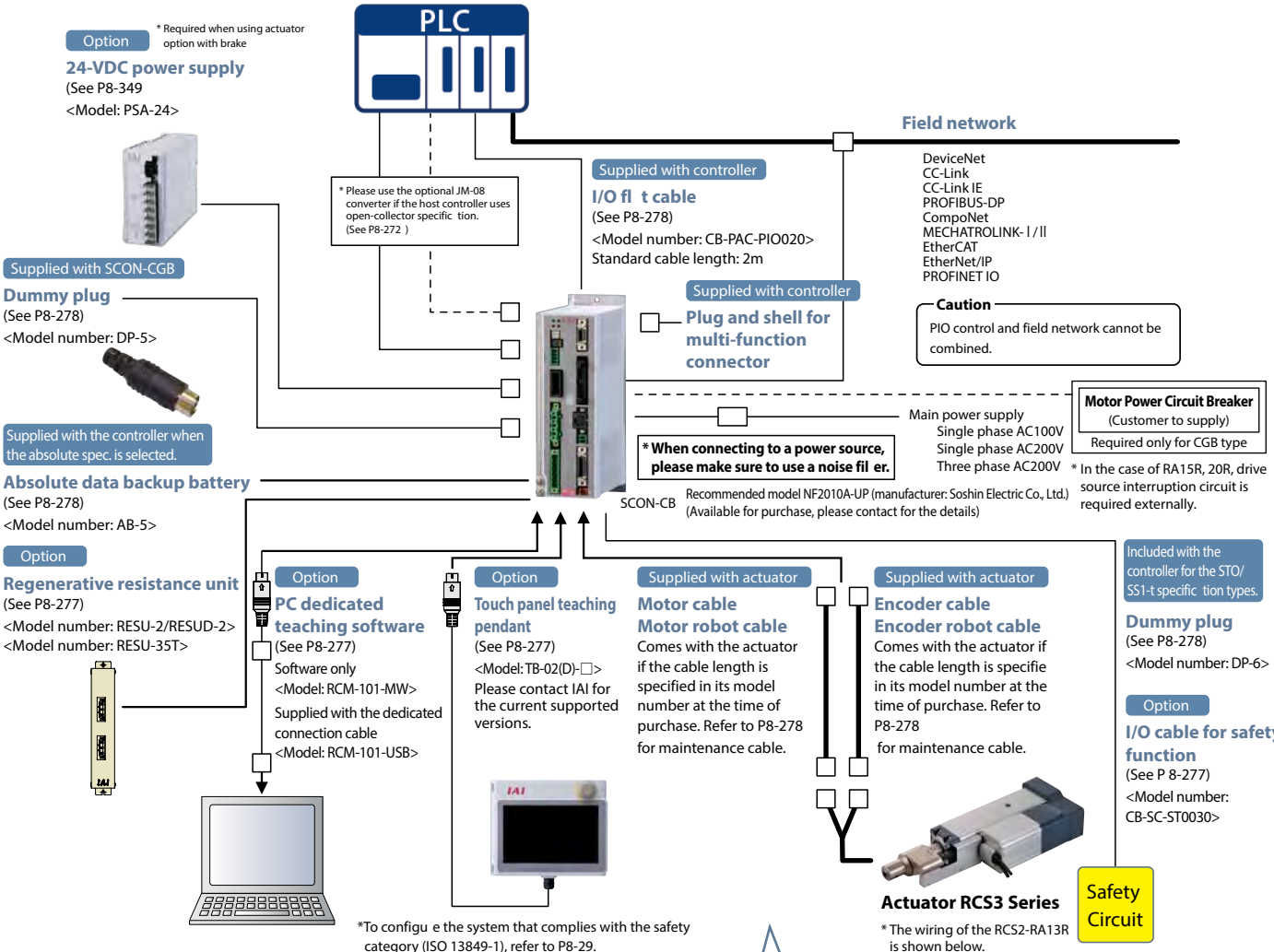
In principle, the same type of motor as the type of motor of the actuator to be connected should be entered, but there are some models where the motor type of some controllers and actuators do not match.
Be sure to check the corresponding models listed below during selection.

<30 D · 750 S Applicable actuator>

●Controller Motor type "30D"
RCS3-RA4R

●Controller Motor type "750S"
RCS 2 - RA 13 R When option LCT is selected

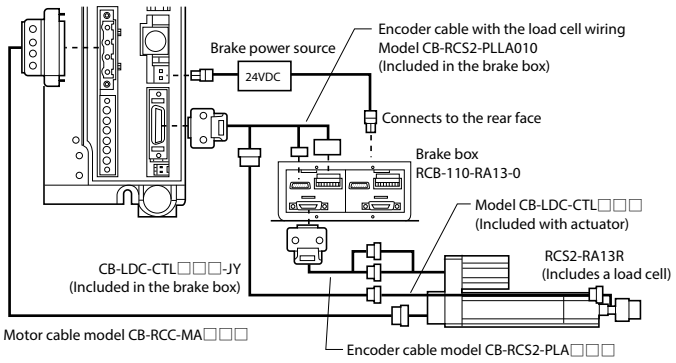
System configuration



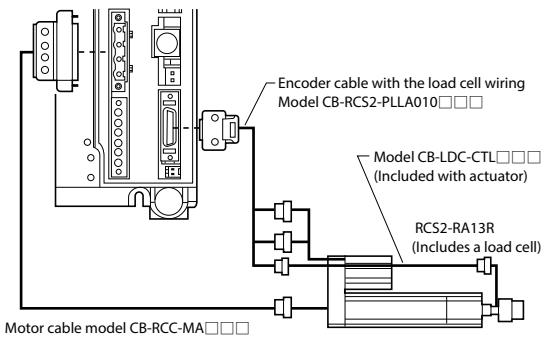
RCS2-RA13R wiring

RCS2-RA13R option: If the brake (No brake box) "BN" is selected and used as the second axis of the brake box, "Cb-ldc-ctl □ □ □-JY", CB-RCS2-PLLA010 should be purchased separately.

With a Brake



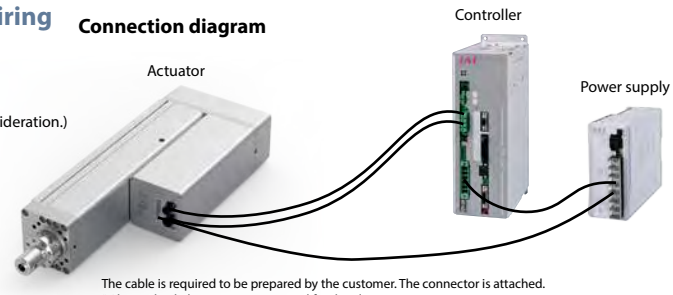
Without a Brake



RCS 3 - RA 15 R / 20 R (with brake) wiring

The brake circuit of RCS3-ra15r/20R is built into the actuator.
Enter a DC ± 10% voltage on the actuator.
(If the input voltage is low, the brake cannot be released.
Please supply power with the voltage drop of the wiring in consideration.)
24v DC Supply is required for both actuators and controllers.

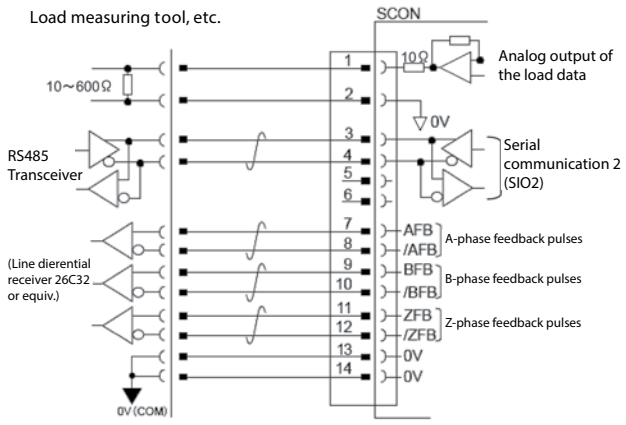
Connection diagram



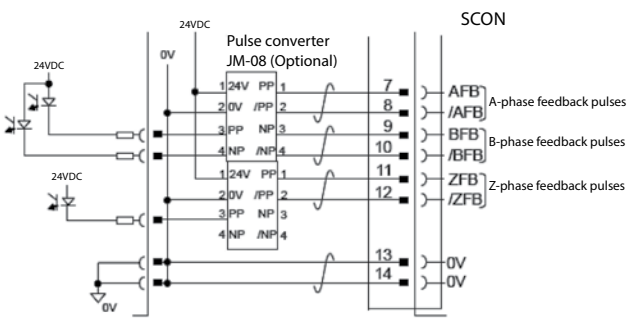
The cable is required to be prepared by the customer. The connector is attached.
* Please check the instruction manual for details.

Multi-function connector (interface)

①When the host controller inputs feedback pulses with a line di¸erential r eceiver.



②A pulse converter (JM - 08: option) is required when the host controller inputs feedback pulses with an open collector.



Basic speciÿcations

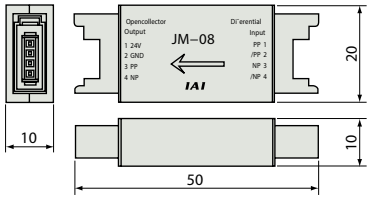
Item			Speciÿcations		
Supported motor capacity			Less than 400W	400W~750W	3000W•3300W
Connected actuator			RCS2/RCS3 series actuator (with load cell)		
Number of controlled axes			1 axis		
Operation method			Press program type		
Backup memory			Non-volatile memory (FRAM)		
I/O connector			40-pin connector		
Number of I/O points			Input 16 points/ output 16 points		
I/O power			External supply 24VDC ±10%		
Brake supply power			External supply 24VDC ±10% (Max1A)		External supply 24VDC ±10% (Max0.1A) *Max 1.5 A must be separately supplied for Actuator
Serial communication			RS485 2ch		
Position detection methods			Incremental encoder / Absolute encoder		
Driving power shut-o function			CB: Available (built-in relay) CGB: Unavailable		
Electromagnetic brake force release			Brake release switch ON/OFF		
Input power			Single phase AC100~115V ±10% Single phase AC200~230V ±10%	Single phase AC200~230V ±10%	Three phase AC200~230V ±10%
Power supply capacity			30W/94VA 60W/186VA 100W/282VA 200W/469VA	400W/968VA 750W/1569VA	3000W/5705VA 3300W/6062VA
SONCB/ CGB	External interface	PIO speciÿcation	Dedicated 24VDC signal inputs/outputs (NPN/PNP selectable) --- Max. of 16 input/16 output points		
		Field bus speciÿcation	DDeviceNet, CC-Link, CC-Link IE, PROFIBUS-DP, CompoNet, MECHATROLINK Ⅰ/Ⅱ, EtherCAT, EtherNet/IP, PROFINET IO		
	Data retention memory		Position data and parameters are saved in non-volatile memory. (No limit to rewrite)		
Vibration control			X,Y,and Z directions, 10~57Hz single-side width 0.035mm (continuous), 0.075mm (intermittent) 58~150Hz 4.9m/s² (continuous), 9.8m/s² (intermittent)		
Calendar/ clock function	Retention time		Approximately 10 days		
	Charging time		Approximately 100 hours		
Protection functions			Excess current, temperature abnormalities, monitoring of fan speed drops, encoder disconnection, etc.		
Internal regenerative resisitance value			2000° 10W		34° 160W
Ambient operating temperature			0~40°C		
Ambient operating humidity			5%RH - 85%RH (non-condensing, no frost)		
Ambient operating atmosphere			Free from corrosive gases		
Protection class			IP20		
Mass			Approx. 900g (an absolute speciÿcation is 25g heavier)	Approx. 1.2kg (an absolute speciÿcation is 25g heavier)	Approx. 2.8kg (an absolute speciÿcation is 25g heavier)
External dimensions			58mm(W)×194mm(H)×121mm(D)	72mm(W)×194mm(H)×121mm(D)	92.7mm(W)×300mm(H)×172mm(D)

Pulse Converter: JM-08

Converts di˜ erential pulses to the open-collector speciÿcation (NPN only).
Please use this converter if the host controller uses open-collector input.

Speciÿcation

Item	Speciÿcations
Input power	24VDC±10% (Max.50mA)
Input pulses	Di˜e rential input (Max. 10mA) (RS422 compliant)
Input frequency	500kHz or less
Output pulses	24VDC open collector (collector current Max. 25mA)
Mass	10g or less (not including the cable connectors)
Accessory	37104-3122-000FL (e-CON connector) x 2 by 3M Suitable power line AWG No.24~26



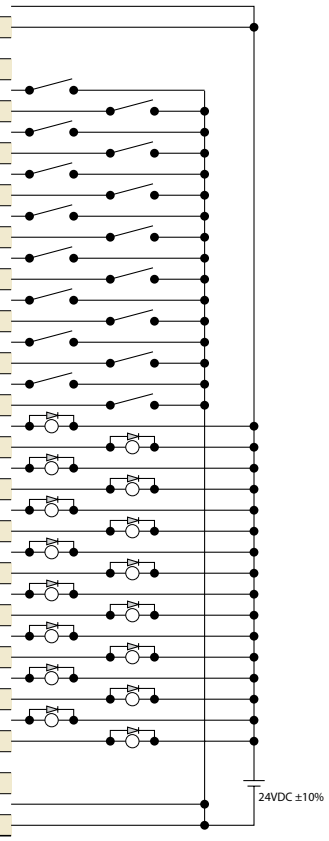
I/O signals

Pin number	Category	Signal	Symbol	Name
1A	24V		P24	Power supply (+24V) for I/O
2A	24V		P24	Power supply (+24V) for I/O
3A	-		NC	-
4A	-		NC	-
5A	Input	IN0	PC1	Command program No. 1
6A		IN1	PC2	Command program No. 2
7A		IN2	PC4	Command program No. 4
8A		IN3	PC8	Command program No. 8
9A		IN4	PC16	Command program No. 16
10A		IN5	PC32	Command program No. 32
11A		IN6	PSTR	Program start
12A		IN7	PHOM	Move to program home position
13A		IN8	ENMV	Enable axis to move
14A		IN9	FPST	Forcibly stop program from running
15A		IN10	CLBR	Load cell calibration command
16A		IN11	BKRL	Forcibly release brake
17A		IN12	RMOD	Operation mode switching
18A		IN13	HOME	HOME Home return
19A		IN14	RES	Alarm reset
20A		IN15	SON	Servo ON command
1B	Output	OUT0	PCMP	Program normally completed
2B		OUT1	PRUN	Program running
3B		OUT2	PORG	Program home position
4B		OUT3	APRC	Approaching
5B		OUT4	SERC	Searching
6B		OUT5	PRSS	Pressing
7B		OUT6	PSTP	Stop pressing
8B		OUT7	MPHM	Moving to program home position
9B		OUT8	JDOK	Overall judgment OK
10B		OUT9	JDNG	Overall judgment NG
11B		OUT10	CEND	Load cell calibration completed
12B		OUT11	RMDS	Operation mode status
13B		OUT12	HEND	Home return completed
14B		OUT13	SV	Servo ON status
15B		OUT14	*ALM	ALM Alarm (Negative logic)
16B		OUT15	*ALML	ALML Minor failure alarm (Negative logic)
17B	-		-	-
18B	-		-	-
19B	0V		N	Power supply (0V) for I/O
20B	0V		N	Power supply (0V) for I/O

I/O Wiring diagram

PIO connector (NPN speciÿcation)

Pin number	Classiÿcation	Signal name
1A	Power supply	24V
2A		24V
3A	—	Unused
4A	—	Unused
5A	Input	IN0
6A		IN1
7A		IN2
8A		IN3
9A		IN4
10A		IN5
11A		IN6
12A		IN7
13A		IN8
14A		IN9
15A		IN10
16A		IN11
17A		IN12
18A		IN13
19A		IN14
20A		IN15
1B	Output	OUT0
2B		OUT1
3B		OUT2
4B		OUT3
5B		OUT4
6B		OUT5
7B		OUT6
8B		OUT7
9B		OUT8
10B		OUT9
11B		OUT10
12B		OUT11
13B		OUT12
14B		OUT13
15B		OUT14
16B		OUT15
17B	—	Unused
18B	—	Unused
19B	Power supply	0V
20B		0V



* Connect pin numbers 1A and 2A to 24V, and connect pin numbers 19B and 20B to 0V.

PIO Input/Output interface

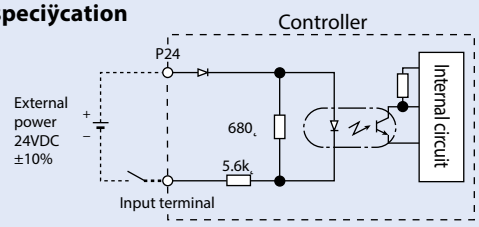
Input part External Input Speciÿcation

Item	Speciÿcation
Input voltage	24VDC ±10%
Input current	4mA, 1 circuit
ON/OFF voltage	ON voltage, 18VDC min. OFF voltage, 60VDC max.
Isolation method	Photo-coupler

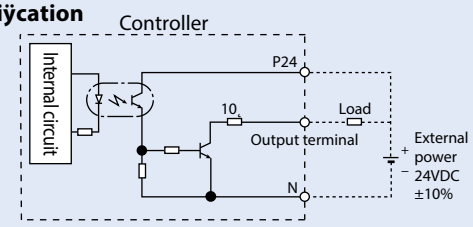
Output part Part External Output Speciÿcations

Item	Speciÿcation
Load voltage	24VDC
Maximum load current	50mA, 1 circuit
Leakage current	0.1 mA or less / 1point
Isolation method	Photo-coupler

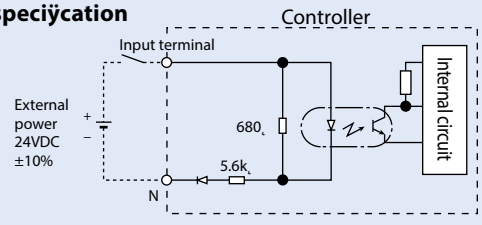
NPN speciÿcation



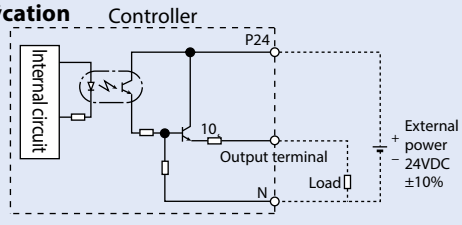
NPN speciÿcation



PNP speciÿcation



PNP speciÿcation



Field network specification operation mode description

If the PCON-CB is controlled via a field network, you can select one of the following two modes to operate the actuator. Please note that the data areas required on the PLC side will vary depending on the mode.

■Mode Description

	Mode	Description
0	Remote I/O mode	Similar to the PIO specification, this mode operates by directing bytes to ON/OFF via a network. The number of positioning points and functions will vary depending on the operation patterns (PIO patterns) set by the controller's parameters.
1	Full direct value mode	In addition to servo press functions such as start of press program and determination result reading, it supports all functions such as direct numerical movement and current load data reading.
2	Press direct value mode	This is an operation mode that designates the "press stage" of a press program by direct value. Press direct value motions and positioning direct value motions are possible.

■Required Data Size for Each Network

	Mode	DeviceNet	CompoNet	CC-Link	CC-Link IE Field	MECHATROLINK Ⅰ, Ⅱ	PROFIBUS-DP	EtherCAT	EtherNet/IP	PROFINET IO
0	Remote I/O mode	2 byte	2 byte	1 station	4 words	2 byte	2 byte	2 byte	2 byte	2 byte
1	Full direct value mode	32 byte	32 byte	4 stations	16 words	× (Note 1)	32 byte	32 byte	32 byte	32 byte
2	Press direct value mode	32 byte	32 byte	4 stations	16 words	× (Note 1)	32 byte	32 byte	32 byte	32 byte

(Note 1) Please not that the MECHATROLINK specification does not support the full direct value mode.

■List of Functions by Operation Mode

	Remote I/O mode	Full direct value mode (Note 1)	Press direct value mode (Note 1)
Operation by position data input	×	○	○
Direct speed/acceleration input	×	○	○
Press load direct command	×	×	○
Current position reading	×	○	○
Current speed reading	×	○	○
Operation by program No. input	○	○	○
Judgment result reading	○	○	○
Current speed read	×	○	○
Overload level monitor	×	○	○
Servo gain switching	○ (*1)	○ (*1)	○

(*1) One servo gain can be registered in one press program.
(Note 1) MECHATROLINK does not support the full function mode and press direct value mode.

○ : Available
× : Unavailable

I/O connector for safety function

	Model	Manufacturer
Controller side	2294417-1	Tyco Electronics (TE Connectivity)
Cable side	2013595-1 (*1)	

(*1) Customer's supply. Cable with connector (CB-SC-ST0030) is sold separately.

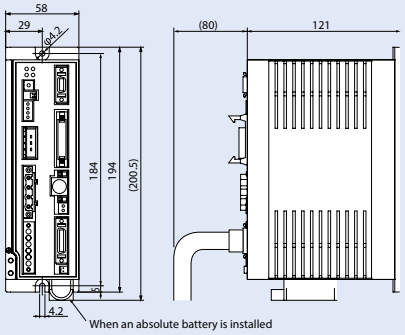
■Signals of I/O connector for safety function

Pin No.	Signal name	Name	Description
1	NC	–	Do not connect.
2	NC	–	Do not connect.
3	/SRI1-	Safety request input signal 1	Input the safety request input signal 1 ON (conduction): Release of the request for operating safety function. OFF (release): Request for operating safety function
4	/SRI1+		
5	/SRI2-	Safety request input signal 2	Input the safety request input signal ON (conduction): Release of the request for operating safety function. OFF (release): Request for operating safety function
6	/SRI2+		
7	EDM-	Output signal for monitoring external device	Output signal to monitor the safety function is functioning without failure.
8	EDM+		

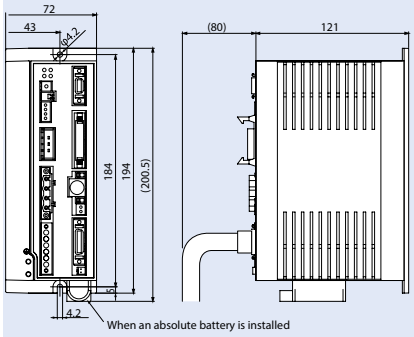
External Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

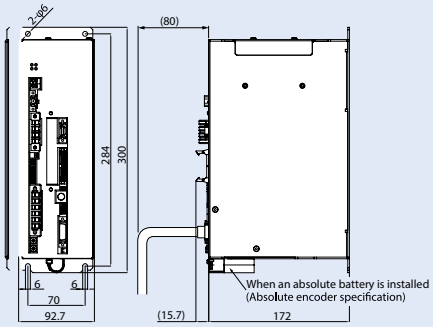
Less than 400W



400W~750W

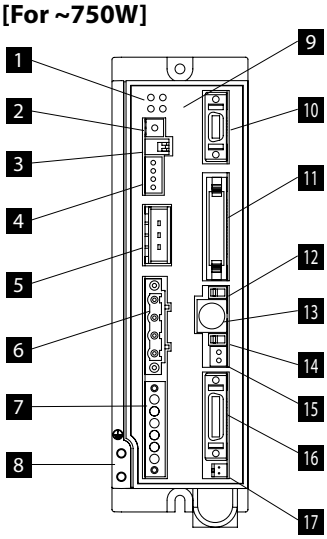


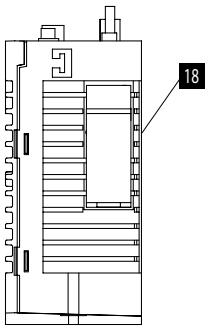
For 3000W, 3300W



Names of the parts

[For ~750W]





1 LED display(PWR, SV, ALM, EMG)

Indicates the status of the controller.

Name	Color	
PWR	Green	Turned ON when the system is ready (after power input and while CPU is normally functioning).
SV	Green	Turned ON when the servo is ON.
ALM	Orange	Turned ON when alarm is being issued.
EMG	Red	Turned ON when the system is in the emergency stop status.

2 Rotary switch(ADRS)

Used to set up the controller address after connecting the controller in order to identify every controller connected.

3 Operation mode selector switch

Not used.

4 System I/O connector(SYS I/O)

Connector used to connect switches such as emergency stop switch.

5 Regenerative unit connector

Connector used to connect the resistance unit that absorbs the regenerative current generated when the actuator decelerates to stop.

6 Motor connector(MOT)

Connector used to connect the actuator cable.

7 Power supply connector (PWR)

Connector used to connect the AC power supply. Pins of this connector are divided into two groups, one for power to controller and the other for power to motor.

8 Grounding terminal

Screw used to connect the protection grounding. Make sure to secure the grounding.

9 I/O connector for safety function

Connector to enable STO/SS1-t function

10 Multi-function connector (MF I/F)

This connector is to output the feedback pulses, analog load data of the load cell, and to use the SIO communication function (SIO2).

11 PIO connector

Used to connect communication cable between peripheral equipment such as PLC in parallel communication.

12 Operation mode selection switch (MANU/AUTO)

Name	Description
MANU	Does not accept commands from PIO.
AUTO	Ready to accept commands from PIO.

* The emergency stop switch on the teaching pendant is enabled when the connection is made, regardless of the states, AUTO or MANU. Turn the power OFF before removing the teaching pendant and SIO communication cable.

13 SIO connector(SIO)

Used to connect the teaching pendant or the communication cable with PC.

14 Brake release switch (BK RLS/NOM)

Used to forcibly release the electromagnetic brake installed in the actuator.
* To release the brake, the power supply (24VDC) for driving brake must be connected.

15 Brake power supply connector (BK PWR)

Connector used to connect lines to brake power supply (24VDC) (Use only when the actuator with a brake is connected).

16 Encoder and sensor connector

Connector used to connect encoder and sensor cables.

17 Absolute battery connector

Connector used to connect the absolute data backup battery (only when the actuator with an absolute encoder is selected).

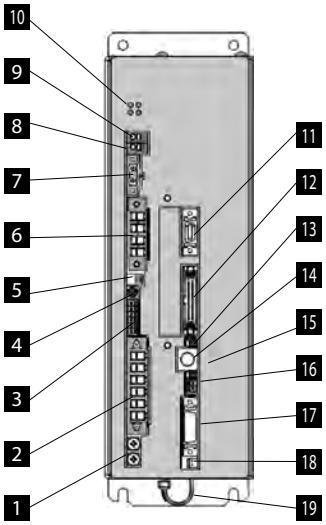
18 Absolute battery holder (attached in case of absolute specification)

Battery holder used to hold the absolute data backup battery.

from gc2022 vol8 ce9002-1.1a

Names of the parts

[For 3000W~3300W]



1 FG connection terminal

A terminal for connecting the ground line to prevent electric shock and noise. It is connected to the PE power supply connector inside the controller.

2 Power supply connector (PWR)

A connector used to connect to the AC power supply.

3 System I/O connector (SYS I/O)

This connector is used to connect the operation stop switch of the actuator.

4 Axis number setting switch (ADRS)

A switch for setting the axis number when operating multiple axes by serial communication. When using the SIO converter, it is possible to control multiple axes without attaching/detaching the connector of the communication cable from teaching tools such as PCs, etc.

5 Piano switch

Not used.

6 Motor connector (MOT)

A connector for the actuator motor cable.

7 Regenerative resistance unit cable connector (RB)

A connector for the external regenerative resistance unit.

8 Charge status display LED

This displays the charge status inside the controller.
Caution: While this LED is lit, do not touch the controller or regenerative resistance unit in order to prevent electric shock.

9 Internal regenerative resistance effective connector

A short-circuit cable is connected at shipping.
Caution: Be sure to use with the short circuit cable attached.
Use without the cable will damage the equipment.

10 LED display (PWR, SV, ALM, EMG)

This represents the operation status of the controller.
○: ON ×: OFF △: Undefined (ON or OFF)

LED				Operating status
PWR(Green)	SV(Green)	ALM(Orange)	EMG(Red)	
×	×	×	×	Control power OFF
○	×	×	×	Controller starts up normally
○	×	×	×	Servo OFF
○	○ Note 1	×	×	Servo ON
○	×	○	△	Alarm
○	×	△	○	Emergency stop
○	△	△	△	Warning

Note1: Blinks when automatic servo is OFF.

11 Multi-function connector (MF I/F)

A connector to output the feedback pulses and analog load data of the load cell, and to use the SIO communication function (SIO2).

12 PIO connector (PIO)

A connector for control input/output signal connection.
(Note) It is not installed for the fieldbus specification.

13 Operation mode setting switch (MANU/AUTO)

An interlocking switch for preventing duplication of movement commands from PIO (PLC) and commands from teaching tools such as PCs, etc.

14 SIO connector (SIO)

Used to connect teaching tools such as the PC dedicated teaching software and communication cables such as the gateway unit.

15 Brake release switch (BK RLS /NOM)

A switch to be used to release the brake of the actuator with brake forcibly.
Warning: Be sure to set this switch to the NOM side in normal operation. If it is left on the RLS side, the brake will not be applied even if the servo is turned OFF. If it is vertically mounted, the workpiece may fall, risking injury or damage to the workpiece.

16 Brake power supply connector (BK PWR)

A connector for supplying power (24VDC) to release the brake when using an actuator with brake.

17 Encoder connector (PG)

A connector for the actuator encoder cable.

18 Connector for the absolute data backup battery

A battery cable connector used for the absolute specification.

19 Absolute battery holder (comes with absolute specifications)

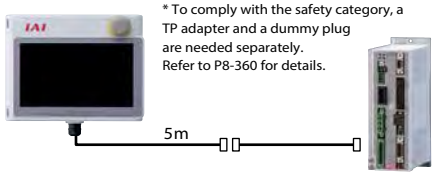
Battery holder used to hold the absolute data backup battery.

Options

Touch panel teaching pendant

Features A teaching device equipped with functions such as position teaching, trial operation, and monitoring.

Model **TB-02(D)-□** **Conÿguration**



* To comply with the safety category, a TP adapter and a dummy plug are needed separately. Refer to P8-360 for details.

Specification

Rated voltage	24VDC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0~40°C
Ambient operating humidity	5%RH - 85%RH (non-condensing)
Environmental resistance	IP20
Mass	470g (TB-02 unit only)

PC dedicated teaching software (Windows only)

Features This start-up support software provides functions such as position teaching, trial operation, and monitoring.
It provides a complete range of functions required to make adjustments, to help reduce start-up time.

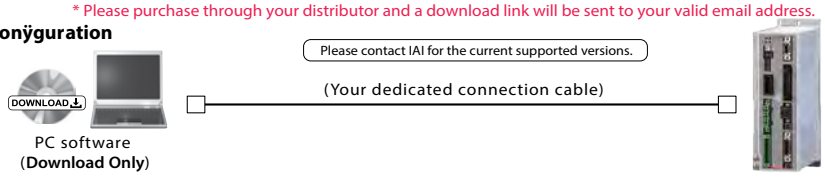
Supported Windows versions: 7/10



Model **IA-OS** (Software only, for customers who already own a dedicated connection cable)

* Please purchase through your distributor and a download link will be sent to your valid email address.

Conÿguration

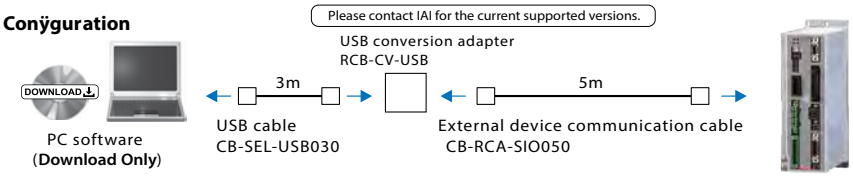


Model **IA-OS-C** (Software with an external device communication cable + USB conversion adapter + USB cable)

* Please purchase through your distributor and a download link will be sent to your valid email address.



Conÿguration



CAD drawings can be downloaded from our website.
www.iai-automation.com
2D CAD 3D CAD

Regenerative Resistance Unit

Features This unit converts the regenerative current, which is generated when the motor decelerates, into heat. Please refer to the tables below to conÿrm the total wattage of the actuators, and use the regenerative unit as necessary.

<For ~750W>

Model RESU-2 (Standard speciÿcation)/RESUD-2 (DIN rail mounting speciÿcation)

Specification

Model number	RESU-2	RESUD-2
Mass	Approximately 0.4kg	
Internal regen. resistance value	235° 80W	
Mounting method	Screw mounting	DIN rail mounting
Included cable	CB-SC-REU010	

Necessary Amount Guideline

Horizontal	Vertical
0 ~100W	~100W
1 ~400W	~400W
2 ~750W	~750W

* The required regenerative resistance may be more than as speciÿed above depending on the operating conditions.
* The guide of the linear servo actuator is same as the above table. However, one LSA / LSAS-N10S type is required.

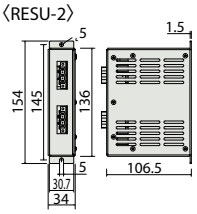
Necessary Amount Guideline (RCS2-RA13R)

	Lead 2.5	Lead 1.25
Horizontal	1	0
Vertical	1	1

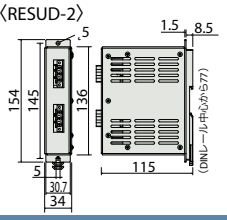
* The required regenerative resistance may be more than as speciÿed above depending on the operating conditions.

External dimensions

〈RESU-2〉



〈RESUD-2〉



<For 3000W・3300W>

Model RESU-35T

Specification

Mass	Approximately 1.8kg
Internal regen. resistance value	30° 450W
Mounting method	Screw mounting

* The cable is required to prepare by the customer.

Necessary Amount Guideline

●For 3000W

Cycle time	Number of connected units
12sec or more	No need
6~12sec	1
3.5~6sec	2
3.5sec or less	(Note)

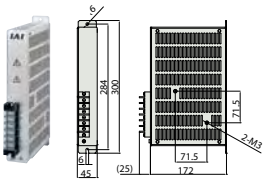
●For 3300W

Cycle time	Number of connected units
2.5sec or more	No need
Less than 2.5sec	1

* The required number varies depending on operating conditions.
(Note) Please inquire when a cycle time of 3.5 sec or less is assumed.

External dimensions

〈RESU-35T〉



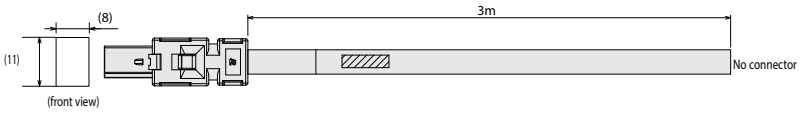
* When two regenerative units are required, please use one RESU-2 and one RESU-1 (Please refer to P8-316).

Maintenance parts

These parts are normally included in each unit. Please order individual parts if lost or need replacing.

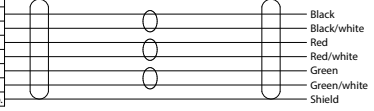
I/O cable for safety functions

Model **CB-SC-STO 030**



2013595-1(TE)

Wiring	Color	Signal	No.
AWG26	—	—	1
	—	—	2
	Black	/SRI1−	3
	Black/White	/SRI1+	4
	Red	/SRI2−	5
	Red/White	/SRI2+	6
	Green	EDM−	7
	Green/White	EDM+	8
Shield is connected to the cable clamp.			



* Wire color: (ex.) Black/White represents white lines on the black insulator.

Absolute data backup battery

Features This is an absolute data backup battery for an actuator with absolute speciÿcation.

Model **Model AB-5(battery only)**
AB-5-CS(with a case)



Dummy plug (Safety category speciÿcation)

Features This plug is required when the safety category speciÿcation (SCON-CGB) is used.

Model **DP-5**



Dummy plug (STO/SS1-t speciÿcation)

Features Necessary when STO/SS1-t function is not used.

Model **DP-6**



Service connector for pulse-train control

Model Plug:
10114-3000PE
Shell:
10314-52F0-008



System I/O connector (for under 750W type)

Model FMC1.5/4-ST-3.5



System I/O connector (for over 3000W type)

Model FMC1.5/6-ST-3.5



Connector for brake power

Model MC1.5/
2-ST-3.5



AC power connector (for under 750W type)

Model MSTB2.5/
6-STF-
5.08



AC power connector (for over 3000W type)

Model PC5/
6-STF-
7.62



External regenerative resistance unit connector(for over 3000W type)

Model GIC2.5/
2-STF-
7.62

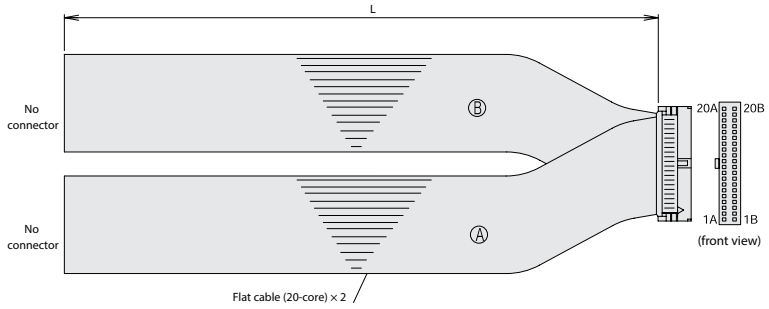


PIO flat cable

* This cable is included in the controller except when cable 0 (no cable) is selected at the model (I/O cable length).

Model Number CB-PAC-PIO□□□

* Please indicate the cable length (L) in □□□ , maximum 10m, e.g.) 080 = 8m



HIF6-40D-1.27R(Hirose)

No.	Signal name	Cable Color	Wiring	No.	Signal name	Cable Color	Wiring
1A	24V	Brown-1	Flat cable Ⓐ (pressure-welded)	1B	OUT0	Brown-3	Flat cable Ⓑ (pressure-welded) AWG28
2A	24V	Red-1		2B	OUT1	Red-3	
3A	—	Orange-1		3B	OUT2	Orange-3	
4A	—	Yellow-1		4B	OUT3	Yellow-3	
5A	IN0	Green-1		5B	OUT4	Green-3	
6A	IN1	Blue-1		6B	OUT5	Blue-3	
7A	IN2	Purple-1		7B	OUT6	Purple-3	
8A	IN3	Gray-1		8B	OUT7	Gray-3	
9A	IN4	White-1		9B	OUT8	White-3	
10A	IN5	Black-1		10B	OUT9	Black-3	
11A	IN6	Brown-2		11B	OUT10	Brown-4	
12A	IN7	Red-2		12B	OUT11	Red-4	
13A	IN8	Orange-2		13B	OUT12	Orange-4	
14A	IN9	Yellow-2		14B	OUT13	Yellow-4	
15A	IN10	Green-2		15B	OUT14	Green-4	
16A	IN11	Blue-2		16B	OUT15	Blue-4	
17A	IN12	Purple-2		17B	—	Purple-4	
18A	IN13	Gray-2		18B	—	Gray-4	
19A	IN14	White-2		19B	0V	White-4	
20A	IN15	Black-2		20B	0V	Black-4	

Maintenance parts (cable)

These parts are normally included in each unit. Please order individual parts if lost or need replacing.
Refer to P1-89 for the details of cables.

Cable model search system is recommended!
URL: https://www.iai-automation.com/iai-cables-search-tool/

■Table of Applicable Cables

Model Number		Motor Cable	Motor Robot Cable	Encoder cable	Encoder robot cable
RCS3	RA4R	CB-RCC-MA□□□	CB-RCC-MA□□□-RB	CB-RCS2-PLDA□□□	CB-RCS2-PLDA□□□-RB
	RA6R				
	RA7R				
	RA8R				
	RA10R				
	RA15R	–	CB-RCS3-MA□□□-RB	–	CB-RCS3-PLA□□□-RB
	RA20R				
RCS2	RA13R (With brake / load cell specification)	CB-RCC-MA□□□	CB-RCC-MA□□□-RB	CB-RCS2-PLA□□□ * Between controller and brake CB-RCS2-PLLA □□□ * Between the load cell and controller: CB-LDC-CTL□□□-JY	CB-X2-PLA□□□ * Between controller and brake CB-RCS2-PLLA□□□-RB
	RA13R (No brake / Load cell specification)			CB-RCS2-PLLA□□□	CB-RCS2-PLLA□□□-RB

SCON-CB



Position Controller for RCS2-RA13R and RCS3-RA15R/RA20R without Load Cell

*This model is also for Single-axis robot / Cartesian robot / Linear servo / ROBO Cylinder RCS2/RCS3/RCS4

CE (*1) RoHS 10 c UL us (*2)

(*1) MECHATROLINK-I/II connection specification is not compliant with CE Marking.
(*2) 3000 and 3300W types are not compliant with UL standard.

Features

1 Compatible with Battery-less Absolute Encoder

The RCS2, RCS3, RCS4, ISB, ISDB, NSA and IFA equipped with a battery-less absolute encoder can be operated.
Since no battery is needed to retain position data, less space is required in the control panel, which contributes to saving initial and maintenance costs.



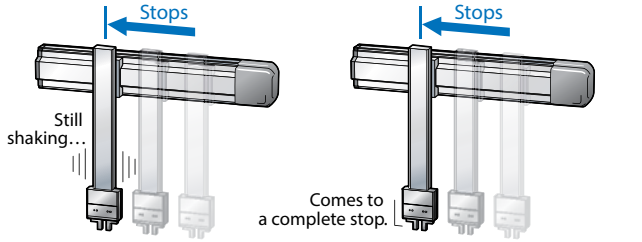
2 Supporting Major Field Networks <Optional Function>

In addition to DeviceNet, CC-Link, CC-Link IE Field and PROFIBUS-DP, direct connections are now possible to MECHATROLINK, CompoNet, EtherCAT, EtherNet/ IP and PROFINET IO.
The actuator can also be operated by specifying coordinate values directly via a ÿeld network.

DeviceNet
PROFIBUS
CompoNet
CC-Link
EtherNet/IP
CC-Link IE Field
MECHATROLINK
EtherCAT
PROFINET

3 Vibration Control Function <Optional Function>

A vibration control function is equipped that suppresses vibration of the work part installed on the slider when the actuator's slider moves.
This function shortens the time the actuator waits for vibration to settle, and consequently shortens the cycle time.



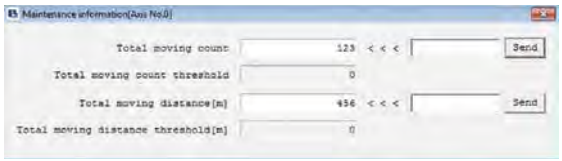
Without vibration control
The work part vibrates after stopping.

With vibration control
The work part generates virtually no vibration after stopping.

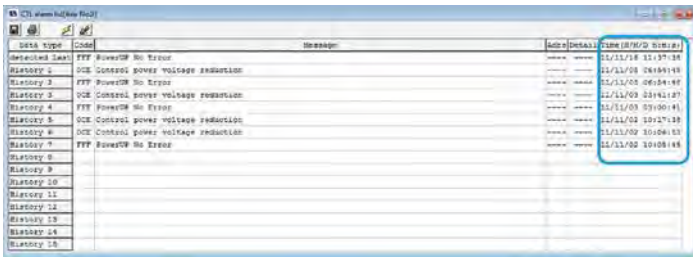
4 Capable of Predictive Maintenance <Optional Function>

- Equipped with a feature to detect motor overload and issue warning.
  By monitoring the motor temperature, abnormal changes can be detected before a malfunction or failure occurs.
- Fully equipped with a monitoring function.
  Like an oscilloscope, waveforms of position and speed can be acquired from the moment that the condition of a selected signal is changed.
  Signal status of positioning complete, alarm and so on can also be acquired.
- With smart tuning and o -board tuning, it is possible to adjust the acceleration/deceleration and gain depending on the payload.
- Using the counter function, the exact number of actuator movements and total distance traveled are calculated.
  This function can be used to output a signal when maintenance is required.
- The calendar function enables to retain the history of alarm occurrence.

<Maintenance information>



<Calendar function>



5 Supports the Safety Function STO/SS1-t <Optional function>

Supports the STO (Safe Torque O°) / SS1-t (Safe Stop 1 - time controlled) function.
The STO / SS1-t function is to shut o° the ener gy supply to the motor by electric circuit in the controller.
For the SCON-CB, two speciÿcations are available; STO and SS1-t speciÿcation. For applications of the vertical axis, SS1-t speciÿcation that has a long reaction time can prevent workpiece from dropping due to the time lag of brake operation when the safety torque shut o° function is activated.

SpeciÿcationDescription	Remarks
STO	Reacting to input signals, the energy supply to the motor is shut o° after a reaction time (8ms or shorter) by shut-o° cir cuit in the controller.
SS1-t	Reacting to input signals, brake is applied and the energy supply to the motor is shut o° af ter a reaction time (500ms or shorter) by shut-o° cir cuit in the controller. This braking operation is not included in the safety function.

The energy supply to the servo motor can be shut o° saf ely by connecting an external safety-related device and the I/O connector for safety function.

I/O connector for safety function (for STO/SS1-t speciÿcation only)



In addition, the STO/SS1-t function is compliant with the following safety standards:
- ISO/EN ISO 13849-1 category 3 PLe
- IEC 61508 SIL3
- IEC/EN61800-5-2
- IEC/EN62061 SIL CL3

(Note) An engineer with expert knowledge in relevant safety standards should read and understand the descriptions stated in the instruction manual before designing a safety system using this function.

List of Models

Model		SCON-CB/CGB											
External view													
I / O type		Standard speciÿcation	Field network type (*1)										
		PIO connection speciÿcation	DeviceNet	CC-Link	CC-Link IE Field	PROFIBUS-DP	CompoNet	MECHATROLINK-I/ II	MECHATROLINK- III	EtherCAT	EtherCAT Motion	EtherNet/IP	PROFINET IO	RCON
I/O type code		NP/PN	DV	CC	CIE	PR	CN	ML	ML3	EC	ECM	EP	PRT	RC
Applicable encoder type		Battery-less absolute Incremental Quasi-absolute Index absolute / Absolute Multi-Rotation Absolute	Battery-less absolute/ Incremental/Absolute/Quasi-absolute											
SCON-CB	12～150W	○ / ○	○	○	○	○	○	○	○	○	○	○	○	○
	200W	○ / ○												
	100S/200S/300S	○ / ○												
	300～400W	○ / ○												
	600W	○ / ○												
	750W	○ / ○												
	3000～3300W	○												

(Note) The index absolute type can not be used in the pulse-train control, MECHATROLINK-III and EtherCAT Motion control. (See P6-38)
(*1) Note that communication with PIO and pulse-train cannot be performed in the network type.

○ : Available

Model

SCON – [Series] – [Type] – [Motor Type] [Encoder Type] [Option] – [I/O Type] – [I/O Cable Length] – [Power Supply Voltage] – [Safety type]

Type

CB	High-function type
CGB	Safety category compliant type

* For RCS 3 - RA 15 R / 20 R, only CGB can be chosen.

Motor Type

12	12W	200	200W
20	20W	200S	200W
30D	30W	300S	300W
30R	30W	400	400W
60	60W	600	600W
100	100W	750	750W
100S	100W	3000	3000W
150	150W	3300	3300W

(Example) 12: 12 W Servo motor compatible

Encoder Type

WAI	Battery-less absolute Incremental
A	Absolute
G	Quasi-absolute*1
AI	Index absolute*2
AM	Multi-Rotation Absolute*2

*1 Quasi-absolute is for LSAS Series only.
*2 DD motor operation mode is added.

Option

Not speciÿed	Standard type
HA	Hi-accel./decel. speciÿcation

* In case of selecting "HA" in the actuator option.
<High-acceleration/deceleration compatible actuator>
RCS2-SA4C/SA5C/SA6C/
SA7C/RA4C/RA5C/RGS4C/
RGS5C/RGD4C/RGD5C

I/O Type

NP	PIO NPN (standard)
PN	PIO PNP
DV	DeviceNet connection
CN	CompoNet connection
CC	CC-Link connection
CIE	CC-Link IE Field connection speciÿcation
ML	MECHATROLINK-I/II (Note 1)
ML3	MECHATROLINK-III (Note 1)
PR	PROFIBUS-DP
EC	EtherCAT
ECM	EtherCAT Motion
EP	EtherNet/IP
PRT	PROFINET IO
RC	RCON connection speciÿcation

(Note 1) Please be sure to check P8-18 for the caution when selecting.

I/O Cable Length

0	No cable
2	2m (standard)
3	3m
5	5m

* If you choose a ÿeld network speciÿcation, the length of the I/O cable will be 0".

Power Supply Voltage

1	Single phase AC100V
2	Single phase AC 200V
3	Three phase 200VAC

* Please check the power supply voltage that can be selected on the page of the actuator.

Safety type

Not speciÿed	Standard type
STO	STO type
SS	SS1-t type

* Only the standard type is selectable for RCS3-RA15R/20R.

Note

Basically, the type of motor is the same as the type of motor of the actuator to be connected, however, there are models that some of the controllers and the motors of the actuators do not match.
The applicable models are listed below, so please note when selecting.
<30D・30R・200S applicable actuator>

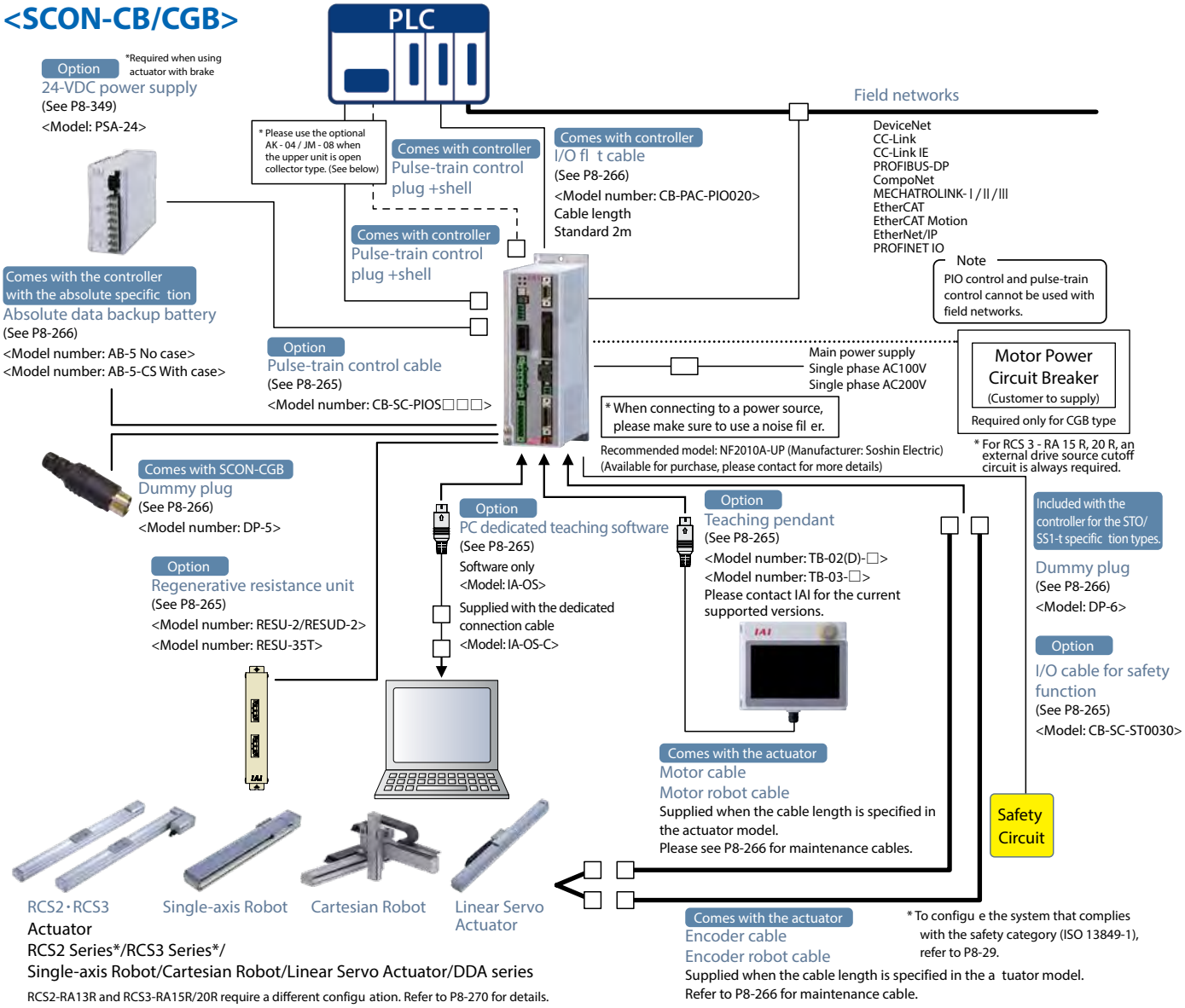
● Controller Motor type "30D"
30W actuator other than RS

● Controller Motor type "30R"
RS

● Controller Motor type "200S"
DD-LT18□ DDCR-LT18□
DDA-LT18C DDACR-LT18C
* For 200S, the housing of the controller will be 400W. Please check the 400w speciÿcations for the price.

System configuration

<SCON-CB/CGB>

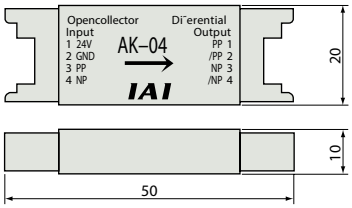


■ Pulse Converter: Model number AK-04

Open-collector command pulses are converted to di˜e rential command pulses. Use this converter if the host controller outputs open-collector pulses.

Speciÿcation

Item	Speciÿcation
Input power supply	24VDC±10% (Max.50mA)
Input pulse	Open-collector (Collector current: 12mA max.)
Input frequency	200kHz or less
Output pulse	Di˜e rential output (10mA max.) (26C31 or equivalent)
Mass	10g or less (excluding cable connectors)
Accessories	3M's 37104-3122-000FL (e-CON connector), 2 pieces Suitable wire: AWG No.24~26

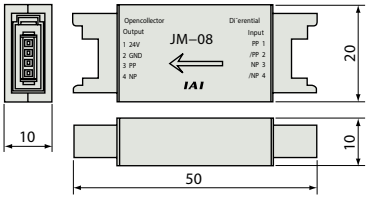


■ Pulse Converter: Model number JM-08

Converts di˜erential pulses to the open- collector speciÿcation. Please use this converter if the host controller uses open-controller speciÿcation for pulse input.

Speciÿcation

Item	Speciÿcation
Input power supply	24VDC±10% (Max.50mA)
Input pulse	Di˜e rential input (10mA max.) (conforming to RS422)
Input frequency	500kHz or less
Output pulse	24-VDC open-collector (Collector current: 25mA max.)
Mass	10g or less (excluding cable connectors)
Accessories	37104-3122-000FL (e-CON connector)(by 3M) × 2 Suitable wire: AWG No.24~26



I/O connector for safety function

	Model	Manufacturer
Controller side	2294417-1	Tyco Electronics
Cable side	2013595-1 (*1)	

(*1) Customer's supply. Cable with connector (CB-SC-ST0030) is sold separately.

■Signals of I/O connector for safety function

Pin No.	Signal name	Name	Description
1	NC	–	Do not connect.
2	NC	–	Do not connect.
3	/SRI1-	Safety request input signal 1	Input for the safety request input signal. ON (conduction): Release of the request for operating safety function. OFF (release): Request for operating safety function.
4	/SRI1+		
5	/SRI2-	Safety request input signal 2	Input the safety request input signal ON (conduction): Release of the request for operating safety function. OFF (release): Request for operating safety function.
6	/SRI2+		
7	EDM-	Output signal for monitoring external device	Output signal to monitor the safety function is functioning without failure.
8	EDM+		

Specification table

Item		Specification		
Applicable motor capacity		Less than 400W	400~750W	3000W・3300W
Number of controlled axes		1 axis		
Operation method		Positioner type/pulse-train type		Positioner type
Number of positioning points		512 points (PIO specification), 768 points (Fieldbus specification)		
Backup memory		Non-volatile memory (FRAM)		
I/O connector		40-pin connector		
Number of I/O points		16 input points/16 output points		
I/O power supply		External supply 24VDC ±10%		
Serial communication		RS485 1ch		RS48 2ch
Command pulse-train input method (Note 1)		Differential line driver output supported		–
Maximum input pulse frequency (Note 1)		Differential line driver method: 2.5Mpps max./ Open-collector method (pulse converter used): 200kpps max.		–
Feedback pulse (Note 2) (Except for field ne work specific tion)		Differential line driver method: Max. 2.5Mpps		–
Position detection method		Incremental encoder / Absolute encoder / Quasi-absolute serial encoder		Battery-less absolute encoder
Driving power shut-off function		CB: Available (built-in relay) CGB: Unavailable		Unavailable
Forced electromagnetic brake release		Brake release switch ON/OFF		
Input power supply		Single-phase AC100~115V±10% Single-phase AC200~230V±10%	Single-phase AC200~230V±10%	Three-phase AC200V~230V±10%
Power-supply capacity (Note 3)		12W/89VA 20W/74VA 30W(other than RS)/94VA 30W(RS)/186VA 60W(other than RCS3-CTZ5C)/186VA 60W(RCS3-CTZ5C)/245VA 100W/282VA 150W/376VA 200W/469VA	100SW(LSA/LSAS-N10)(*)/331VA 200SW(LSA-S10H, LSA/LSAS-N15S)(*)/534VA 200SW(LSA/LSAS-N15H)(*)/821VA 300W(LSA-N19)(*)/710VA 400W(other than RCS3-CT8C)/968VA 400W(RCS3-CT8C)/1278VA 600W/1212VA 750W/1569VA	3000W/5705VA 3300W/6062VA
Vibration resistance		X,Y, and Z directions 10~57Hz single-side width 0.035mm(continuous), 0.075mm(continuous) 58~150Hz 4.9m/s^2(continuous), 9.8m/s^2(continuous)		X,Y, and Z directions 10~57Hz single-side width 0.035mm(continuous), 0.075mm(intermittent) 58~150Hz 4.9m/s^2(continuous), 9.8m/s^2(intermittent)
Calendar/ clock function	Retention time	Approx. 10 days		
	Charge time	Approx. 100 hours		
Protective functions		Overcurrent, abnormal temperature, low fan speed monitoring, encoder disconnection, etc.		
Ambient operating temperature		0~40˚C		
Ambient operating humidity		5%RH - 85%RH (non-condensing, no frost)		
Operating atmosphere		Free from corrosive gases		
Protection degree		IP20		
Mass		Approx. 900g (+ 25g for the absolute specification)	Approx. 1.2kg (+ 25g for the absolute specification)	Approx. 2.8kg
External dimensions		58mm(W)×194mm(H)×121mm(D)	72mm(W)×194mm(H)×121mm(D)	92.7mm(W)×300mm(H)×172mm(D)

(Note 1) When the master unit is of the open-collector method, convert the pulse to the pulse differential method by AK-04 (see P8-218). The maximum input pulse frequency of AK-04 is 200kpps.
(Note 2) When the master unit is of the open-collector method, convert the pulse to the pulse differential method by JM-08 (see P8-218). The maximum input pulse frequency of JM-08 is 500kpps.
(Note 3) Controllers operating any of the actuator models denoted by (*) shall conform to the external dimensions of controllers for 400W or more, even when the output is less than 400W.

* The number of encoder pulses for the actuators operable with SCON-CB is 1600 pulses for RCS2-SRA7BD/SRGS7BD, 1600 pulses for RCS2-□□5N (incremental), 1048576 pulses for DD(A)-□18P: 20bit, 131072 pulses for DD(A)-□18S: 17bit, 2400 pulses for NS-S□M□ (incremental, 131072 pulses for ISB (battery-less absolute) and 16384 pulses for all the rest.

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Operation modes

With this controller, you can select a desired control method from the two modes of positioner mode and pulse-train control mode.
In the positioner mode, you can enter position data (target position, speed, acceleration, etc.) in the controller under the desired numbers and then specify each number externally via a I/O (input/output signal) to operate the actuator.
Also, in the positioner mode, you can select the desired operation mode from the eight modes using the parameter.
In the pulse-train control mode, you can control the travel, speed, acceleration, etc., by sending pulses from an external pulse generator.

Mode		Type	Number of positioning points	Features
Positioner mode	Positioning mode	PIO Patterns 0	64	Standard factory-set mode. Specify externally a number corresponding to the position you want to move to, to operate the actuator.
	Teaching mode	PIO Patterns 1	64	In this mode, you can move the slider (rod) via an external signal and register the stopped position in the position data table.
	256-point mode	PIO Patterns 2	256	In this mode, the number of positioning points available in the positioning mode has been increased to 256 points.
	512-point mode	PIO Patterns 3	512	In this mode, the number of positioning points available in the positioning mode has been increased to 512 points.
	Solenoid valve mode 1	PIO Patterns 4	7	Like the solenoid valve of the air cylinder, the actuator can be moved only by turning signals ON/OFF.
	Solenoid valve mode 2	PIO Patterns 5	3	In this mode, the output signal is set to the same as the air cylinder auto switch in the solenoid valve mode.
	Force mode 1 (Note1)	PIO Patterns 6	32	In this mode, you can move to positions under force control in the positioning mode. (Up to 32 positioning points are available.)
	Force mode 2 (Note1)	PIO Patterns 7	5	In this mode, you can move to positions under force control in the solenoid valve mode. (Up to ÿve positioning points are available.)
Pulse-train control mode	Pulse-train control mode for incremental (Note1)	PIO Patterns 0	—	Position data input to the controller is not necessary, and movement is made according to the sent pulse.
	Pulse-train control mode for absolute (Note1)	PIO Patterns 1		

Note 1 3000 W / 3300 W can not be used.

I/O Signal table * You can select one of nine types of I/O signal assignments.

Pin No	Category		Parameter (PIO Pattern) Selection								
			0	1	2	3	4	5	6 (Note 1)	7 (Note 1)	0/1 (Note 1)
			Positioning mode	Teaching mode	256-point mode	512-point mode	Solenoid valve mode 1	Solenoid valve mode 2	Force mode 1	Force mode 2	Pluse-train mode
		Positioning point	64	64	256	512	7	3	32	5	—
1A	24V		P24								P24
2A	24V		P24								P24
3A	—		NC								NC
4A	—		NC								NC
5A	Input	IN0	PC1	PC1	PC1	PC1	ST0	ST0	PC1	ST0	SON
6A		IN1	PC2	PC2	PC2	PC2	ST1	ST1 (JOG+)	PC2	ST1	RES
7A		IN2	PC4	PC4	PC4	PC4	ST2	ST2 (–)	PC4	ST2	HOME
8A		IN3	PC8	PC8	PC8	PC8	ST3	—	PC8	ST3	TL
9A		IN4	PC16	PC16	PC16	PC16	ST4	—	PC16	ST4	CSTP
10A		IN5	PC32	PC32	PC32	PC32	ST5	—	—	—	DCLR
11A		IN6	—	MODE	PC64	PC64	ST6	—	—	—	BKRL
12A		IN7	—	JISL	PC128	PC128	—	—	—	—	RMOD
13A		IN8	—	JOG+	—	PC256	—	—	CLBR	CLBR	RSTR (Note 2)
14A		IN9	BKRL	JOG–	BKRL	BKRL	BKRL	BKRL	BKRL	BKRL	—
15A		IN10	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD	—
16A		IN11	HOME	HOME	HOME	HOME	HOME	—	HOME	HOME	—
17A		IN12	*STP	*STP	*STP	*STP	*STP	—	*STP	*STP	—
18A		IN13	CSTR	CSTR/PWRT	CSTR	CSTR	—	—	CSTR	—	—
19A		IN14	RES	RES	RES	RES	RES	RES	RES	RES	—
20A		IN15	SON	SON	SON	SON	SON	SON	SON	SON	—
1B	Output	OUT0	PM1	PM1	PM1	PM1	PE0	LSO	PM1	PE0	PWR
2B		OUT1	PM2	PM2	PM2	PM2	PE1	LS1 (TRQS)	PM2	PE1	SV
3B		OUT2	PM4	PM4	PM4	PM4	PE2	LS2 (–)	PM4	PE2	INP
4B		OUT3	PM8	PM8	PM8	PM8	PE3	—	PM8	PE3	HEND
5B		OUT4	PM16	PM16	PM16	PM16	PE4	—	PM16	PE4	TLR
6B		OUT5	PM32	PM32	PM32	PM32	PE5	—	TRQS	TRQS	*ALM
7B		OUT6	MOVE	MOVE	PM64	PM64	PE6	—	LOAD	LOAD	*EMGS
8B		OUT7	ZONE1	MODES	PM128	PM128	ZONE1	ZONE1	CEND	CEND	RMDS
9B		OUT8	PZONE/ZONE2	PZONE/ZONE1	PZONE/ZONE1	PM256	PZONE/ZONE2	PZONE/ZONE2	PZONE/ZONE1	PZONE/ZONE1	ALM1
10B		OUT9	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS	ALM2
11B		OUT10	HEND	HEND	HEND	HEND	HEND	HEND	HEND	HEND	ALM4
12B		OUT11	PEND	PEND/WEND	PEND	PEND	PEND	—	PEND	PEND	ALM8
13B		OUT12	SV	SV	SV	SV	SV	SV	SV	SV	*OVLW/*ALML
14B		OUT13	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	REND(Note 2)
15B		OUT14	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM	ZONE1
16B		OUT15	*BALM	*BALM	*BALM	*BALM	*BALM	*BALM	*BALM	*BALM	ZONE2
17B	—		—								—
18B	—		—								—
19B	0V		N								N
20B	0V		N								N

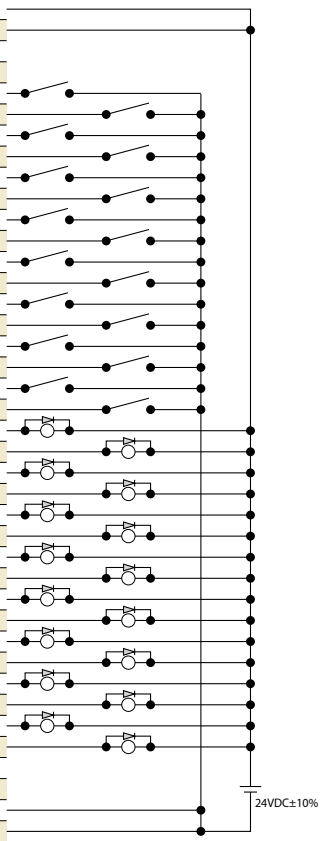
* In the above table, signals in ( ) represent functions available before the home return.
* In the above table, signals preceded by * are turned OFF while the actuator is operating.
Note 1 3000 W / 3300 W can not be used.
Note 2: It is available to use only in Pulse-Train Control Mode PIO Pattern 1.

I/O Wiring diagrams

Positioning Mode/Teaching Mode/Solenoid Valve Mode

PIO connector (NPN speciÿcation)

Pin No.	Category	Signal name
1A	Power supply	24V
2A		24V
3A	—	Not used
4A	—	Not used
5A	Input	IN0
6A		IN1
7A		IN2
8A		IN3
9A		IN4
10A		IN5
11A		IN6
12A		IN7
13A		IN8
14A		IN9
15A		IN10
16A		IN11
17A		IN12
18A		IN13
19A		IN14
20A		IN15
1B	Output	OUT0
2B		OUT1
3B		OUT2
4B		OUT3
5B		OUT4
6B		OUT5
7B		OUT6
8B		OUT7
9B		OUT8
10B		OUT9
11B		OUT10
12B		OUT11
13B		OUT12
14B		OUT13
15B		OUT14
16B		OUT15
17B	—	Not used
18B	—	Not used
19B	Power supply	0V
20B		0V

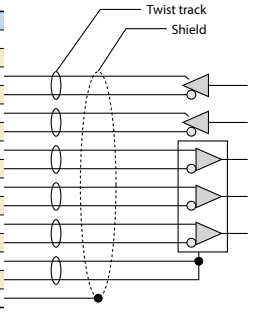


* Connect Pins 1A and 2A to 24 V, and Pins 19B and 20B to 0 V.

Pulse-train Mode (Di°erential Output)

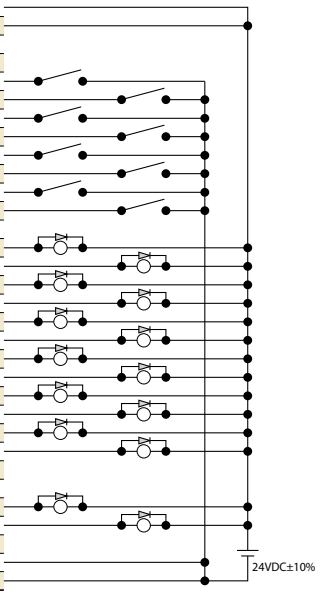
Pulse connector

Pin No.	Category	Signal name
1		Not used
2		Not used
3	Input	PP
4		/PP
5		NP
6		/NP
7	Output	AFB
8		/AFB
9		BFB
10		/BFB
11		ZFB
12		/ZFB
13	Ground	GND
14		GND
Shell	Shield	Shield



PIO connector (NPN speciÿcation)

Pin No.	Category	Signal name
1A	Power supply	24V
2A		24V
3A		Not used
4A		Not used
5A	Input	SON
6A		RES
7A		HOME
8A		TL
9A		CSTP
10A		DCLR
11A		BKRL
12A		RMOD
13A～20A	—	Not used
1B	Output	PWR
2B		SV
3B		INP
4B		HEND
5B		TLR
6B		*ALM
7B		*EMGS
8B		RMDS
9B		ALM1
10B		ALM2
11B		ALM4
12B		ALM8
13B		See (*1)
14B		—
15B		ZONE1
16B		ZONE2
17B～18B	—	Not used
19B	Power supply	0V
20B		0V



* Please make sure to connect the Shield of the twisted pair cable, which connects to the Pulse connector, to the Shell. Also keep the cable length to 10m or less.
* Connect Pins 1A and 2A to 24V, and Pins 19B and 20B to 0V
(*1) —/*ALML/*OVLW/*BALM (switchable with parameters)

PIO input and output interface

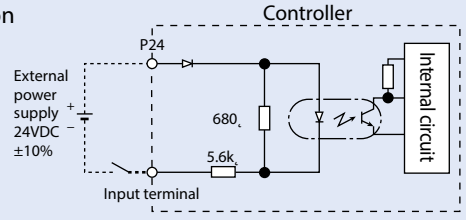
Input Part External Input Speciÿcations

Item	Speciÿcation
Input voltage	24VDC ±10%
Input current	4mA/1 circuit
ON/OFF voltage	ON voltage: DC 18V min. OFF voltage: DC 6V max.
Isolation method	Photocoupler

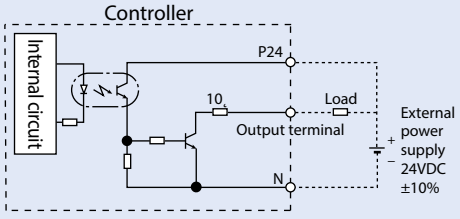
Output Part External Output Speciÿcations

Item	Speciÿcation
Load voltage	24VDC
Max. load current	50mA/1 point
Leak current	Max. 0.1mA/1 point
Isolation method	Photocoupler

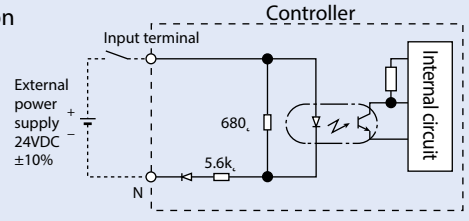
NPN speciÿcation



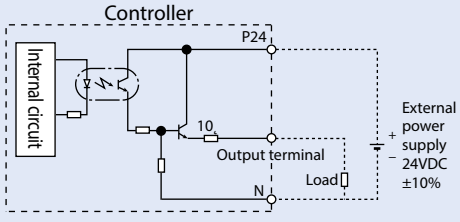
NPN speciÿcation



PNP speciÿcation



PNP speciÿcation



Pulse-train control mode I/O signals

The signal assignments of the ˜a t cable in the pulse-train control mode is as shown in the table below.
Connect external equipment (such as PLC) according to this table.

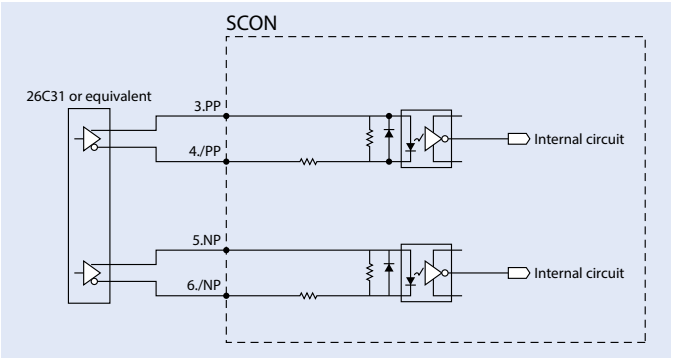
Pin No.	Classiÿcation	I/O No.	Signal code	Signal name	Parameter No. 25 "PIO pattern 6/7"
1A	24V		P24	Power	Power for I/O +24V
2A	24V		P24	Power	Power for I/O +24V
3A	Pulse input		PP	Di¸erential pulse-train input (+)	Input di¸erential pulses from host. Possible up to 200kpps.
4A			/PP	Di¸erential pulse-train input (-)	
5A	Input	IN0	SON	Servo ON	Servo ON while ON, Servo OFF while OFF.
6A		IN1	RES	Reset	Alarm is reset by signal ON
7A		IN2	HOME	Home return	Home return motion by signal ON
8A		IN3	TL	Torque limit selection	The motor torque is limited to the parameter set value by signal ON.
9A		IN4	CSTP	Forced stop	The actuator is stopped forcedly by continuous ON over 16ms. It is decelerated to a stop and the servo is turned OFF according to the torque set by inside the controller.
10A		IN5	DCLR	Deviation counter clear	This signal clears the deviation counter
11A		IN6	BKRL	Brake forced release	Releases the brake forcedly
12A		IN7	RMOD	Operation mode switch	Possible to switch the operation mode when the controller Mode switch is AUTO. (AUTO by OFF signal and MANU by ON signal)
13A		IN8	RSTR※1	Reference position move command	*1: Usable only in PIO pattern 7
14A		IN9	NC	—	Not used
15A		IN10	NC	—	Not used
16A		IN11	NC	—	Not used
17A		IN12	NC	—	Not used
18A		IN13	NC	—	Not used
19A		IN14	NC	—	Not used
20A		IN15	NC	—	Not used
1B	Output	OUT0	PWR	System standby complete	Turns ON when the control power is ready after turning the main power on.
2B		OUT1	SV	Servo ON status	Turns ON when the servo is ON.
3B		OUT2	INP	Positioning complete	Turns ON when the remaining pulse amount in the deviation counter is within the positioning width range.
4B		OUT3	HEND	Home return complete	Turns ON when the home return is complete.
5B		OUT4	TLR	Torque limited	Turns ON when the torque reaches the limit while torque is limited.
6B		OUT5	*ALM	Controller alarm status	Turns ON when the controller is in the normal state, and turns OFF at the emergency stop status.
7B		OUT6	*EMGS	Emergency stop status	Turns ON when the controller is in the emergency stop canceled status, and turns OFF in the emergency stop status.
8B		OUT7	RMDS	Operation mode status	Outputs the operation mode status. Turns ON when the controller is in manual mode.
9B		OUT8	ALM1	Alarm code output signal	Outputs the alarm code when the alarm is activated. Refer to the instruction manual for details.
10B		OUT9	ALM2		
11B		OUT10	ALM4		
12B		OUT11	ALM8		
13B		OUT12	*ALML	Minor failure alarm	Outputs when a message level alarm is activated. Turns OFF for alarm activation.
14B		OUT13	REND※1	Reference position movement complete	Turns ON when the movement to the reference position that is set in Parameter No.167 is complete.
15B		OUT14	ZONE1	Zone signal 1	Turns ON when the actuator's current position is within the range set by the parameter.
16B		OUT15	ZONE2	Zone signal 2	
17B	Pulse input		NP	Movement pulse-train input (+)	Inputs di¸erential pulses from the host. Possible to input up to 200kpps.
18B			/NP	Movement pulse-train input (-)	
19B	0V		N	Power source	Power source 0V for I/O
20B	0V		N	Power source	Power source 0V for I/O

Note) The asterisk (*) indicates negative logic signals. Normally it is ON when the power is on, OFF when the signal is output.

Pulse-train type I/O speciÿcation (di°erential line driver speciÿcation) * Except for the ÿeld network speciÿcation.

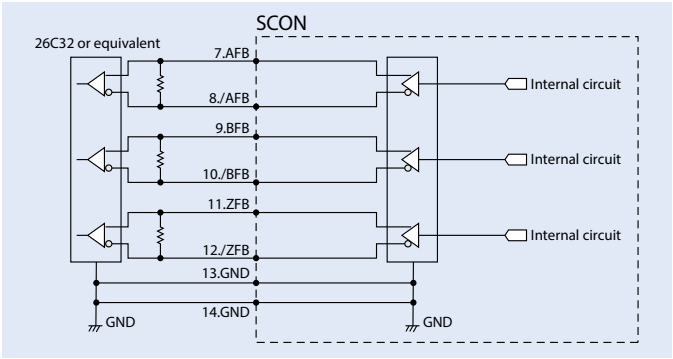
Input Part

Maximum number of input pulses	: Line driver interface 2.5Mppss
Isolation method	: Photocoupler isolation



Output Part

Maximum number of output pulses	: Line driver interface 2.5Mpps
Isolation/non-isolation	: Non-isolation

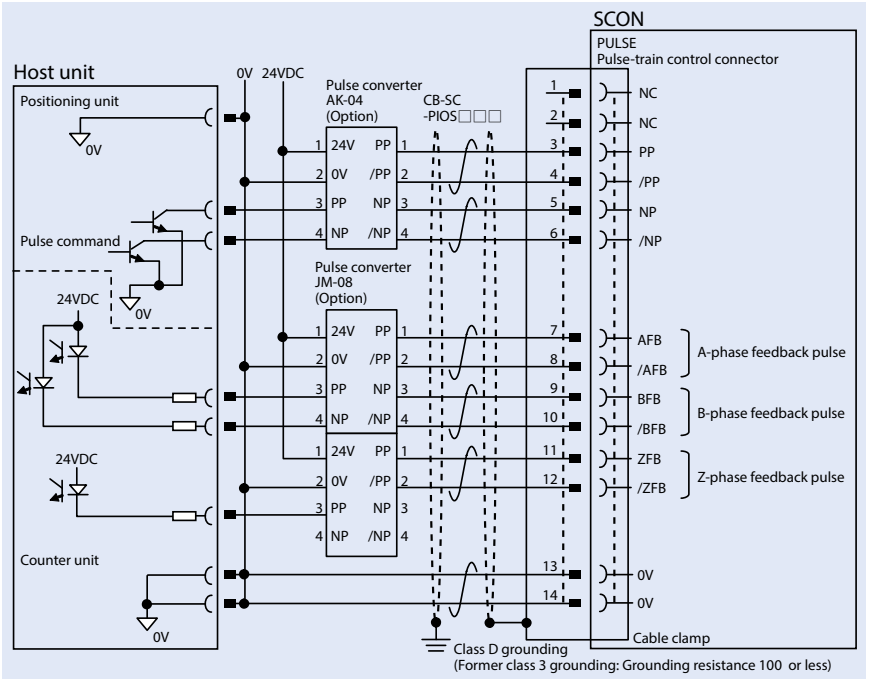


Pulse-train type I/O speciÿcation (open-collector speciÿcation)

The AK-04 (Option) is needed to input pulses. The JM-08 (Option) is needed to output pulses.

Maximum number of input pulses	: 200kpps (AK-04 required)
Maximum number of output pulses	: 500kpps (JM-08 required)

* The 24VDC power supply connected to the AK-04 must be shared with the PIO interface.
* Keep the length of the cable connecting the pulse output unit (PLC) and AK-04/JM-08 as short as possible.
  Also keep the cable between the AK-04/JM-08 and PULSE **connector to 2m or less.**



Note

Use the same power supply for open collector input/output to/from the host and for the AK-04, JM-08.

Command pulse input patterns

	Command pulse-train pattern	Input terminal	Forward	Reverse
Negative logic	Forward pulse-train	PP•/PP		
	Reverse pulse-train	NP•/NP		
	A forward pulse-train indicates the amount of motor rotation in the forward direction, while a reverse pulse-train indicates the amount of motor rotation in the reverse direction.			
	Pulse-train	PP•/PP		
	Sign	NP•/NP	Low	High
	The command pulse is used for the amount of motor rotation, while the sign indicates the rotating direction.			
	Phase A/B pulse-train	PP•/PP		
		NP•/NP		
	Command phases A and B having a 90° phase di¯erence (multiplier is 4) indicate the amount of rotation and the rotating direction.			
Positive logic	Forward pulse-train	PP•/PP		
	Reverse pulse-train	NP•/NP		
	Pulse-train	PP•/PP		
	Sign	NP•/NP	High	Low
	Phase A/B pulse-train	PP•/PP		
		NP•/NP		

Field network specification Operation mode Description (Except for MECHATROLINK-Ⅲ and EtherCAT Motion)

If the SCON-CB is controlled via a field network, you can select one of the following nine modes to operate the actuator. Please note that the data areas required on the PLC side will vary depending on the mode.

■Mode Description

	Mode	Description
0	Remote I/O mode	Similarly to the PIO specification, this mode operates by directing bytes to ON/OFF via a network. The number of positioning points and functions will vary depending on the operation patterns (PIO patterns) set by the controller's parameters.
1	Position/simple direct value mode	The target position value is directly input, while all other operational conditions (speed, acceleration, etc) are set by indicating the position number corresponding to the desired operating conditions from the position data table.
2	Half direct value mode	The actuator is operated by directly inputting values for speed, acceleration rate and push current, as well as the target position.
3	Full direct value mode	The actuator is operated by directly inputting values for the target position, speed, acceleration rate and push current, etc. In addition, you are able to read the current position, current speed, and the specified current, etc.
4	Remote I/O mode 2	This mode is the same as the remote I/O mode above, with the added functionality of reading current position and the command motor current.
5	Position/simple direct value mode 2	Instead of teaching and zone function of the above position / simple direct value mode, it is a mode equipped with force control function.
6	Half direct value mode 2	Instead of reading the command current which is the function of the half direct value mode, load cell data can be read. It also supports force control function.
7	Remote I/O mode 3	This mode added the current position and load cell data reading function to the remote I / O mode.
8	Half direct value mode 3	This mode corresponds to the damping control function instead of the jog function of the half direct value mode.

■Required Data Size for Each Network

	Mode	DeviceNet	CompoNet	CC-Link	CC-LinkIE Field	MECHATROLINK Ⅰ,Ⅱ	PROFIBUS-DP	EtherCAT	EtherNet/IP	PROFINET IO
0	Remote I/O mode	2 bytes	2 bytes	1 channel	4 words	2 bytes	2 bytes	2 bytes	2 bytes	2 bytes
1	Position/simple direct value mode	8 bytes	8 bytes	1 channel	4 words	8 bytes	8 bytes	8 bytes	8 bytes	8 bytes
2	Half direct value mode	16 bytes	16 bytes	2 channel	8 words	16 bytes	16 bytes	16 bytes	16 bytes	16 bytes
3	Full direct value mode	32 bytes	32 bytes	4 channel	16 words	× (Note 1)	32 bytes	32 bytes	32 bytes	32 bytes
4	Remote I/O mode 2	12 bytes	12 bytes	1 channel	4 words	12 bytes	12 bytes	12 bytes	12 bytes	12 bytes
5	Position/simple direct value mode 2	8 bytes	8 bytes	1 channel	4 words	8 bytes	8 bytes	8 bytes	8 bytes	8 bytes
6	Half direct value mode 2	16 bytes	16 bytes	2 channel	8 words	16 bytes	16 bytes	16 bytes	16 bytes	16 bytes
7	Remote I/O mode 3	12 bytes	12 bytes	1 channel	4 words	12 bytes	12 bytes	12 bytes	12 bytes	12 bytes
8	Half direct value mode 3	16 bytes	16 bytes	2 channel	8 words	16 bytes	16 bytes	16 bytes	16 bytes	16 bytes

(Note 1) Please note that the MECHATROLINK specification does not support the full direct value mode.

■List of Functions by Operation Mode

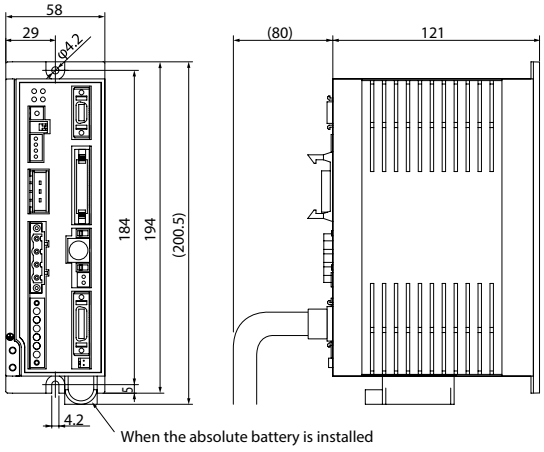
	Remote I/O mode	Position/simple direct value mode	Half direct value mode	Full direct value mode (Note 1)	Remote I/O mode 2	Position/simple direct value mode 2	Half direct value mode 2	Remote I/O mode 3	Half direct value mode 3
Number of positioning points	512	768	(No limit)	(No limit)	512	768	(No limit)	512	(No limit)
Operation by direct position data input	×	○	○	○	×	○	○	×	○
Direct speed/acceleration input	×	×	○	○	×	×	○	×	○
Push-motion operation	○	○	○	○	○	○	○	○	○
Current position read	×	○	○	○	○	○	○	○	○
Current speed read	×	×	○	○	×	×	○	×	○
Operation by position number input	○	○	×	×	○	○	×	○	×
Completed position number read	○	○	×	×	○	○	×	○	×
Force control	△(Note 2)	×	×	○	△(Note 2)	○	○	△(Note 2)	×
Damping control	○	○	×	○	○	○	×	○	○
Servo gain switching	○	○	○	○	○	○	×	○	○

* ○ indicates that the operation is supported, and X indicates that it is not supported.
(Note 1) Please note that the MECHATROLINK specification does not support the full direct value mode.
(Note 2): It can be used when the PIO pattern is set to 6 or 7.

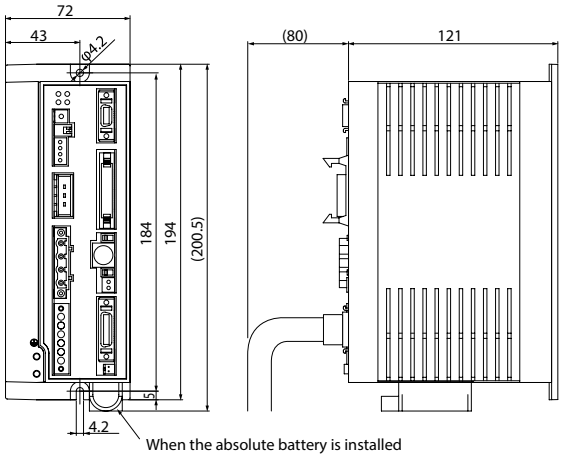
External Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

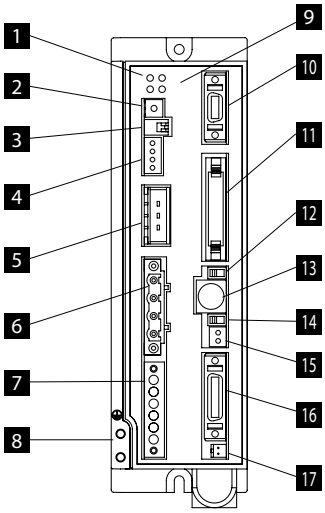
Less than 400W

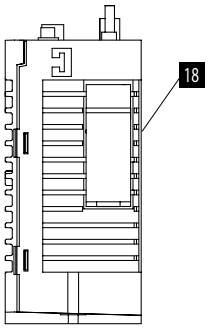


400~750W



Name of each part





1 LED display

It displays the controller status.

Name	Color	Function description
PWR	Green	Turns on when system is ready (after power turned on, CPU in normal function).
SV	Green	Turns on when servo is on
ALM	Orange	Turns on when alarm issued
EMG	Red	Turns on while in emergency stop

2 Rotary switch

The address setting switch for identifying each controller when they are linked.

3 Piano switch

The controller systems switch.

Name	Function description
1	Operation mode changeover switch OFF: Positioner mode ON: Pulse-train control mode * Valid when power is turned on
2	For manufacturer tuning, always off

4 System I/O connector

The connector for the emergency stop switch etc.

5 Regenerative unit connector

The connector for regenerative units which absorb the regenerative current generated when the actuator decelerates and stops.

6 Motor connector

The actuator motor cable connector.

7 Power supply connector

The AC power connector. Divided into controller power input and motor power input.

8 Grounding terminal

The protective grounding screw. Please make sure to secure grounding.

9 I/O connector for safety function

Connector to enable STO/SS1-t function.

10 Connector for pulse-train control

It is a connector used in the operation in Pulse-Train Control Mode. Feedback pulse is valid also in Positioner Mode.

11 PIO connector

The connector for the cable for parallel communications with the PLC and other peripheral devices.

12 Operation mode selection switch

Name	Function description
MANU	Does not accept PIO commands
AUTO	Accepts PIO commands

* The emergency stop switch on the touch panel teaching pendant becomes effective as soon as it is connected regardless of AUTO or MANU. Also, turn the power off before disconnecting the touch panel teaching pendant and SIO communication cable.

13 SIO connector

The connector for the teaching pendant or the PC communications cable.

14 Brake release switch

The forced release switch for the electromagnetic brake integrated with an actuator.
* It is necessary that 24V DC power supply for brake drive is connected.

15 Brake power supply connector

The connector for supplying 24VDC power to the brake. (necessary only when brake-equipped actuator is connected).

16 Encoder / Sensor connector

The encoder/sensor cable connector.

17 Absolute battery connector

The connector for the absolute data backup battery (necessary only for absolute encoder type).

18 Absolute battery holder

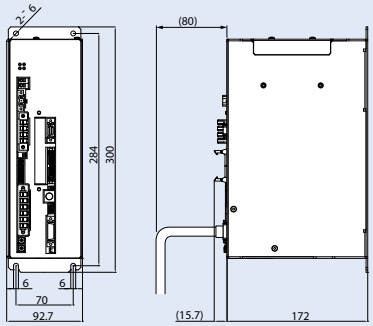
It is a battery holder in order to mount the absolute data backup battery.

from gc2022 vol8 ce9002-1.1a

External dimensions

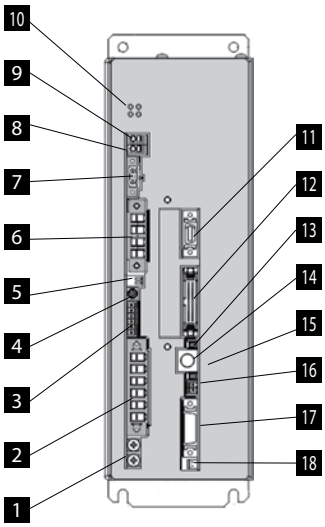
CAD drawings can be downloaded from our website.
www.iai-automation.com
2D CAD 3D CAD

For 3000W, 3300W



Name of each part

[For 3000W·3300W]



1 FG connection terminal

A terminal for connecting the ground line to prevent electric shock and noise. It is connected to the PE power supply connector inside the controller.

2 Power supply connector (PWR)

A connector used to connect to the AC power supply.

3 System I/O connector (SYS I/O)

This connector is used to connect the operation stop switch of the actuator.

4 Axis number setting switch (ADRS)

A switch for setting the axis number when operating multiple axes by serial communication. When using the SIO converter, it is possible to control multiple axes without attaching/detaching the connector of the communication cable from teaching tools such as PCs, etc.

5 Piano switch

Not used.

6 Motor connector (MOT)

A connector for the actuator motor cable.

7 Regenerative resistance unit cable connector (RB)

A connector for the external regenerative resistance unit.

8 Charge status display LED

This displays the charge status inside the controller. Caution: While this LED is lit, do not touch the controller or regenerative resistance unit in order to prevent electric shock.

9 Internal regenerative resistance effective connector

A short-circuit cable is connected at shipping.
Caution: Be sure to use with the short circuit cable attached.
Use without the cable will damage the equipment.

10 LED display (PWR, SV, ALM, EMG)

This represents the operation status of the controller.
○: ON ×: OFF △: Undefined (ON or OFF)

LED				Operating status
PWR(Green)	SV(Green)	ALM(Orange)	EMG(Red)	
×	×	×	×	Control power OFF
○	×	×	×	Controller starts up normally
○	×	×	×	Servo OFF
○	○ Note 1	×	×	Servo ON
○	×	○	△	Alarm
○	×	△	○	Emergency stop
○	△	△	△	Warning

Note 1. Blinks when automatic servo is OFF

11 Multi-function connector (MF I/F)

A connector to output the feedback pulses and analog load data of the load cell, and to use the SIO communication function (SIO2).

12 PIO connector (PIO)

A connector for control input/output signal connection.
(Note) It is not installed for the fieldbus specification.

13 Operation mode setting switch (MANU/AUTO)

An interlocking switch for preventing duplication of movement commands from PIO (PLC) and commands from teaching tools such as PCs, etc.

14 SIO connector (SIO)

A communication cable connection connector such as a teaching tool and a gateway unit such as PC-compatible software.

15 Brake release switch (BK RLS / NOM)

A switch to be used to release the brake of the actuator with brake forcibly.
Warning: Be sure to set this switch to the NOM side in normal operation. If it is left on the RLS side, the brake will not be applied even if the servo is turned OFF. If it is vertically mounted, the workpiece may fall, risking injury or damage to the workpiece.

16 Brake power supply connector (BK PWR)

A connector for supplying power (24VDC) to release the brake when using an actuator with brake.

17 Encoder connector (PG)

A connector for the actuator encoder cable.

18 Connector for the absolute data backup battery

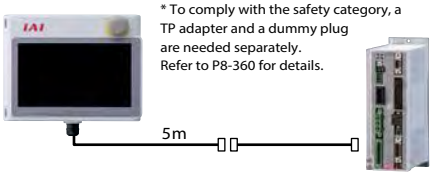
A battery cable connector used for the absolute specification.

Options

Touch panel teaching pendant

Features A teaching device equipped with functions such as position teaching, trial operation, and monitoring.

Model **TB-02(D)-□** **Conÿguration**



* To comply with the safety category, a TP adapter and a dummy plug are needed separately. Refer to P8-360 for details.

Specification

Rated voltage	24VDC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0~40°C
Ambient operating humidity	5%RH - 85%RH (non-condensing)
Environmental resistance	IP20
Mass	470g (TB-02 unit only)

PC dedicated teaching software (Windows only)

Features This start-up support software provides functions such as position teaching, trial operation, and monitoring.
It provides a complete range of functions required to make adjustments, to help reduce start-up time.

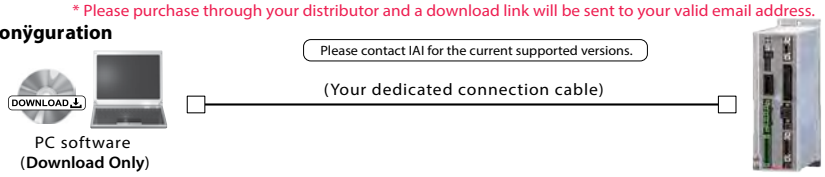
Supported Windows versions: 7/10



Model **IA-OS** (Software only, for customers who already own a dedicated connection cable)

* Please purchase through your distributor and a download link will be sent to your valid email address.

Conÿguration

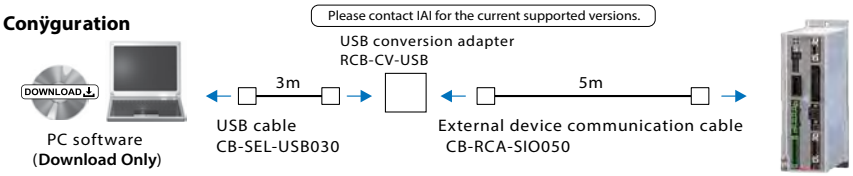


Model **IA-OS-C** (Software with an external device communication cable + USB conversion adapter + USB cable)

* Please purchase through your distributor and a download link will be sent to your valid email address.



Conÿguration



CAD drawings can be downloaded from our website.
www.iai-automation.com
2D CAD 3D CAD

Regenerative Resistance Unit

Features This unit converts the regenerative current, which is generated when the motor decelerates, into heat. Please refer to the tables below to conÿrm the total wattage of the actuators, and use the regenerative unit as necessary.

<For ~750W>

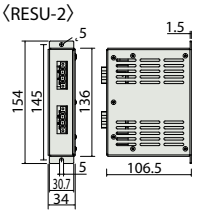
Model RESU-2 (Standard speciÿcation)/RESUD-2 (DIN rail mounting speciÿcation)

Specification

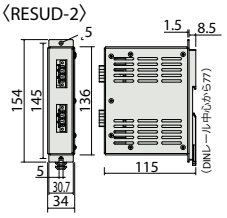
Model number	RESU-2	RESUD-2
Mass	Approximately 0.4kg	
Internal regen. resistance value	235° 80W	
Mounting method	Screw mounting	DIN rail mounting
Included cable	CB-SC-REU010	

External dimensions

〈RESU-2〉



〈RESUD-2〉



Necessary Amount Guideline

Horizontal	Vertical
0 ~100W	~100W
1 ~400W	~400W
2 ~750W	~750W

* The required regenerative resistance may be more than as speciÿed above depending on the operating conditions.
* The guide of the linear servo actuator is same as the above table. However, one LSA / LSAS-N10S type is required.

Necessary Amount Guideline (RCS2-RA13R)

	Lead 2.5	Lead 1.25
Horizontal	1	0
Vertical	1	1

* The required regenerative resistance may be more than as speciÿed above depending on the operating conditions.

Necessary Amount Guideline (DD/DDA)

Series	Type	Required Quantity
DD	LT18□	1
DDA	LH18□	2

<For 3000W・3300W>

Model RESU-35T

Specification

Mass	Approximately 1.8kg
Internal regen. resistance value	30° 450W
Mounting method	Screw mounting

* The cable is required to prepare by the customer.

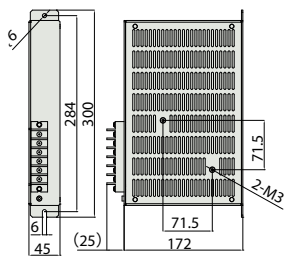
Necessary Amount Guideline

●3000W, 3300W

Number of connected units
2

External dimensions

〈RESU-35T〉



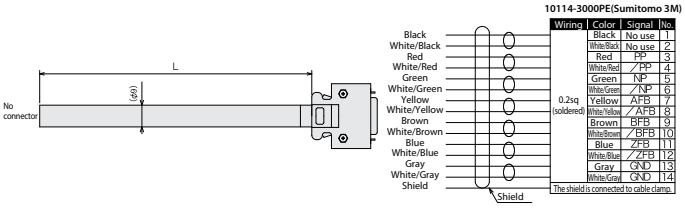
* When two regenerative units are required, please use one RESU-2 and one RESU-1 (Please refer to P8-316).

Maintenance parts

These parts are normally included in each unit. Please order individual parts if lost or need replacing.

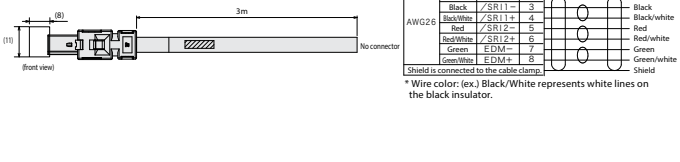
Cable for pulse-train control

Model Number CB-SC-PIOS□□□ *Please indicate the cable length (L) in □□□, maximum 10m, e.g.) 080 = 8m



I/O cable for safety functions

Model Number CB-SC-STO 030



* Wire color: (ex.) Black/White represents white lines on the black insulator.

Absolute data backup battery

Features This is an absolute data backup battery for an actuator with absolute speciÿcation.

Model **Model AB-5(battery only)**
AB-5-CS(with a case)



Dummy plug (Safety category speciÿcation)

Features This plug is required when the safety category speciÿcation (SCON-CGB) is used.

Model **DP-5**



Dummy plug (STO/SS1-t speciÿcation)

Features Necessary when STO/SS1-t function is not used.

Model **DP-6**



Service connector for pulse-train control

Model **Plug: 10114-3000PE**
Shell: 10314-52F0-008



System I/O connector (for under 750W type)

Model **FMC1.5/4-ST-3.5**



System I/O connector (for over 3000W type)

Model **FMC1.5/6-ST-3.5**



Connector for brake power

Model **MC1.5/ 2-ST-3.5**



AC power connector (for under 750W type)

Model **MSTB2.5/ 6-STF- 5.08**



AC power connector (for over 3000W type)

Model **PC5/ 6-STF- 7.62**



External regenerative resistance unit connector(for over 3000W type)

Model **GIC2.5/ 2-STF- 7.62**

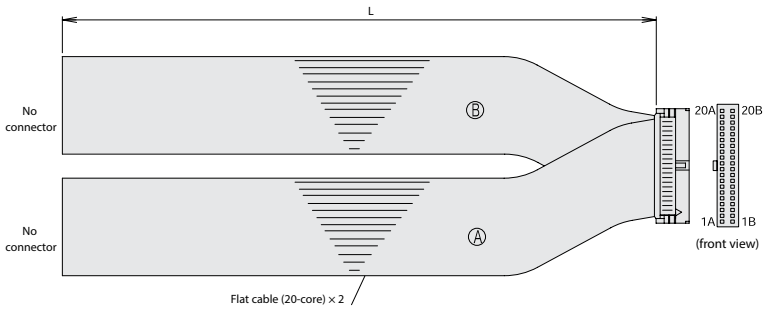


PIO flat cable

* This cable is included in the controller except when cable 0 (no cable) is selected at the model (I/O cable length).

Model Number CB-PAC-PIO□□□

* Please indicate the cable length (L) in □□□ , maximum 10m, e.g.) 080 = 8m



HIF6-40D-1.27R(Hirose)

No.	Signal name	Cable Color	Wiring	No.	Signal name	Cable Color	Wiring
1A	24V	Brown-1	Flat cable Ⓐ (pressure-welded)	1B	OUT0	Brown-3	Flat cable Ⓑ (pressure-welded) AWG28
2A	24V	Red-1		2B	OUT1	Red-3	
3A	—	Orange-1		3B	OUT2	Orange-3	
4A	—	Yellow-1		4B	OUT3	Yellow-3	
5A	IN0	Green-1		5B	OUT4	Green-3	
6A	IN1	Blue-1		6B	OUT5	Blue-3	
7A	IN2	Purple-1		7B	OUT6	Purple-3	
8A	IN3	Gray-1		8B	OUT7	Gray-3	
9A	IN4	White-1		9B	OUT8	White-3	
10A	IN5	Black-1		10B	OUT9	Black-3	
11A	IN6	Brown-2		11B	OUT10	Brown-4	
12A	IN7	Red-2		12B	OUT11	Red-4	
13A	IN8	Orange-2		13B	OUT12	Orange-4	
14A	IN9	Yellow-2		14B	OUT13	Yellow-4	
15A	IN10	Green-2		15B	OUT14	Green-4	
16A	IN11	Blue-2		16B	OUT15	Blue-4	
17A	IN12	Purple-2		17B	—	Purple-4	
18A	IN13	Gray-2		18B	—	Gray-4	
19A	IN14	White-2		19B	0V	White-4	
20A	IN15	Black-2		20B	0V	Black-4	

Maintenance parts (cable)

These parts are normally included in each unit. Please order individual parts if lost or need replacing.
Refer to P1-89 for the details of cables.

Cable model search system is recommended!
URL:https://www.intelligentactuator.com/iai-cables-search-tool/

■Table of Applicable Cables

Model Number			Motor Cable	Motor Robot Cable	Encoder Cable	Encoder Robot Cable
①	RCS2(CR/W) RCS3(CR)	Models other than ② - ⑥	CB-RCC-MA□□□	CB-RCC-MA□□□-RB	CB-RCS2-PA□□□	CB-X3-PA□□□
②	RCS2	RT			CB-RCS2-PLA□□□	CB-X2-PLA□□□
③		RA13R (Standard)			CB-RCS2-PLA□□□	CB-X2-PLA□□□
④		RA13R (With brake)			CB-RCS2-PLA□□□ * Between controller and brakeCB-RCS2-PLA□□□	CB-X2-PLA□□□ * Between controller and brakeCB-RCS2-PLA□□□
⑤	RCS3	CTZ5C/CT8C			–	CB-X1-PA□□□
⑥	RCS3	RA15R/RA20R	–	CB-RCS3-MA□□□-RB	–	CB-RCS3-PLA□□□-RB
⑦	RCS4(CR)		CB-RCC-MA□□□	CB-RCC-MA□□□-RB	–	CB-X1-PA□□□
⑧	NS	No LS	–	CB-X-MA□□□	–	CB-X3-PA□□□
⑨		With LS	–		–	CB-X2-PLA□□□
⑩	LSAS	N	–		–	CB-X1-PA□□□
⑪	LSA	S/H/L/N	–		–	CB-X3-PA□□□
⑫		W	–	CB-XMC-MA□□□	–	CB-X2-PLA□□□
⑬	DDA DDACR DDW	LT18□	–	CB-X-MA□□□	–	CB-X3-PA□□□
⑭		LH18□	–	CB-XMC-MA□□□	–	
⑮	DDA DDACR (with brake)	LT18□	–	CB-X-MA□□□	–	CB-X3-PA□□□ * Between the brake box and the actuator, CB-DDB-BK□□□
⑯		LH18□	–	CB-XMC-MA□□□	–	
⑰	IS(P)WA	S/M/L	–	CB-XEU-MA□□□	–	CB-X1-PA□□□-WC
⑱	Models other than ① - ⑰		–	CB-X-MA□□□	–	CB-X1-PA□□□(In case of 20 m or shorter) *
						CB-X1-PA□□□-AWG24(in case of 21m or longer) *
⑲	Models with LS other than ① - ⑰		–		–	CB-X1-PLA□□□(In case of 20 m or shorter) *
						CB-X1-PLA□□□-AWG24(in case of 21m or longer) *

* NSA and Model that is not battery-less absolute specification will be CB-X1-PA □□□ / CB-X1-PLA □□□ even when it is 20 m or more.

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IAI America, Inc.

USA Headquarters & Western Region (Los Angeles): 2690 W. 237th Street, Torrance, CA 90505 (800) 736-1712
Midwest Branch Office (Chicago) : 110 E. State Pkwy, Schaumburg, IL 60173 (800) 944-0333
Southeast Branch Office (Atlanta): 1220 Kennestone Circle, Suite 108, Marietta, GA 30066 (678) 354-9470

www.iai-automation.com

JAPAN Headquarters: 577-1 Obane, Shimizu-ku, Shizuoka-shi, Shizuoka, 424-0103, JAPAN
The information contained in this product brochure may change without prior notice due to product improvements.

IAI Industrieroboter GmbH
Ober der Röth 4, D-65824 Schwalbach am Taunus, Germany

IAI (Shanghai) Co., Ltd.
Shanghai Jiahua Business Center A8-303, 808,
Hongqiao Rd., Shanghai 200030, China

IAI Robot (Thailand) Co., Ltd.
825 Phairojkijja Tower 7th Floor, Debaratana Rd.,
Bangna Nuea, Bangna, Bangkok 10260, Thailand