IAI
Quality and Innovation

EC-(D)RR6
EC-(D)RR6X
EC-(D)RR7
EC-(D)RR7X

Long Stroke Type added

ELECYLINDER® High Rigidity Radial Cylinders

*** Please check EC catalog at website for side-mounted motor type**

Simple & Wireless Operation
2 Position Actuator

www.intelligentactuator.com

Electric cylinder with no external guide required

EC ELECYLINDER® High Rigidity Radial Cylinder®

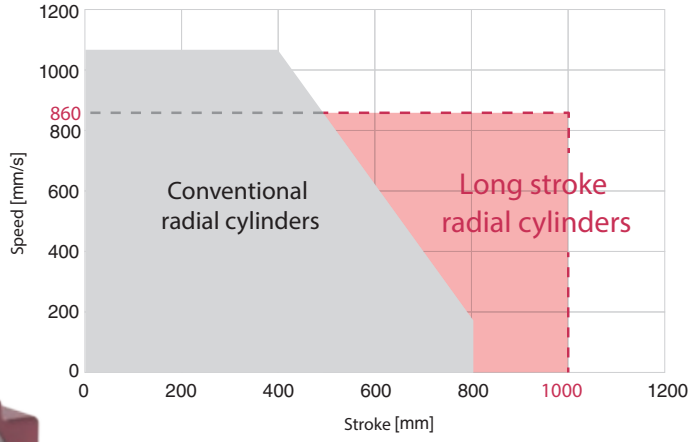
POINT 1

Maximum stroke 1,000mm

Maximum speed 860mm/s

The support mechanism supports the ball screw, increasing the resonance range of the ball screw and greatly increasing the maximum speed.

Stroke and Max Speed



POINT 2

4-row linear guide built-in

Load is distributed over 4 rows of steel balls, allowing it to support a rod tip dynamic allowable radial load of up to 10N even at maximum stroke.

New product with a maximum stroke of 1,000mm!

POINT 3 Supports digital speed controllers

No complicated programming required.
Simply select and enter numbers. It just works!

Simply use the keys to select numbers to make individual adjustments

AVD Set.

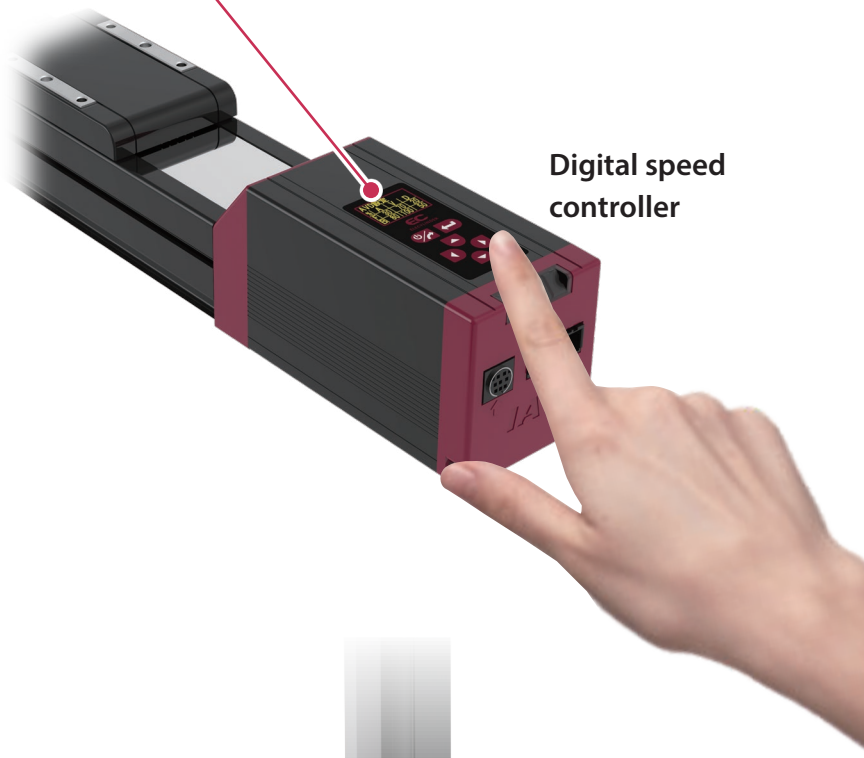
%	A	V	D
F	30	70	20
B	80	100	50

AVD settings

Easy setting

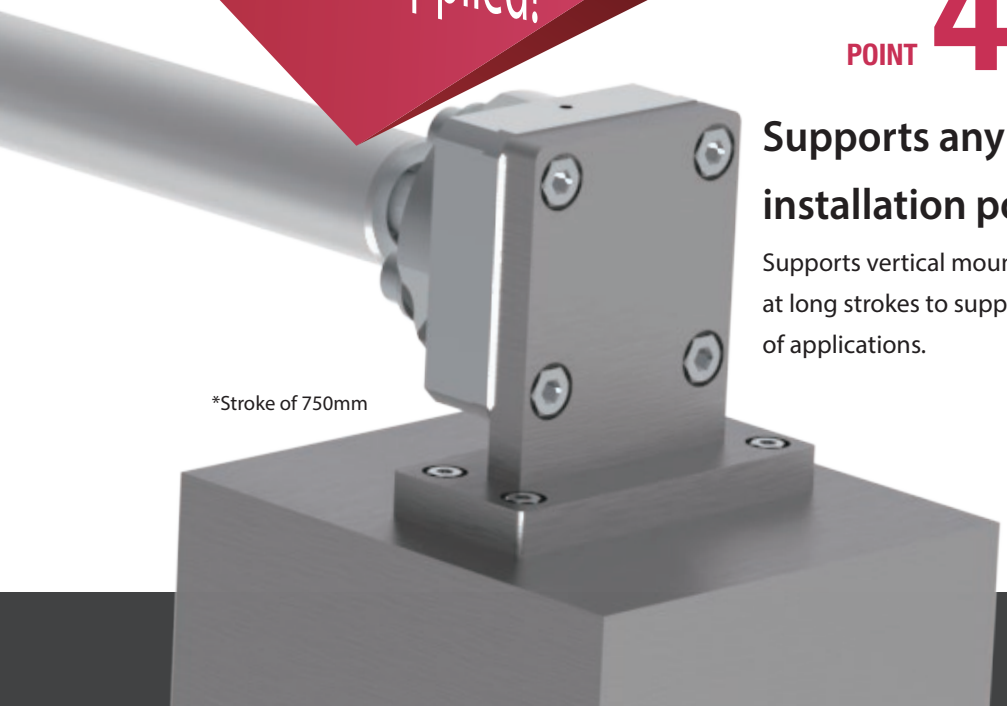
Level	Velocity(V)
Forward(F)	10
Backward(B)	8

Easy setup (10 levels)



Digital speed controller

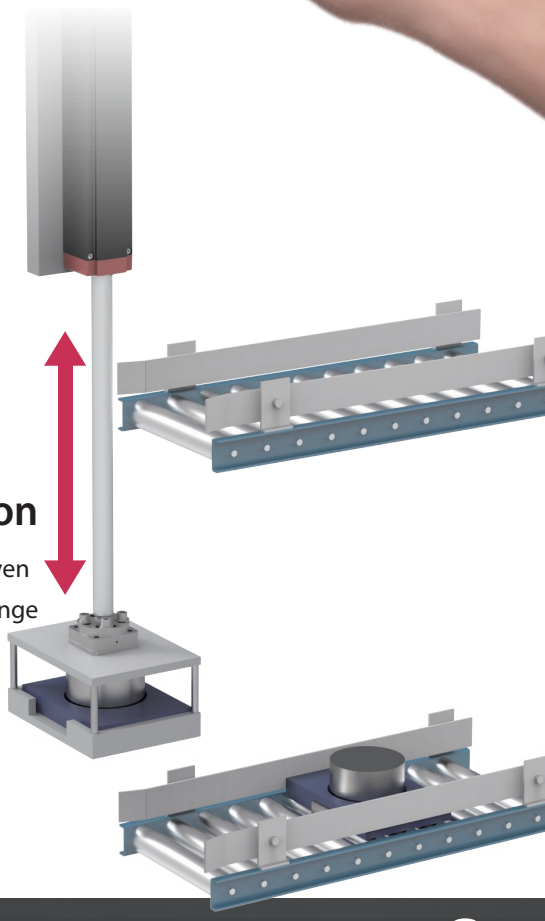
20 N* No problem even with radial load applied!



*Stroke of 750mm

POINT 4 Supports any installation position

Supports vertical mounting even at long strokes to support a range of applications.



Model Specification Items

ELECYLINDER®

EC - [ ] [ ] [ ] **AH** ([ ]) - [ ] - [ ] - ([ ])

Series | Digital speed controller | Type | Lead | Specification | Motor coupling method | Stroke | Cable length | Options

Blank	Without digital speed controller
D	With digital speed controller

RR6	Radial cylinder 63mm width
RR7	Radial cylinder 75mm width
RR6X	Radial cylinder 63mm width (with support)
RR7X	Radial cylinder 75mm width (with support)

AH	High rigidity specification

<RR6/RR6X>

S	Lead 20mm
H	Lead 12mm
M	Lead 6mm
L	Lead 3mm

<RR7/RR7X>

S	Lead 24mm
H	Lead 16mm
M	Lead 8mm
L	Lead 4mm

50	50mm
≀	≀
1000	1000mm

(Every 50mm)

Blank	Standard
R	Side-mounted

*R (Motor Side Mount) is not available for RR6X/DRR6X and RR7X/DRR7X type.

0	Without cable
(S)1	1m
≀	≀
(S)10	10m

(Every 1m)

Blank	Incremental encoder specification, NPN specification, no option
ACR	RCON-EC connection specification
B	With brake
FFA	Tip adapter (flange)
FL	Flange (front)
ML	Motor side-mounted to left (standard)
MR	Motor side-mounted to right
NFA	Tip adapter (internal thread)
NJ	Knuckle joint
NJPB	Knuckle joint + oscillation receiving bracket
NM	Non-motor end specification
PN	PNP specification
QR	Clevis bracket
QRPB	Clevis bracket + oscillation receiving bracket
TMD2	Split motor and controller power supply specification
WA	Battery-less absolute encoder specification
WL	Wireless communication specification
WL2	Wireless axis operation specification

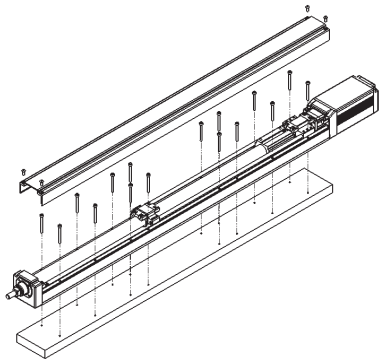
**The range of selections varies according to the actuator type.
Please refer to the pages of each type for details.
Please refer to ELECYLINDER® General Catalog 2020 for side-mounted motor types.

Specification Tables

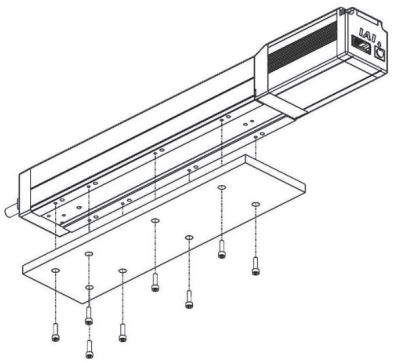
Type	Type	Lead		Stroke (mm) and max speed (mm/s) *Length of band = Stroke, * Numbers in band = Maximum speed by stroke, Numbers in < > are for vertical specification	Max. push force (N)	Max. payload (kg)		Reference page
		Model	mm	50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000		Horizontal	Vertical	
Straight motor	RR6□AH DRR6□AH	S-		800	67	6	1.5	P.7
		H-		700	112	25	4	
		M-		450	224	40	10	
		L-		225	449	60	20	
	RR6X□AH DRR6X□AH	S-	20	800	67	6	1.5	P.15
		H-	12	700	112	25	4	
		M-	6	330	224	40	10	
		L-	3	145	449	60	20	
Side-mounted motor	RR6□AHR DRR6□AHR	S-		800	67	6	1.5	Refer to ELECYLINDER® General Catalog 2020
		H-		700	112	25	4	
		M-		450	224	40	10	
		L-		225	449	60	20	
Straight motor	RR7□AH DRR7□AH	S-		860 <640>	182	20	3	P.11
		H-		700 <560>	273	50	8	
		M-		350	547	60	18	
		L-		175	1094	80	28	
	RR7X□AH DRR7X□AH	S-	24	860 <640>	182	20	3	P.19
		H-	16	700 <560>	273	50	8	
		M-	8	350	547	60	18	
		L-	4	175	1094	80	28	
Side-mounted motor	RR7□AHR DRR7□AHR	S-		860 <640>	182	20	3	Refer to ELECYLINDER® General Catalog 2020
		H-		640 <560>	273	50	8	
		M-		320 <280>	547	60	18	
		L-		150 <140>	1094	80	28	

Mounting method

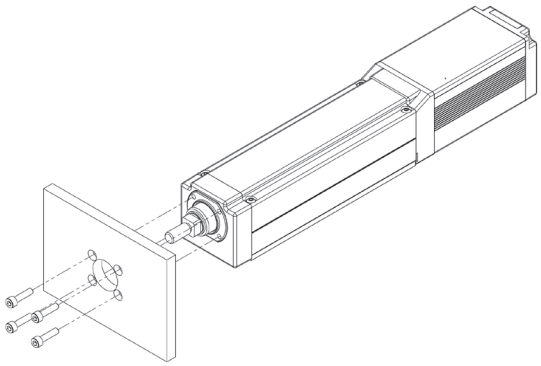
● Using the through hole on the body top



● Using the base bottom surface screw hole

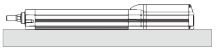
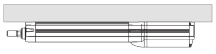


● Using the front bracket screw hole



Mounting orientation

○: Can be mounted

			Mounting orientation			
						
Classification	Series	Type	Horizontal mounting on flat surface	Vertical mounting (*)	Side mounting	Ceiling mounting
Rod type	EC	RR6□AH/DRR6□AH	○	○	○	○
		RR7□AH/DRR7□AH	○	○	○	○
		RR6X□AH/DRR6X□AH	○	○	○	○
		RR7X□AH/DRR7X□AH	○	○	○	○

(*) When mounting vertically, make sure to install with the motor on top for straight motor types.
Installing with the motor on the bottom could cause grease to separate and base oil to leak into the motor, which could cause controller or motor encoder failure.
It is therefore not recommended to install the motor on the bottom side.

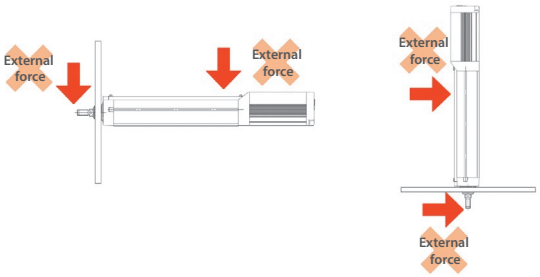
Precautions for installation

- **Keep the body installation surface and workpiece mounting surface flatness at 0.05mm/m or lower.**
  Uneven flatness will increase the sliding resistance of the slider and may cause a malfunction.

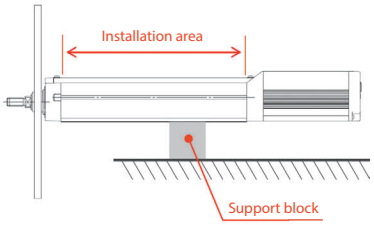
- **When applying radial load/moment load, it is recommended to secure the entire surface of the base bottom.**
  Securing with a front bracket may cause deflection or reflexion throughout the product due to radial load/moment load, leading to vibration, reduced service life, or failure.

- **When using the through hole on the body top to mount a model with a support mechanism, the positions of the through hole and support mechanism may overlap.**
  If this occurs, move the rod forward and backward to move the support mechanism prior to mounting.
  If a brake is present, the brake will need to be forced released.

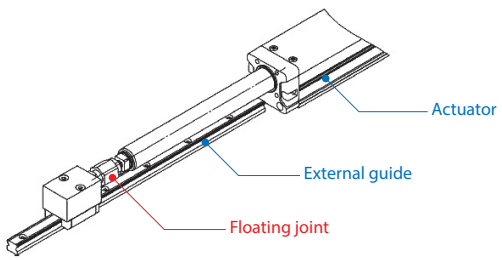
- **Do not attempt to apply any external force to the body during front bracket mounting or flange (front) mounting.**
  External force may cause malfunctions or damage to parts.



- **When using front bracket mounting, flange (front) mounting, etc., if the device is mounted horizontally, secured at a single point, and has a stroke of 150mm or more, prepare a support block as shown in the figure below even if there is no external force applied on the body.**
  Even when the stroke is less than 150mm, a support block is strongly recommended in order to avoid vibration generated due to the operation conditions or installation environment, which may lead to abnormal operation or damage to parts.
  If using a support block, it is recommended to either use an optional foot bracket or keep the support block (made from aluminum alloy, etc.) close against the body. The installation position should be on the frame motor side.



- **A "floating joint" is recommended for securing to an external guide.**
  The floating joint absorbs misalignment between the built-in guide and external guide, making adjustment easier.
  With [rigid attachment], it is difficult to adjust parallelism between the built-in guide and external guide. Even a slight deviation in parallelism applies load to the guide, which may cause premature damage.



EC-RR6□AH
EC-DRR6□AH

<With digital speed controller>

Coupled Motor | Body Width 60 mm | 24V Stepper Motor

Model Specification Items

EC - [ ] [ ] - AH - [ ] - [ ] - [ ]

Series	Type		Lead		Specification		Stroke		Power / I/O cable length	Options
	RR6	Standard	S	20mm	AH	High rigidity	50	50mm	See power / I/O cable length below	See options below
	DRR6	Digital speed controller	H	12mm			~	~		
			M	6mm			550	550mm (Every 50mm)		
			L	3mm						

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Radial Load Specification
Radial Cylinder®

Stroke

Stroke (mm)	RR6□AH	DRR6□AH	Stroke (mm)	RR6□AH	DRR6□AH
50	○	○	350	○	○
100	○	○	400	○	○
150	○	○	450	○	○
200	○	○	500	○	○
250	○	○	550	○	○
300	○	○			

Options

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

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	23
Brake	B	23
Tip adapter (flange)	FFA	23
Flange (front)	FL	23
Designated grease specification	G5	23
Tip adapter (internal thread)	NFA	24
Knuckle joint (Note 2)	NJ	24
Knuckle joint + oscillation receiving bracket (Note 2)	NJPB	24
Non-motor end specification	NM	24
PNP specification	PN	24
Clevis bracket (Note 2)	QR	25
Clevis bracket + oscillation receiving bracket (Note 2)	QRPB	25
split motor and controller power supply specification	TMD2	25
Battery-less absolute encoder specification	WA	25
Wireless communication specification	WL	25
Wireless axis operation specification	WL2	25

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Can be selected only for a stroke from 50 ~ 400mm. The clevis bracket (QR or QRPB) and knuckle joint (NJ or NJPB) are sold as a set. Assembly is required.

POINT Selection Notes

(1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.
(2) Radial cylinders are equipped with a built-in guide. Please refer to P. 26 for details on the radial load applied to rods.
(3) The value of the horizontal payload assumes that there is an external guide.
(4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 27 for applicable notes.
(5) Duty restriction is required, depending on the ambient operating temperature.
Please refer to P. 27 for details.
(6) Special attention needs to be paid to the mounting orientation.
Please refer to P. 5 for details.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 4) (with connectors on both edges) CB-REC-PWBIO□□□-RB supplied
0	No cable	○ (Note 3)	○
1 ~ 3	1 ~ 3m	○	○
4 ~ 5	4 ~ 5m	○	○
6 ~ 7	6 ~ 7m	○	○
8 ~ 10	8 ~ 10m	○	○

(Note 3) Only terminal block connector is included. Please refer to P. 30 for details.
(Note 4) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC2-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 5) (with connectors on both edges) CB-REC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○	○
S4 ~ S5	4 ~ 5m	○	○
S6 ~ S7	6 ~ 7m	○	○
S8 ~ S10	8 ~ 10m	○	○

(Note 5) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

Main Specifications

Item			Description			
Lead		Ball screw lead (mm)	20	12	6	3
Horizontal	Payload	Max. payload (kg) (energy-saving disabled)	6	25	40	60
		Max. payload (kg) (energy-saving enabled)	6	25	40	40
	Speed / acceleration/ deceleration	Max. speed (mm/s)	800	700	450	225
		Min. speed (mm/s)	25	15	8	4
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	1	1	1	1
Vertical	Payload	Max. payload (kg) (energy-saving disabled)	1.5	4	10	20
		Max. payload (kg) (energy-saving enabled)	1	4	10	20
	Speed / acceleration/ deceleration	Max. speed (mm/s)	800	700	450	225
		Min. speed (mm/s)	25	15	8	4
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
Push		Max. push force (N)	67	112	224	449
		Max. push speed (mm/s)	20	20	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake			
		Brake holding force (kgf)	1.5	4	10	20
Stroke		Min. stroke (mm)	50	50	50	50
		Max. stroke (mm)	550	550	550	550
		Stroke pitch (mm)	50	50	50	50

Item	Description
Drive system	Ball screw, ϕ10mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ϕ25mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 6)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 6) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

Energy-saving setting disabled The unit for payload is kg. If blank, operation is not possible.

Lead 20

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

Lead 12

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	25	18	16	12	4	4
100	25	18	16	12	4	4
200	25	18	16	10	4	4
400	20	14	10	6	4	4
500	15	8	6	4	3.5	3
700	6	2			2	1

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	40	35	30	25	10	10
50	40	35	30	25	10	10
100	40	35	30	25	10	10
200	40	30	25	20	10	10
250	40	27.5	22.5	18	9	8
350	30	14	12	10	5	5
400	18	10	6	5	3	3
450	8	3			2	1

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	60	50	45	40	20	20
50	60	50	45	40	20	20
100	60	50	45	40	20	20
125	60	50	40	30	10	10
175	40	35	25	20	6	5
200	35	30	20	14	5	4.5
225	16	16	10	6	5	4

(Note) Refer to precautions when selecting "G5" option

Energy-saving setting enabled The unit for payload is kg.

Lead 20

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	6	5	1
160	6	5	1
320	6	5	1
480	4	3	1
640	3	1	0.5

Lead 12

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	25	10	4
100	25	10	4
200	25	10	4
300	20	8	3
400	10	5	2
500	5	2	1

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	40	20	10
50	40	20	10
100	40	20	10
150	40	20	8
200	35	18	5
250	10	6	3

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	40	25	20
25	40	25	20
50	40	25	20
75	40	25	12
100	40	25	9
125	40	25	5

(Note) Refer to precautions when selecting "G5" option

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

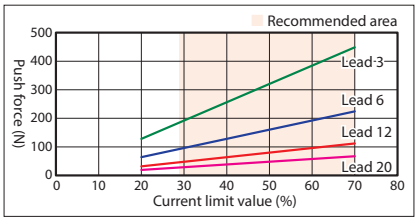
- Lead 12: 400mm/s or lower
- Lead 6: 200mm/s or lower
- Lead 3: 100mm/s or lower

Stroke and Max Speed

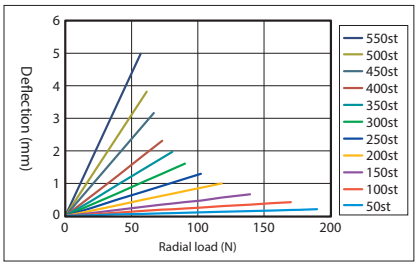
Lead (mm)	Energy-saving setting	50 ~ 550 (Every 50mm)
20	Disabled	800
	Enabled	640
12	Disabled	700
	Enabled	500
6	Disabled	450
	Enabled	250
3	Disabled	225
	Enabled	125

(Unit: mm/s)

Correlation diagrams between push force and current limit



Rod Deflection (Reference Values)



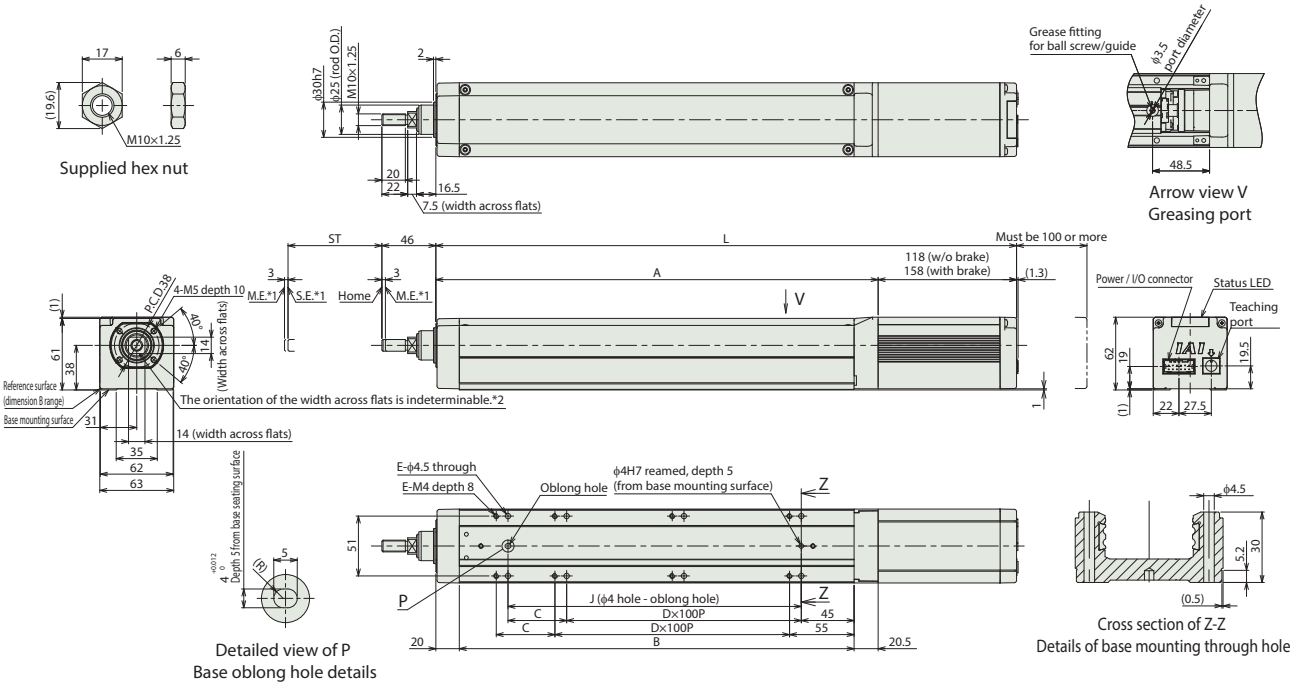
Dimensions

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

EC-RR6□AH

*1 When the rod is returning to its home position, please be mindful of possible interference from surrounding objects, as it will travel until it reaches the M.E.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



Dimensions by stroke

	Stroke	50	100	150	200	250	300	350	400	450	500	550
L	Without brake	345	395	445	495	545	595	645	695	745	795	845
	With brake	385	435	485	535	585	635	685	735	785	835	885
A		227	277	327	377	427	477	527	577	627	677	727
B		186.5	236.5	286.5	336.5	386.5	436.5	486.5	536.5	586.5	636.5	686.5
C		0	50	0	50	0	50	0	50	0	50	0
D		1	1	2	2	3	3	4	4	5	5	6
E		4	6	6	8	8	10	10	12	12	14	14
J		100	150	200	250	300	350	400	450	500	550	600

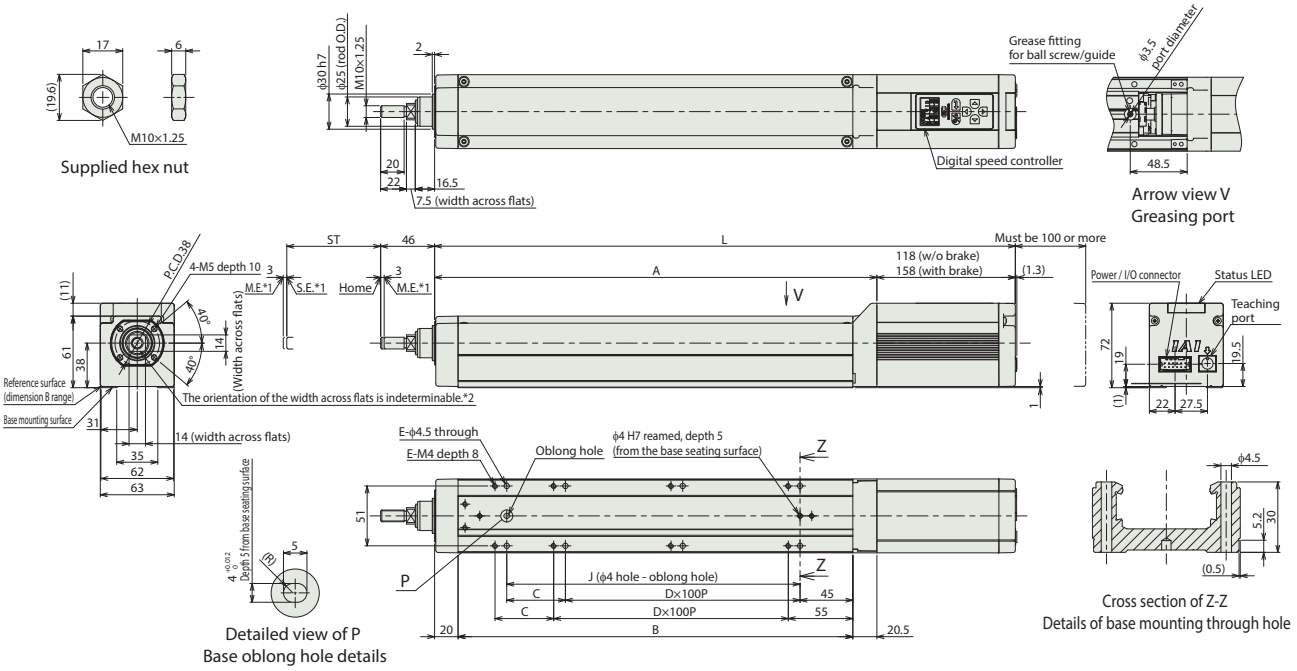
Mass by stroke

	Stroke	50	100	150	200	250	300	350	400	450	500	550
Mass (kg)	Without brake	2	2.2	2.5	2.8	3	3.3	3.6	3.8	4.1	4.4	4.7
	With brake	2.3	2.5	2.8	3.1	3.3	3.6	3.9	4.1	4.4	4.6	4.9

■EC-DRR6□AH <with digital speed controller>

*1 When the rod is returning to its home position, please be mindful of possible interference from surrounding objects, as it will travel until it reaches the M.E.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



■Dimensions by stroke

Stroke		50	100	150	200	250	300	350	400	450	500	550
L	Without brake	345	395	445	495	545	595	645	695	745	795	845
	With brake	385	435	485	535	585	635	685	735	785	835	885
A		227	277	327	377	427	477	527	577	627	677	727
B		186.5	236.5	286.5	336.5	386.5	436.5	486.5	536.5	586.5	636.5	686.5
C		0	50	0	50	0	50	0	50	0	50	0
D		1	1	2	2	3	3	4	4	5	5	6
E		4	6	6	8	8	10	10	12	12	14	14
J		100	150	200	250	300	350	400	450	500	550	600

■Mass by stroke

Stroke		50	100	150	200	250	300	350	400	450	500	550
Mass (kg)	Without brake	2.1	2.3	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.4	4.7
	With brake	2.4	2.6	2.9	3.2	3.4	3.7	4.0	4.2	4.5	4.7	5

■Applicable controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 29 for details on built-in controllers.

EC-RR7□AH
EC-DRR7□AH

<With digital speed controller>

Coupled Motor | Body Width 70 mm | 24V Stepper Motor

Model Specification Items

EC - [Series] - [Type] - [Lead] - AH - [Specification] - [Stroke] - [Power / I/O cable length] - [Options]

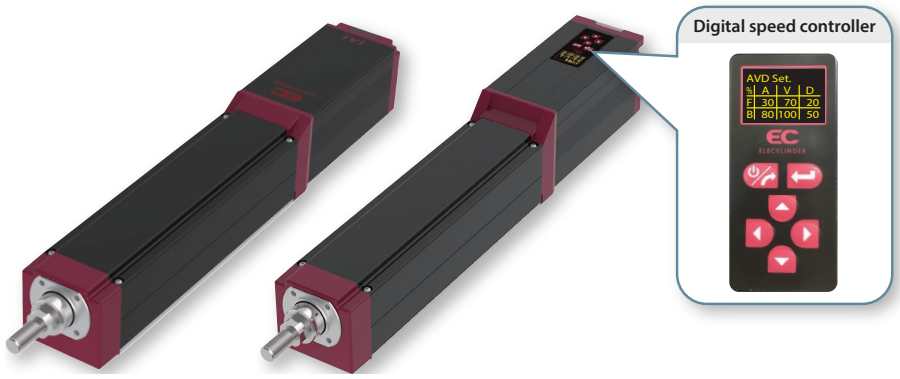
Series
EC

Type		Lead		Specification	
RR7	Standard	S	24mm	AH	High rigidity
DRR7	Digital speed controller	H	16mm		
		M	8mm		
		L	4mm		

Stroke	
50	50mm
↕	↕
700	700mm (Every 50mm)

Power / I/O cable length
See power / I/O cable length below

Options
See options below



CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Radial Load Specification
Radial Cylinder®

Stroke

Stroke (mm)	RR7□AH	DRR7□AH	Stroke (mm)	RR7□AH	DRR7□AH
50	○	○	400	○	○
100	○	○	450	○	○
150	○	○	500	○	○
200	○	○	550	○	○
250	○	○	600	○	○
300	○	○	650	○	○
350	○	○	700	○	○

Options

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

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	23
Brake	B	23
Tip adapter (flange)	FFA	23
Flange (front)	FL	23
Designated grease specification	G5	23
Tip adapter (internal thread)	NFA	24
Knuckle joint (Note 2)	NJ	24
Knuckle joint + oscillation receiving bracket (Note 2)	NJPB	24
Non-motor end specification	NM	24
PNP specification	PN	24
Clevis bracket (Note 2)	QR	25
Clevis bracket + oscillation receiving bracket (Note 2)	QRPB	25
split motor and controller power supply specification	TMD2	25
Battery-less absolute encoder specification	WA	25
Wireless communication specification	WL	25
Wireless axis operation specification	WL2	25

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Can be selected only for a stroke from 50 ~ 500mm. The clevis bracket (QR or QRPB) and knuckle joint (NJ or NJPB) are sold as a set. Assembly is required.

POINT Selection Notes

(1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.
(2) Radial cylinders are equipped with a built-in guide. Please refer to P. 26 for details on the radial load applied to rods.
(3) The value of the horizontal payload assumes that there is an external guide.
(4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 27 for applicable notes.
(5) Duty restriction is required, depending on the ambient operating temperature.
Please refer to P. 27 for details.
(6) Special attention needs to be paid to the mounting orientation.
Please refer to P. 5 for details.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 4) (with connectors on both edges) CB-REC-PWBIO□□□-RB supplied
0	No cable	○ (Note 3)	○
1 ~ 3	1 ~ 3m	○	○
4 ~ 5	4 ~ 5m	○	○
6 ~ 7	6 ~ 7m	○	○
8 ~ 10	8 ~ 10m	○	○

(Note 3) Only terminal block connector is included. Please refer to P. 30 for details.
(Note 4) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC2-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 5) (with connectors on both edges) CB-REC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○	○
S4 ~ S5	4 ~ 5m	○	○
S6 ~ S7	6 ~ 7m	○	○
S8 ~ S10	8 ~ 10m	○	○

(Note 5) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

Main Specifications

Item			Description			
Lead		Ball screw lead (mm)	24	16	8	4
Horizontal	Payload	Max. payload (kg) (energy-saving disabled)	20	50	60	80
		Max. payload (kg) (energy-saving enabled)	18	40	50	55
	Speed / acceleration/ deceleration	Max. speed (mm/s)	860	700	350	175
		Min. speed (mm/s)	30	20	10	5
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	1	1	1	1
Vertical	Payload	Max. payload (kg) (energy-saving disabled)	3	8	18	28
		Max. payload (kg) (energy-saving enabled)	3	5	17.5	26
	Speed / acceleration/ deceleration	Max. speed (mm/s)	640	560	350	175
		Min. speed (mm/s)	30	20	10	5
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
Push		Max. push force (N)	182	273	547	1094
		Max. push speed (mm/s)	20	20	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake			
		Brake holding force (kgf)	3	8	18	28
Stroke		Min. stroke (mm)	50	50	50	50
		Max. stroke (mm)	700	700	700	700
		Stroke pitch (mm)	50	50	50	50

Item	Description
Drive system	Ball screw ϕ12mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ϕ30mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 6)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 6) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

Energy-saving setting disabled The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	20	18	15	12	3	3
200	20	18	15	12	3	3
400	20	14	12	8	3	3
420	17	12	10	6	3	3
600	14	6	5	4	3	2
640	5	3	2	1.5	2	1
800	5	1	1			
860	2	0.5				

Lead 16

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	50	40	35	30	8	8
140	50	40	35	30	8	8
280	50	35	25	20	7	7
420	25	18	14	10	4.5	4
560	10	5	3	2	2	1
700	2					

(Note) Refer to precautions when selecting "G5" option

Lead 8

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	60	50	45	40	18	18
70	60	50	45	40	18	18
140	60	50	45	40	16	12
210	60	40	31	26	10	9
280	34	20	15	11	5	4
350	12	4	1		2	1

(Note) Refer to precautions when selecting "G5" option

Lead 4

Orientation	Horizontal				Vertical	
Speed	Acceleration (G)					
(mm/s)	0.3	0.5	0.7	1	0.3	0.5
0	80	70	65	60	28	28
35	80	70	65	60	28	28
70	80	70	65	60	28	28
105	80	60	50	40	18	18
140	50	30	20	15	12	10
175	15				2	

(Note) Refer to precautions when selecting "G5" option

Energy-saving setting enabled The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	18	9.5	3
200	18	9.5	3
420	10	5	1.5
630	1		

Lead 16

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	40	25	5
140	40	25	5
280	18	12	2
420	1.5	1	

Lead 8

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	50	30	17.5
70	50	30	17.5
140	50	30	7
210	14	7	2

Lead 4

Orientation	Horizontal		Vertical
Speed	Acceleration (G)		
(mm/s)	0.3	0.7	0.3
0	55	50	26
35	55	50	26
70	55	50	13
105	30	15	2

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

- Lead 16: 560mm/s or lower
- Lead 8: 280mm/s or lower
- Lead 4: 140mm/s or lower

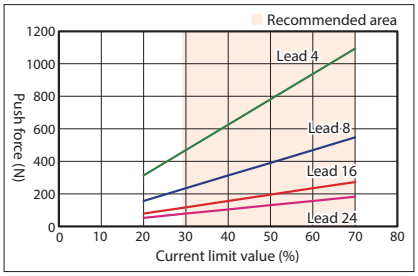
Stroke and Max Speed

Lead (mm)	Energy-saving setting	50 ~ 700 (Every 50mm)
24	Disabled	860 <640>
	Enabled	630 <420>
16	Disabled	700 <560>
	Enabled	420 <280>
8	Disabled	350
	Enabled	210
4	Disabled	175
	Enabled	105

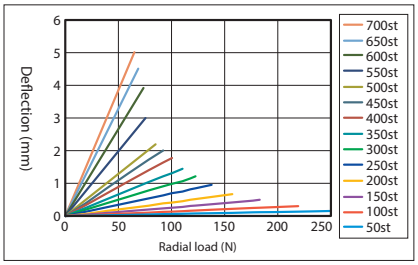
(Unit: mm/s)

(Note) Values in brackets < > are for vertical use.

Correlation diagrams between push force and current limit



Rod Deflection (Reference Values)



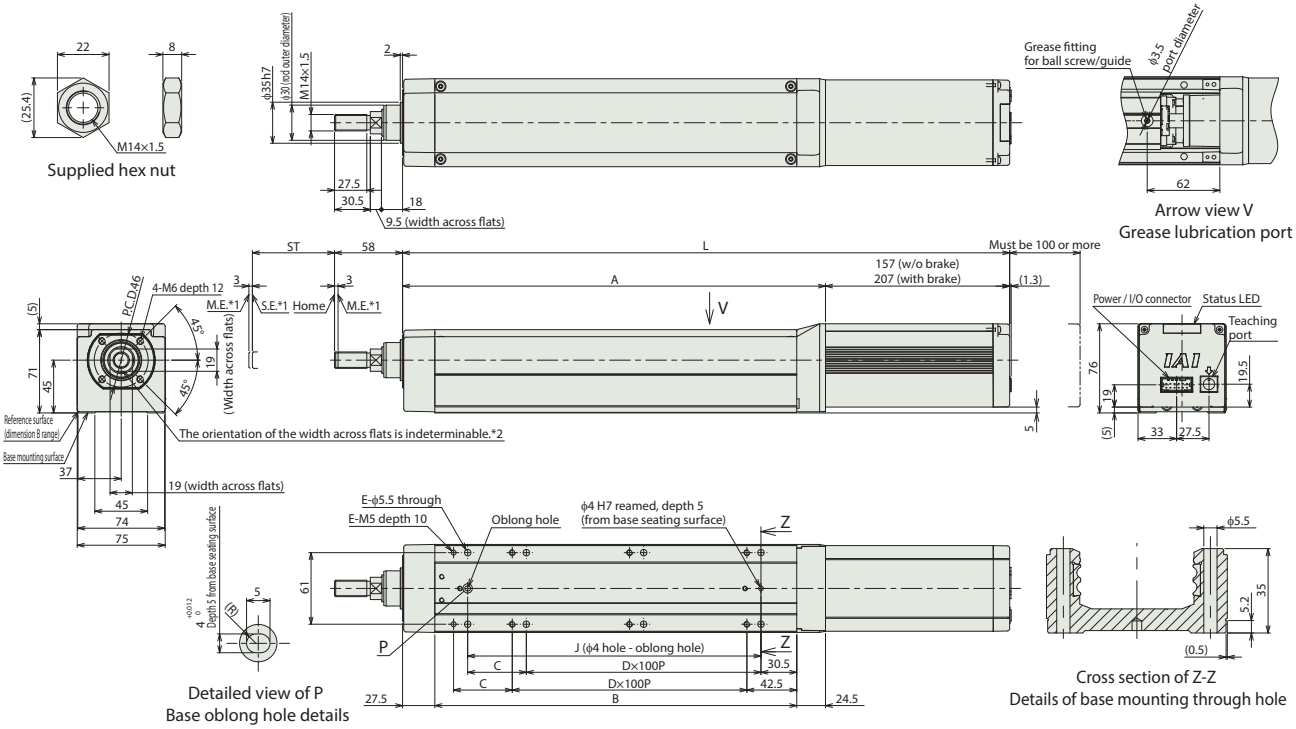
Dimensions

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

EC-RR7□AH

*1 When the rod is returning to its home position, please be mindful of possible interference from surrounding objects, as it will travel until it reaches the M.E.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



Dimensions by stroke

Stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700
L	Without brake	417.5	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5	867.5	917.5	967.5	1017.5	1067.5
	With brake	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5	867.5	917.5	967.5	1017.5	1067.5	1117.5
A		260.5	310.5	360.5	410.5	460.5	510.5	560.5	610.5	660.5	710.5	760.5	810.5	860.5	910.5
B		208.5	258.5	308.5	358.5	408.5	458.5	508.5	558.5	608.5	658.5	708.5	758.5	808.5	858.5
C		50	0	50	0	50	0	50	0	50	0	50	0	50	0
D		1	2	2	3	3	4	4	5	5	6	6	7	7	8
E		6	6	8	8	10	10	12	12	14	14	16	16	18	18
J		150	200	250	300	350	400	450	500	550	600	650	700	750	800

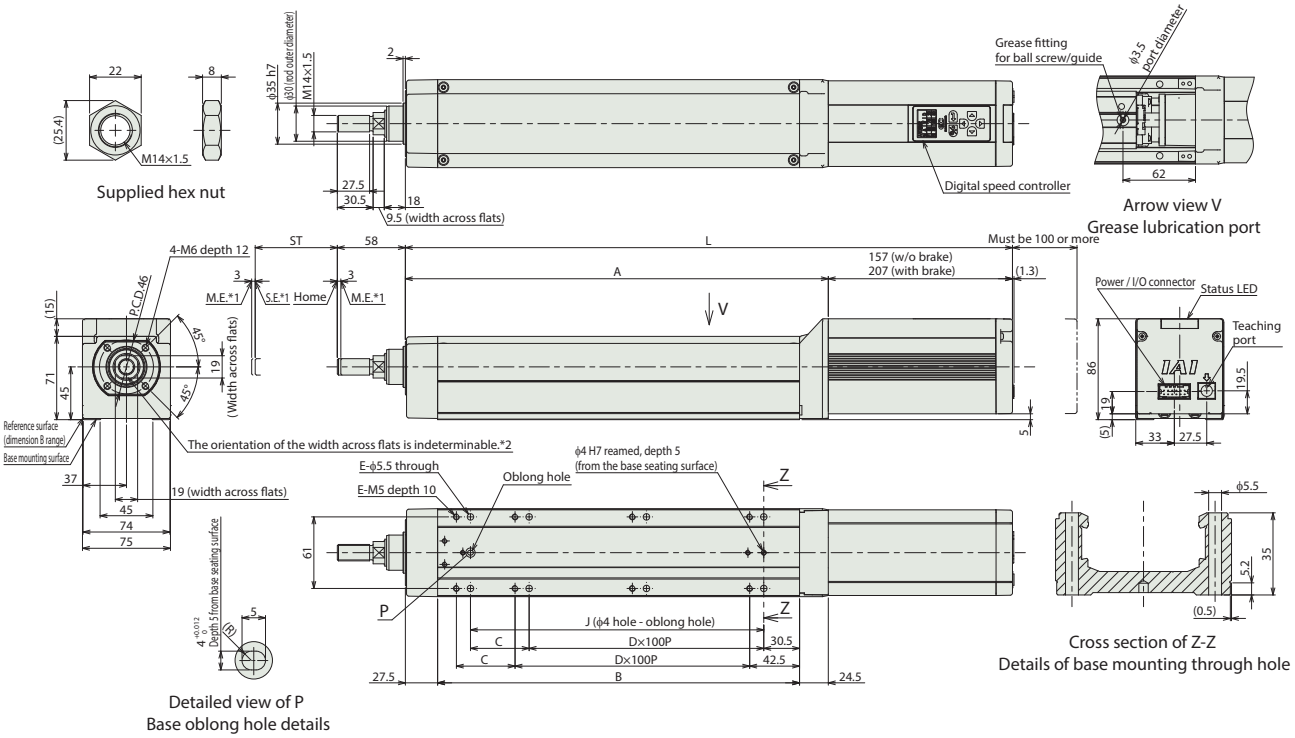
Mass by stroke

Stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700
Mass (kg)	Without brake	4	4.4	4.7	5	5.4	5.7	6	6.4	6.7	7	7.5	7.8	8.2	8.6
	With brake	4.5	4.9	5.2	5.5	5.9	6.2	6.5	6.9	7.2	7.5	8	8.3	8.7	9.1

■ EC-DRR7□AH <with digital speed controller>

*1 When the rod is returning to its home position, please be mindful of possible interference from surrounding objects, as it will travel until it reaches the M.E.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



■ Dimensions by stroke

Stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700
L	Without brake	417.5	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5	867.5	917.5	967.5	1017.5	1067.5
	With brake	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5	867.5	917.5	967.5	1017.5	1067.5	1117.5
A		260.5	310.5	360.5	410.5	460.5	510.5	560.5	610.5	660.5	710.5	760.5	810.5	860.5	910.5
B		208.5	258.5	308.5	358.5	408.5	458.5	508.5	558.5	608.5	658.5	708.5	758.5	808.5	858.5
C		50	0	50	0	50	0	50	0	50	0	50	0	50	0
D		1	2	2	3	3	4	4	5	5	6	6	7	7	8
E		6	6	8	8	10	10	12	12	14	14	16	16	18	18
J		150	200	250	300	350	400	450	500	550	600	650	700	750	800

■ Mass by stroke

Stroke		50	100	150	200	250	300	350	400	450	500	550	600	650	700
Mass (kg)	Without brake	4.1	4.5	4.8	5.2	5.5	5.9	6.3	6.6	7.0	7.3	7.6	7.9	8.3	8.6
	With brake	4.7	5.1	5.4	5.8	6.1	6.5	6.9	7.2	7.6	7.9	8.2	8.5	8.9	9.2

■ Applicable controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 29 for details on built-in controllers.

EC-RR6X□AH
EC-DRR6X□AH

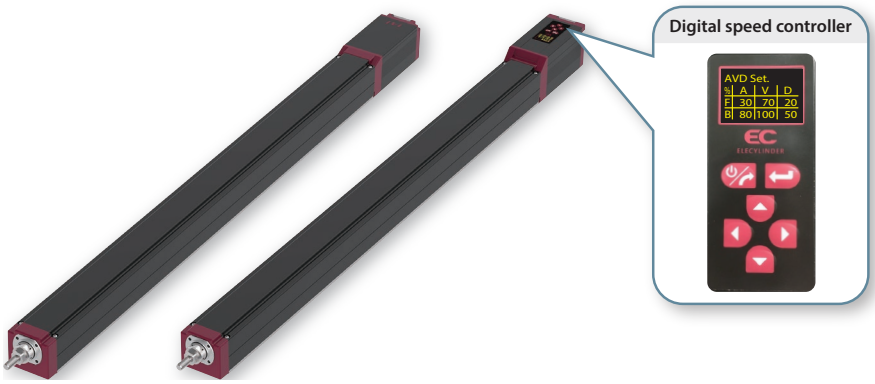
<With digital speed controller>

Coupled Motor | Support Mechanism | Body Width 60 mm | 24v Stepper Motor

Model Specification Items

EC - [ ] [ ] AH - [ ] - [ ] - [ ]

Series	Type		Lead		Specification		Stroke		Power / I/O cable length	Options
	RR6X	Standard	S	20mm	AH	High rigidity	600 ~ 1000	600mm ~ 1000mm (Every 50mm)	See power / I/O cable length below	See options below
	DRR6X	Digital speed controller	H	12mm						
			M	6mm						
			L	3mm						



CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Radial Load Specification
Radial Cylinder®

Stroke

Stroke (mm)	RR6X□AH	DRR6X□AH	Stroke (mm)	RR6X□AH	DRR6X□AH
600	○	○	**850**	○	○
650	○	○	**900**	○	○
700	○	○	**950**	○	○
750	○	○	**1000**	○	○
800	○	○			

Options

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

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	23
Brake	**B**	23
Tip adapter (flange)	**FFA**	23
Flange (front)	**FL**	23
Designated grease specification	**G5**	23
Tip adapter (internal thread)	**NFA**	24
Non-motor end specification	**NM**	24
PNP specification	**PN**	24
split motor and controller power supply specification	**TMD2**	25
Battery-less absolute encoder specification	**WA**	25
Wireless communication specification	**WL**	25
Wireless axis operation specification	**WL2**	25

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.

POINT Selection Notes

(1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.

(2) Radial cylinders are equipped with a built-in guide. Please refer to P. 26 for details on the radial load applied to rods.

(3) The value of the horizontal payload assumes that there is an external guide.

(4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 27 for applicable notes. Pushing may vary depending on the deflection of the rod. If using for pushing, please mount an external guide.

(5) Duty restriction is required, depending on the ambient operating temperature.
Please refer to P. 27 for details.

(6) Special attention needs to be paid to the mounting orientation.
Please refer to P. 5 for details.

(7) Cannot be used for oscillating motion.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 3) (with connectors on both edges) CB-REC-PWBIO□□□-RB supplied
0	No cable	○ (Note 2)	○
1 ~ 3	1 ~ 3m	○	○
4 ~ 5	4 ~ 5m	○	○
6 ~ 7	6 ~ 7m	○	○
8 ~ 10	8 ~ 10m	○	○

(Note 2) Only terminal block connector is included. Please refer to P. 30 for details.
(Note 3) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC2-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 4) (with connectors on both edges) CB-REC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○	○
S4 ~ S5	4 ~ 5m	○	○
S6 ~ S7	6 ~ 7m	○	○
S8 ~ S10	8 ~ 10m	○	○

(Note 4) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

Main Specifications

Item			Description			
Lead		Ball screw lead (mm)	20	12	6	3
Horizontal	Payload	Max. payload (kg) (energy-saving disabled)	6	25	40	60
		Max. payload (kg) (energy-saving enabled)	6	25	40	40
	Speed / acceleration/ deceleration	Max. speed (mm/s)	800	700	330	145
		Min. speed (mm/s)	25	15	8	4
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	1	1	1	1
Vertical	Payload	Max. payload (kg) (energy-saving disabled)	1.5	4	10	20
		Max. payload (kg) (energy-saving enabled)	1	4	10	20
	Speed / acceleration/ deceleration	Max. speed (mm/s)	800	700	330	145
		Min. speed (mm/s)	25	15	8	4
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
Push		Max. push force (N)	67	112	224	449
		Max. push speed (mm/s)	20	20	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake			
		Brake holding force (kgf)	1.5	4	10	20
Stroke		Min. stroke (mm)	600	600	600	600
		Max. stroke (mm)	1000	1000	1000	1000
		Stroke pitch (mm)	50	50	50	50

Item	Description
Drive system	Ball screw, ϕ10mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ϕ25mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 5)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 5) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

Energy-saving setting disabled The unit for payload is kg. If blank, operation is not possible.

Lead 20

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

Lead 12

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	25	18	16	12	4	4
100	25	18	16	12	4	4
200	23	18	16	10	4	4
400	20	14	10	6	4	4
500	15	8	6	2	3	2.5
700	6	2			0.5	

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	40	35	30	25	10	10
50	40	35	30	25	10	10
100	40	35	30	25	10	10
200	40	30	25	20	10	10
250	40	27.5	22.5	18	9	8
330	29	14	10	6	5	4

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	60	50	45	40	20	20
50	60	50	45	40	20	20
100	60	50	45	40	20	20
125	60	50	40	30	10	10
145	40	35	25	20	6	5

(Note) Refer to precautions when selecting "G5" option

Energy-saving setting enabled The unit for payload is kg.

Lead 20

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	6	5	1
160	6	5	1
320	6	5	1
480	4	3	1
640	3	1	0.5

Lead 12

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	25	10	4
100	25	10	4
200	25	10	4
280	20	8	3
400	10	5	2
500	5	2	1

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	40	20	10
50	40	20	10
100	40	20	10
150	40	20	8
200	35	18	5
250	10	6	3

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	40	25	20
25	40	25	20
50	40	25	20
100	40	25	12
125	40	25	5

(Note) Refer to precautions when selecting "G5" option

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

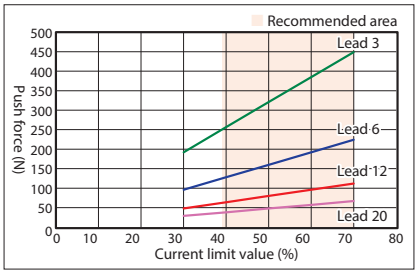
- Lead 12: 400mm/s or lower
- Lead 6: 200mm/s or lower
- Lead 3: 100mm/s or lower

Stroke and Max Speed

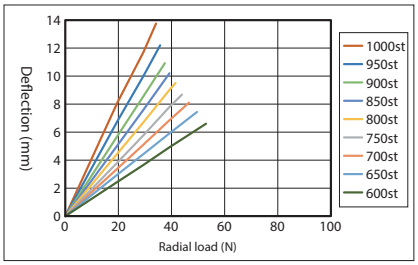
Lead (mm)	Energy-saving setting	600 ~ 1000 (Every 50mm)
20	Disabled	800
	Enabled	640
12	Disabled	700
	Enabled	500
6	Disabled	330
	Enabled	250
3	Disabled	145
	Enabled	125

(Unit: mm/s)

Correlation diagrams between push force and current limit



Rod Deflection (Reference Values)



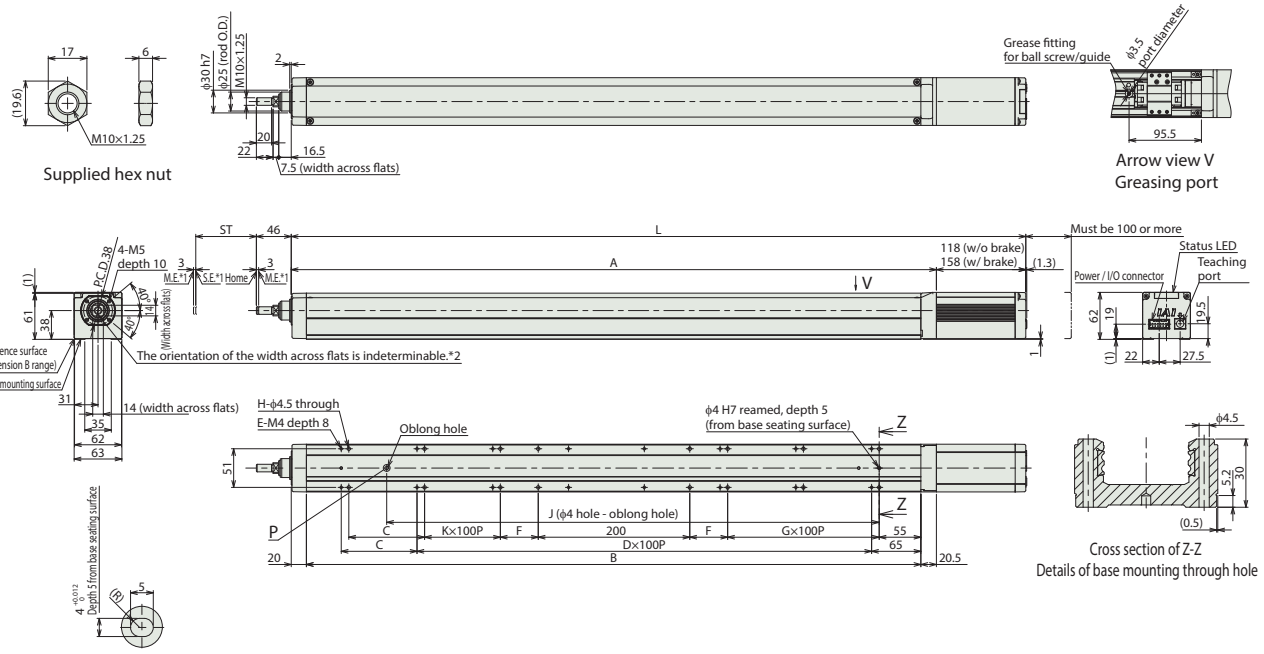
Dimensions

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

EC-RR6X□AH

*1 When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



Dimensions by stroke

Stroke		600	650	700	750	800	850	900	950	1000
L	Without brake	969.5	1019.5	1069.5	1119.5	1169.5	1219.5	1269.5	1319.5	1369.5
	With brake	1009.5	1059.5	1109.5	1159.5	1209.5	1259.5	1309.5	1359.5	1409.5
A		851.5	901.5	951.5	1001.5	1051.5	1101.5	1151.5	1201.5	1251.5
B		811	861	911	961	1011	1061	1111	1161	1211
C		100	50	100	50	100	50	100	50	100
D		6	7	7	8	8	9	9	10	10
E		16	18	18	20	20	22	22	24	24
F		50	0	0	50	50	0	0	50	50
G		2	3	3	3	3	4	4	4	4
H		16	16	16	20	20	20	20	24	24
J		650	700	750	800	850	900	950	1000	1050
K		1	2	2	2	2	3	3	3	3

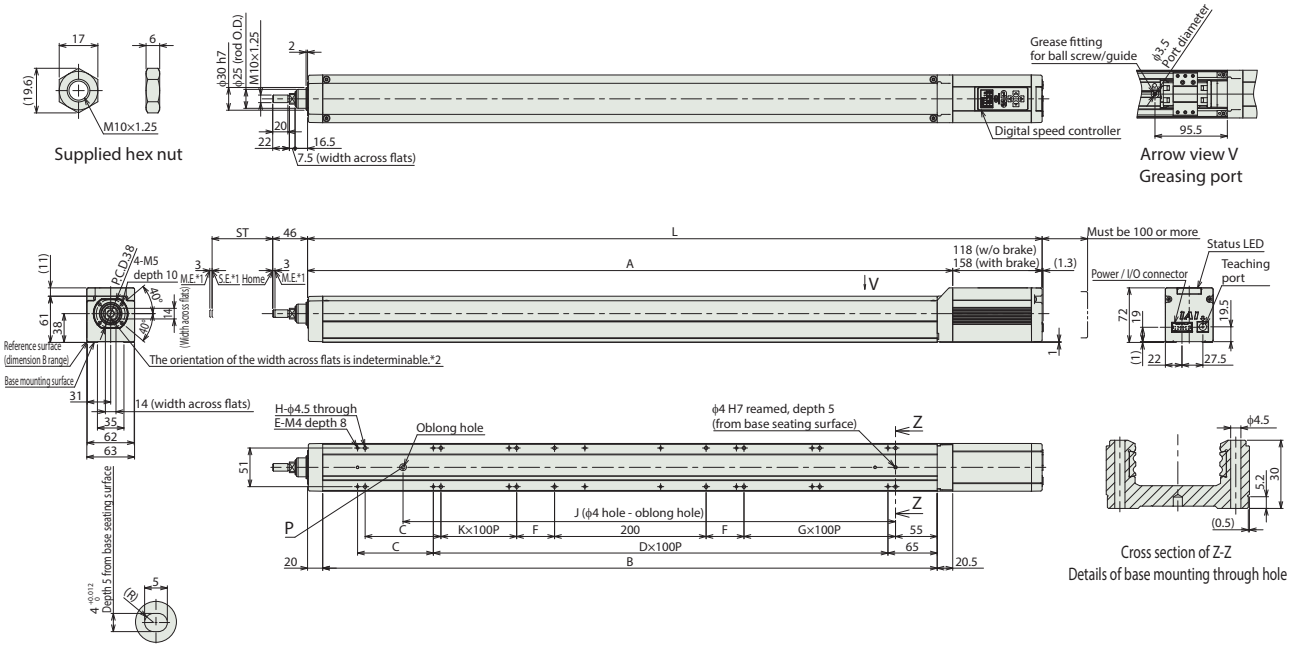
Mass by stroke

Stroke		600	650	700	750	800	850	900	950	1000
Mass (kg)	Without brake	5.6	5.9	6.2	6.5	6.8	7	7.3	7.6	7.9
	With brake	5.9	6.2	6.5	6.8	7.1	7.3	7.6	7.9	8.2

■EC-DRR6X□AH <with digital speed controller>

*1 When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



■Dimensions by stroke

Stroke		600	650	700	750	800	850	900	950	1000
L	Without brake	969.5	1019.5	1069.5	1119.5	1169.5	1219.5	1269.5	1319.5	1369.5
	With brake	1009.5	1059.5	1109.5	1159.5	1209.5	1259.5	1309.5	1359.5	1409.5
A		851.5	901.5	951.5	1001.5	1051.5	1101.5	1151.5	1201.5	1251.5
B		811	861	911	961	1011	1061	1111	1161	1211
C		100	50	100	50	100	50	100	50	100
D		6	7	7	8	8	9	9	10	10
E		16	18	18	20	20	22	22	24	24
F		50	0	0	50	50	0	0	50	50
G		2	3	3	3	3	4	4	4	4
H		16	16	16	20	20	20	20	24	24
J		650	700	750	800	850	900	950	1000	1050
K		1	2	2	2	2	3	3	3	3

■Mass by stroke

Stroke		600	650	700	750	800	850	900	950	1000
Mass (kg)	Without brake	5.7	6	6.3	6.6	6.9	7.1	7.4	7.7	8
	With brake	6	6.3	6.6	6.9	7.2	7.4	7.7	8	8.3

■Applicable controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 29 for details on built-in controllers.

EC-RR7X□AH
EC-DRR7X□AH

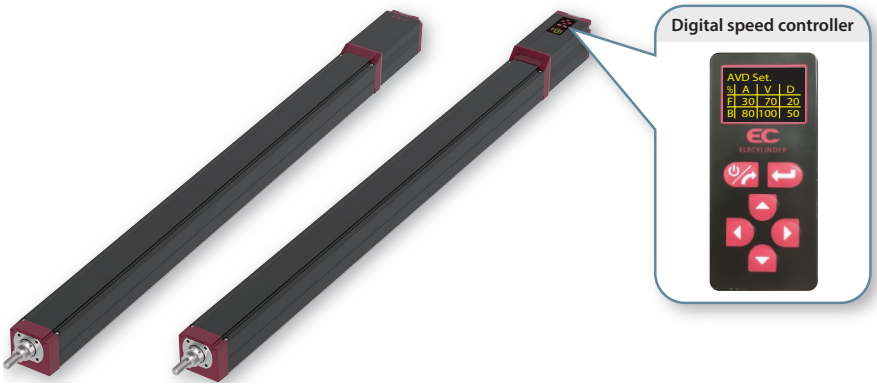
<With digital speed controller>

Coupled Motor | Support Mechanism | Body Width 70 mm | 24v Stepper Motor

Model Specification Items

EC - [ ] [ ] AH - [ ] - [ ] - [ ]

Series	Type		Lead		Specification		Stroke		Power / I/O cable length	Options
	RR7X	Standard	S	24mm	AH	High rigidity	750 ~ 1000	750mm ~ 1000mm (Every 50mm)	See power / I/O cable length below	See options below
	DRR7X	Digital speed controller	H	16mm						
			M	8mm						
			L	4mm						



CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Radial Load Specification
Radial Cylinder®

Stroke

Stroke (mm)	RR7X□AH	DRR7X□AH	Stroke (mm)	RR7X□AH	DRR7X□AH
750	○	○	**900**	○	○
800	○	○	**950**	○	○
850	○	○	**1000**	○	○

Options

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

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	23
Brake	**B**	23
Tip adapter (flange)	**FFA**	23
Flange (front)	**FL**	23
Designated grease specification	**G5**	23
Tip adapter (internal thread)	**NFA**	24
Non-motor end specification	**NM**	24
PNP specification	**PN**	24
split motor and controller power supply specification	**TMD2**	25
Battery-less absolute encoder specification	**WA**	25
Wireless communication specification	**WL**	25
Wireless axis operation specification	**WL2**	25

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.

POINT Selection Notes

(1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.

(2) Radial cylinders are equipped with a built-in guide. Please refer to P. 26 for details on the radial load applied to rods.

(3) The value of the horizontal payload assumes that there is an external guide.

(4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 27 for applicable notes. Pushing may vary depending on the deflection of the rod. If using for pushing, please mount an external guide.

(5) Duty restriction is required, depending on the ambient operating temperature.
Please refer to P. 27 for details.

(6) Special attention needs to be paid to the mounting orientation.
Please refer to P. 5 for details.

(7) Cannot be used for oscillating motion.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 3) (with connectors on both edges) CB-REC-PWBIO□□□-RB supplied
0	No cable	○ (Note 2)	○
1 ~ 3	1 ~ 3m	○	○
4 ~ 5	4 ~ 5m	○	○
6 ~ 7	6 ~ 7m	○	○
8 ~ 10	8 ~ 10m	○	○

(Note 2) Only terminal block connector is included. Please refer to P. 30 for details.
(Note 3) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC2-PWBIO□□□-RB supplied	RCON-EC connection specification (Note 4) (with connectors on both edges) CB-REC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○	○
S4 ~ S5	4 ~ 5m	○	○
S6 ~ S7	6 ~ 7m	○	○
S8 ~ S10	8 ~ 10m	○	○

(Note 4) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

Main Specifications

Item			Description			
Lead		Ball screw lead (mm)	24	16	8	4
Horizontal	Payload	Max. payload (kg) (energy-saving disabled)	20	50	60	80
		Max. payload (kg) (energy-saving enabled)	18	40	50	55
	Speed / acceleration/ deceleration	Max. speed (mm/s)	860	700	350	175
		Min. speed (mm/s)	30	20	10	5
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	1	1	1	1
Vertical	Payload	Max. payload (kg) (energy-saving disabled)	3	8	18	28
		Max. payload (kg) (energy-saving enabled)	3	5	17.5	26
	Speed / acceleration/ deceleration	Max. speed (mm/s)	640	560	350	175
		Min. speed (mm/s)	30	20	10	5
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
Push		Max. push force (N)	182	273	547	1094
		Max. push speed (mm/s)	20	20	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake			
		Brake holding force (kgf)	3	8	18	28
Stroke		Min. stroke (mm)	750	750	750	750
		Max. stroke (mm)	1000	1000	1000	1000
		Stroke pitch (mm)	50	50	50	50

Item	Description
Drive system	Ball screw ϕ12mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ϕ30mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 5)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 5) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

Energy-saving setting disabled The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	20	18	15	12	3	3
200	20	18	15	12	3	3
400	20	14	12	8	3	3
420	17	12	10	6	3	3
560	14	6	4	3	2	1.5
640	5	3	2	1	1	1
800	4	1				
860	2					

Lead 16

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	50	40	35	30	8	8
140	50	40	35	30	8	8
280	50	30	23	18	7	7
420	25	17	12	8	4.5	3.5
560	10	5	2	0.5	1	1
700	2					

(Note) Refer to precautions when selecting "G5" option

Lead 8

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	60	50	45	40	18	18
70	60	50	45	40	18	18
140	60	50	45	40	16	12
210	60	40	31	26	10	9
280	34	20	15	11	5	4
350	12	2			0.5	

(Note) Refer to precautions when selecting "G5" option

Lead 4

Orientation	Horizontal				Vertical	
Speed (mm/s)	Acceleration (G)					
	0.3	0.5	0.7	1	0.3	0.5
0	80	70	65	60	28	28
35	80	70	65	60	28	28
70	80	70	65	60	28	28
105	80	60	50	40	18	18
140	50	30	20	15	12	10
175	15				2	

(Note) Refer to precautions when selecting "G5" option

Energy-saving setting enabled The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	18	9.5	3
200	18	9.5	3
420	10	5	1.5
630	1		

Lead 16

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	40	25	5
140	40	25	5
280	18	12	2
420	1.5	1	

Lead 8

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	50	30	17.5
70	50	30	17.5
140	50	30	7
210	14	7	2

Lead 4

Orientation	Horizontal		Vertical
Speed (mm/s)	Acceleration (G)		
	0.3	0.7	0.3
0	55	50	26
35	55	50	26
70	55	50	13
105	30	15	2

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

- Lead 16: 560mm/s or lower
- Lead 8: 280mm/s or lower
- Lead 4: 140mm/s or lower

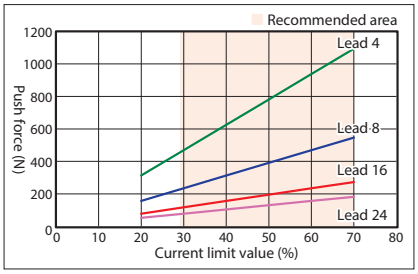
Stroke and Max Speed

Lead (mm)	Energy-saving setting	750 ~ 1000 (Every 50mm)
24	Disabled	860 <640>
	Enabled	630 <420>
16	Disabled	700 <560>
	Enabled	420 <280>
8	Disabled	350
	Enabled	210
4	Disabled	175
	Enabled	105

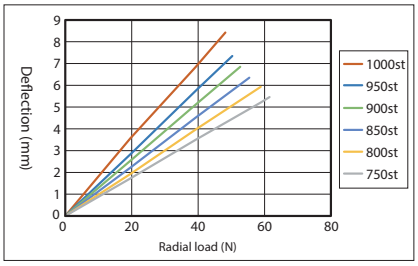
(Unit: mm/s)

(Note) Values in brackets < > are for vertical use.

Correlation diagrams between push force and current limit



Rod Deflection (Reference Values)



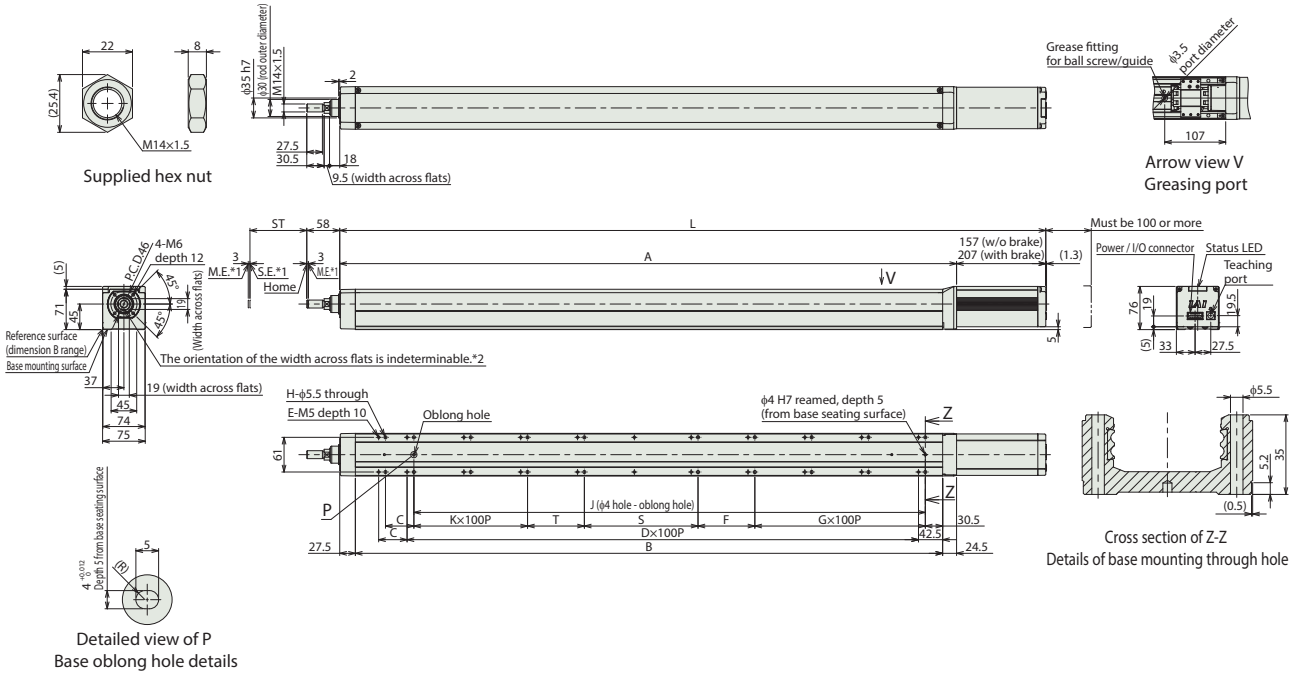
Dimensions

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

EC-RR7X□AH

*1 When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



Dimensions by stroke

Stroke		750	800	850	900	950	1000
L	Without brake	1192.5	1242.5	1292.5	1342.5	1392.5	1442.5
	With brake	1242.5	1292.5	1342.5	1392.5	1442.5	1492.5
A		1035.5	1085.5	1135.5	1185.5	1235.5	1285.5
B		983.5	1033.5	1083.5	1133.5	1183.5	1233.5
C		0	50	0	50	0	50
D		9	9	10	10	11	11
E		20	22	22	24	24	26
F		50	0	0	50	50	0
G		3	4	4	4	4	5
H		18	20	20	22	22	24
J		850	900	950	1000	1050	1100
K		3	3	3	3	4	4
S		250	200	250	250	250	200
T		0	0	50	0	0	0

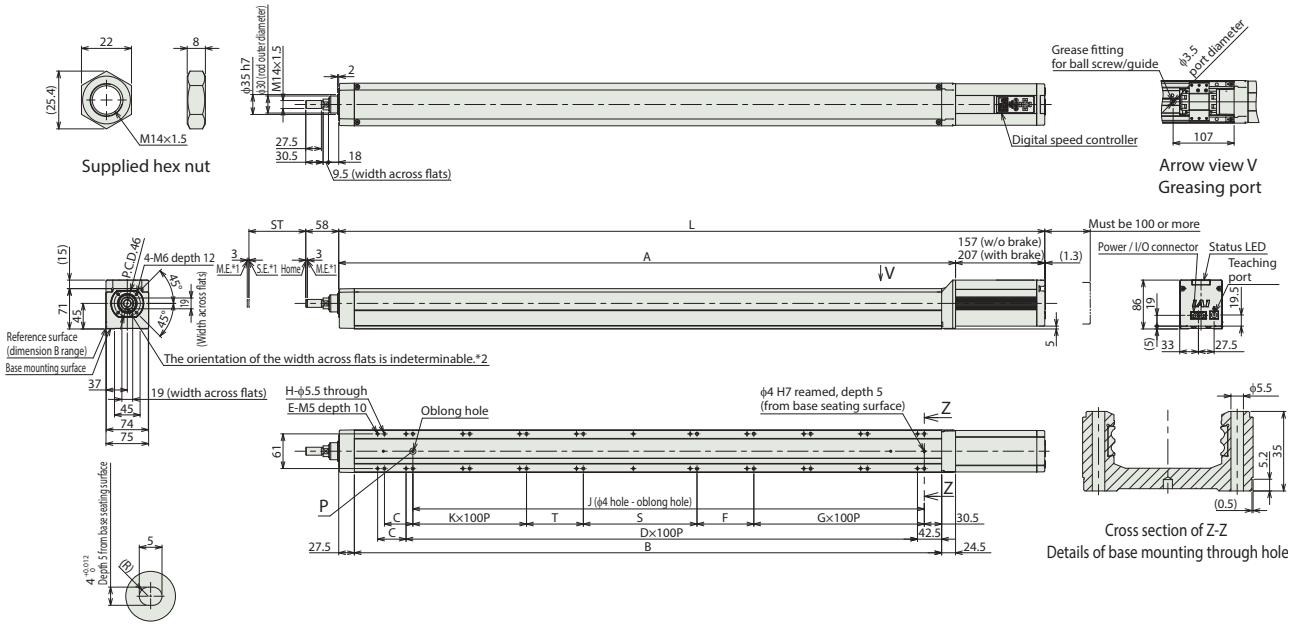
Mass by stroke

Stroke		750	800	850	900	950	1000
Mass (kg)	Without brake	9.6	10	10.3	10.7	11	11.4
	With brake	10.1	10.5	10.8	11.2	11.5	11.9

■ EC-DRR7X□AH <with digital speed controller>

*1 When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



■ Dimensions by stroke

Stroke		750	800	850	900	950	1000
L	Without brake	1192.5	1242.5	1292.5	1342.5	1392.5	1442.5
	With brake	1242.5	1292.5	1342.5	1392.5	1442.5	1492.5
A		1035.5	1085.5	1135.5	1185.5	1235.5	1285.5
B		983.5	1033.5	1083.5	1133.5	1183.5	1233.5
C		0	50	0	50	0	50
D		9	9	10	10	11	11
E		20	22	22	24	24	26
F		50	0	0	50	50	0
G		3	4	4	4	4	5
H		18	20	20	22	22	24
J		850	900	950	1000	1050	1100
K		3	3	3	3	4	4
S		250	200	250	250	250	200
T		0	0	50	0	0	0

■ Mass by stroke

Stroke		750	800	850	900	950	1000
Mass (kg)	Without brake	9.7	10.1	10.4	10.8	11.1	11.5
	With brake	10.3	10.7	11	11.4	11.7	12.1

■ Applicable controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 29 for details on built-in controllers.

ELECYLINDER® Series Options

RCON-EC connection specification *Cannot be selected with the TMD2 and PN options (the ACR option includes the split motor and controller power supply specification)

Model ACR

Description This option should be selected to connect over an R-unit to a field network.
*If this option is selected, the power supply must be a twin power supply and the input/output specification must be NPN. It can therefore not be selected with the TMD2 or PN options.

Brake

Model B

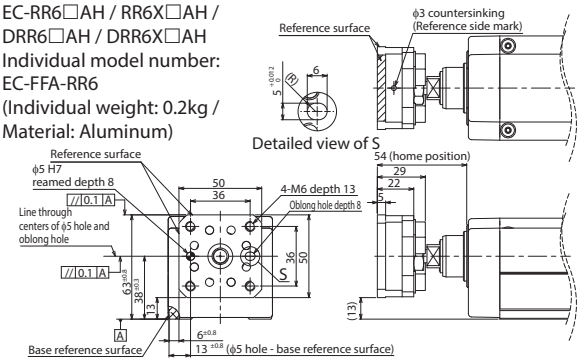
Description When the actuator is mounted vertically, this works as a holding mechanism that prevents the rod from falling and damaging any attachments when the power or servo is turned off. When using the rotary on its side or vertically, this holding mechanism also prevents the output shaft from accidentally rotating due to the weight of the attached object, and damaging the attached object when the power or servo is turned off.

Tip adapter (flange)

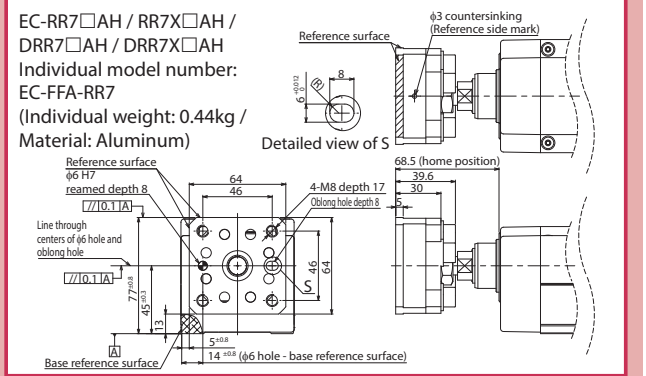
Model FFA

Description This adapter is used to mount jigs etc., on the rod tip with 4 bolts.

EC-RR6☐AH / RR6X☐AH / DRR6☐AH / DRR6X☐AH
Individual model number: EC-FFA-RR6
(Individual weight: 0.2kg / Material: Aluminum)



EC-RR7☐AH / RR7X☐AH / DRR7☐AH / DRR7X☐AH
Individual model number: EC-FFA-RR7
(Individual weight: 0.44kg / Material: Aluminum)

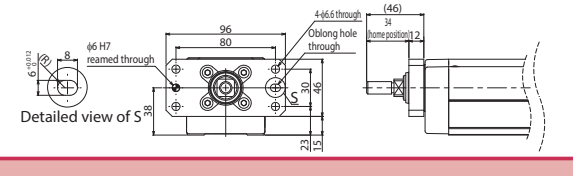


Flange (front)

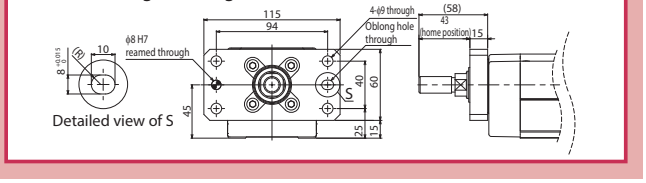
Model FL

Description This bracket is used for fixing the actuator body side with bolts.
*Not shipped assembled. Refer to the drawing to mount.
However, it will be shipped with flange front "FL" assembled if selected with tip adapter (flange) "FFA."

EC-RR6☐AH / RR6X☐AH / DRR6☐AH / DRR6X☐AH
Individual model number: EC-FL-RR6
(Individual weight: 0.32kg / Material: Carbon steel)



EC-RR7☐AH / RR7X☐AH / DRR7☐AH / DRR7X☐AH
Individual model number: EC-FL-RR7
(Individual weight: 0.63kg / Material: Carbon steel)



Designated grease specification

Model G5

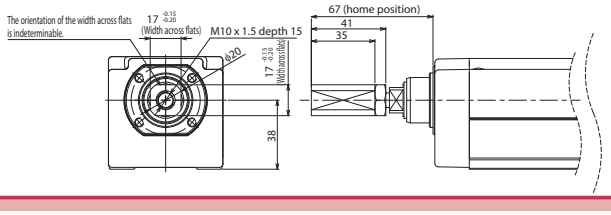
Description Replaces the grease applied to the actuator ball screw, linear guide, and sliding surface of the rod with food machine grease (White Alcom Grease).

Tip adapter (internal thread)

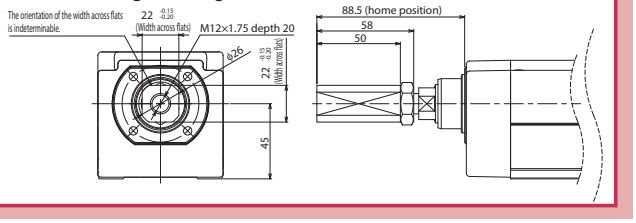
Model **NFA**

Description This adapter is used to mount jigs etc., on the rod tip with 1 bolt.

EC-RR6□AH / RR6X□AH / DRR6□AH / DRR6X□AH
Individual model number: EC-NFA-R6
(Individual weight: 0.07kg / Material: Stainless steel)



EC-RR7□AH / RR7X□AH / DRR7□AH / DRR7X□AH
Individual model number: EC-NFA-R7
(Individual weight: 0.16kg / Material: Stainless steel)



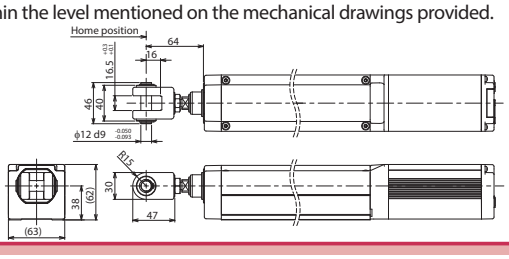
Knuckle joint

Model **NJ**

Description When using a clevis or trunnion bracket, this bracket is used to allow the actuator rod tip to move freely (rotate).
It should be used as a set with a clevis bracket (QR or QRPB).

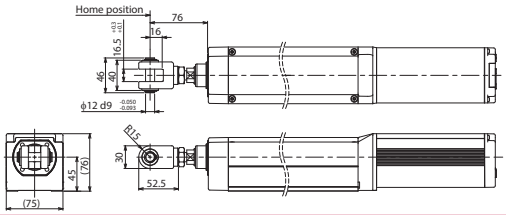
EC-RR6□AH / DRR6□AH
Individual model number: EC-NJ-RR6
(Material: Stainless cast steel)

*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.



EC-RR7□AH / DRR7□AH
Individual model number: EC-NJ-RR7
(Material: Stainless cast steel)

*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.

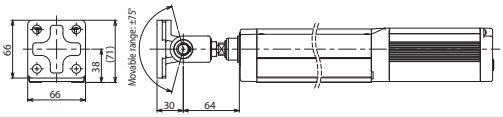


Knuckle joint + oscillation receiving bracket

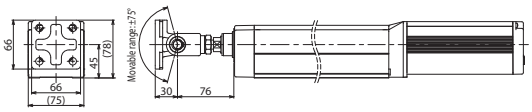
Model **NJPB**

Description This is a knuckle joint and oscillation receiving bracket.
It should be used as a set with a clevis bracket (QR or QRPB).

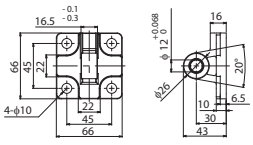
EC-RR6□AH / DRR6□AH
Individual model number: EC-NJPB-RR6 (Material: Stainless cast steel)



EC-RR7□AH / DRR7□AH
Individual model number: EC-NJPB-RR7 (Material: Stainless cast steel)



Oscillation receiving bracket mounting dimensions



Non-motor end specification

Model **NM**

Description The home position is normally set to the motor side. This option is for setting the home position on the other side in order to accommodate variations in equipment layout, etc.

PNP specification * Cannot be selected with ACR option, which is the NPN specification.

Model **PN**

Description EC Series products provide NPN specification input/output for connecting external devices as standard.
Specifying this option changes input/output to the PNP specification.

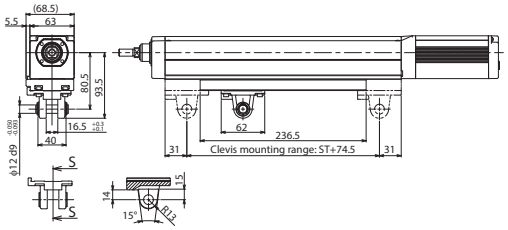
Clevis bracket

Model **QR**

Description When the motion of the object mounted on the rod tip differs from the rod operation direction, this bracket is used to make it track the actuator body. It should be used as a set with a knuckle joint (NJ or NJPB).

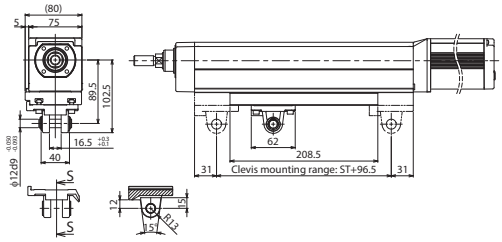
EC-RR6□AH / DRR6□AH
Individual model number: ECH-QR-RR6
(Material: Stainless cast steel)

*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.



EC-RR7□AH / DRR7□AH
Individual model number: ECH-QR-RR7
(Material: Stainless cast steel)

*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.

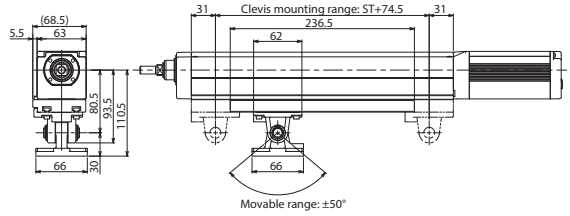


Clevis bracket + oscillation receiving bracket

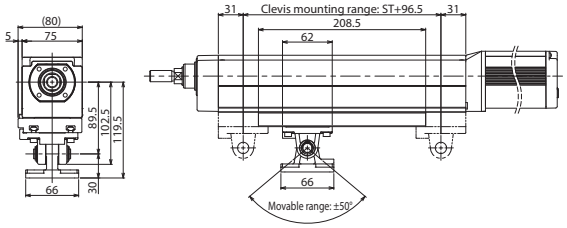
Model **QRPB**

Description This is a clevis and oscillation receiving bracket. The method for mounting the oscillation receiving bracket is the same as for NJPB. It should be used as a set with a knuckle joint (NJ or NJPB).

EC-RR6□AH /DRR6□AH
Individual model number: ECH-QRPB-RR6
(Material: Stainless cast steel)



EC-RR7□AH /DRR7□AH
Individual model number: ECH-QRPB-RR7
(Material: Stainless cast steel)



Split motor and controller power supply specification

* Cannot be selected with the ACR option (the RCON-EC connection specification is a split motor and controller power supply specification)

Model **TMD2**

Description This option includes an actuator operation stop input.
Select this option to allow shutting down the actuator drive power only.
Please refer to P. 30 for more information on wiring.

Battery-less absolute encoder specification

Model **WA**

Description EC Series products use the incremental encoder specification as standard.
Specify this option to have a built-in battery-less absolute encoder installed.

Wireless communication specification

Model **WL**

Description This option enables support for wireless communication. Specifying this option enables wireless communication with the TB-03 teaching pendant. The start point, end point, and AVD can be adjusted via wireless communication.

Wireless axis operation specification

Model **WL2**

Description Specifying WL2 allows for the product to operate wirelessly as with WL (start point, end point, and AVD adjustment), and to also perform axis travel operation tests (forward end/backward end movement, jog, and inching). However, this function is not meant to perform automatic operation. Please refer to P. 326 of the EC General Catalog 2020 for precautions on axis operations using a wireless connection. (Note) WL cannot be changed to WL2, or WL2 to WL, by the customer. Please contact IAI for this.

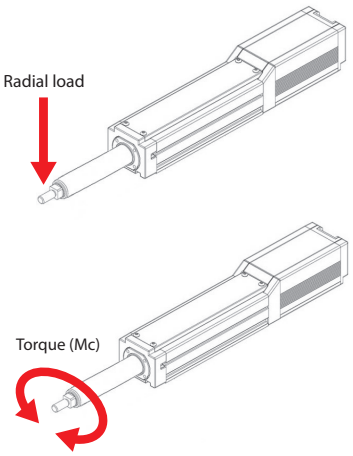
Radial loads acting on rods

Radial cylinders have a linear guide built into the body, so that radial and moment loads can be applied to the rod. The allowable radial and moment loads must meet the following three conditions.

1. The radial load acting on the rod must not exceed the allowable value.

	Rod tip static allowable radial load	Rod tip dynamic allowable radial load (*1)							
		Stroke (mm)							
RR6□AH DRR6□AH	190N	50 ~ 250	300	350	400	450 ~ 500	550		
		130N	40N	35N	25N	20N	15N		
RR6X□AH DRR6X□AH		600 ~ 750		800 ~ 900		950 ~ 1000			
		15N		10N		5N			
RR7□AH DRR7□AH	250N	50 ~ 250	300	350	400	450	500 ~ 550	600 ~ 650	700
		170N	50N	45N	40N	35N	30N	25N	20N
RR7X□AH DRR7X□AH		750		800 ~ 850		900 ~ 1000			
		20N		15N		10N			

(*1) Value at a standard rated service life of 5,000km.



2. The torque (Mc) acting on the rod must not exceed the allowable value.

Type	Rod tip static allowable torque	Rod tip dynamic allowable torque (*2)
RR6□AH/DRR6□AH/RR6X□AH/DRR6X□AH	9N•m	5.5N•m
RR7□AH/DRR7□AH/RR7X□AH/DRR7X□AH	17.6N•m	10.5N•m

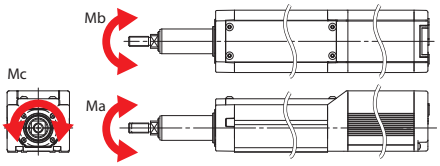
(*2) Value at a standard rated service life of 5,000km.

3. The uniform load acting on the rod must not exceed the allowable value.
The uniform load is obtained by the following formula.
Uniform load = Ma · Ka + Mb · Kb + Mc · Kc

Type	Static allowable uniform load	Dynamic allowable uniform load (*3)	Load uniform coefficient Ka	Load uniform coefficient Kb	Load uniform coefficient Kc
RR6□AH/DRR6□AH/RR6X□AH/DRR6X□AH	6700N	2400N	104/m	87/m	62/m
RR7□AH/DRR7□AH/RR7X□AH/DRR7X□AH	11400N	3000N	90/m	76/m	50/m

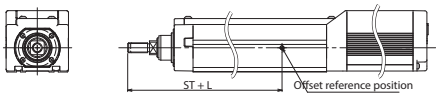
(*3) Value at a standard rated service life of 5,000km.

Ma, Mb, Mc: Moment load

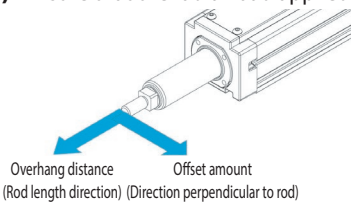


Type	L
RR6□AH/DRR6□AH	126mm
RR6X□AH/DRR6X□AH	153.5mm
RR7□AH/DRR7□AH	153.5mm
RR7X□AH/DRR7X□AH	183mm

Moment offset reference position



(Caution) •Ensure that the radial load applied to a rod does not exceed the allowable offset amount and allowable overhang distance.



Type	Allowable offset amount	Allowable overhang distance
RR6□AH/DRR6□AH/RR6X□AH/DRR6X□AH	100mm	100mm
RR7□AH/DRR7□AH/RR7X□AH/DRR7X□AH	150mm	150mm

•Operating conditions should be moderated if some abnormal vibration or noise is observed, even if the radial load and torque are within allowable values.
•The center mass location of the attached object should not exceed 1/2 the offset amount or overhang distance.

Duty Ratio

The duty ratio is the operating rate shown as the actuator's operating time during one cycle in, expressed as a percentage.

The duty ratio for each ELECYLINDER® type is limited to the values below.
The data below is applicable even during operation at maximum speed and maximum acceleration/deceleration.

[Duty cycle]

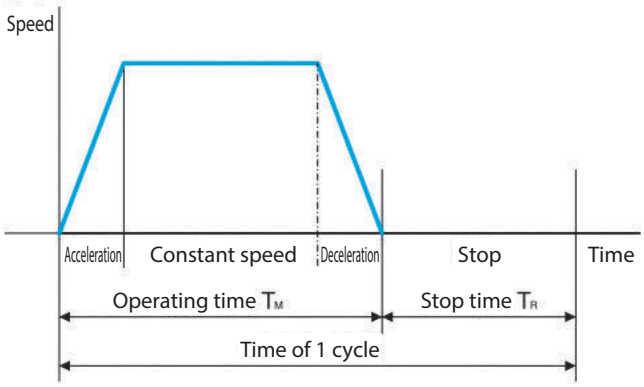
The duty ratio is the operating rate shown as the operating time of ELECYLINDER® during one cycle, expressed as a percentage.

$$D = \frac{TM}{TM + TR} \times 100\ (\%)$$

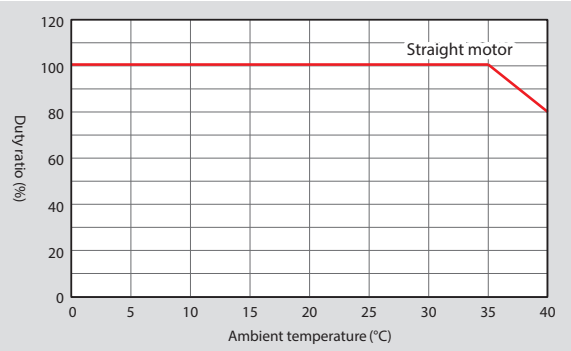
D: Duty ratio

TM: Operating time (including push-motion operation)

TR: Stop time



■ Ambient temperature and duty ratio



Push-motion operation

Push-motion operation is a function that keeps the rod pushed up against a workpiece, as with an air cylinder.
Please check the usage instructions and precautions below prior to use.

[Push force adjustment]

- **The push force during a push-motion operation can be adjusted by changing the "push force (%)" on ELECYLINDER®.**
- **Please check the push force for the applicable model in the "correlation diagrams between push force and current limit" on the production specification page, and select a model that matches your conditions.**

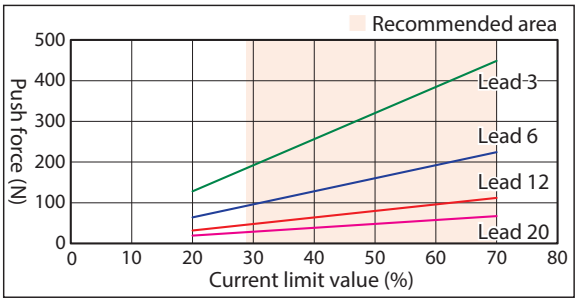
[Lead selection method]

Select a lead with the desired push force in the recommended current limit value range (the colored area in the graph).

Lead 6 would be appropriate for the EC-RR6 type shown in the figure to the right if a push force of 150N is desired. Selecting lead 3 would limit the adjustment range.

(Example)

EC-RR6

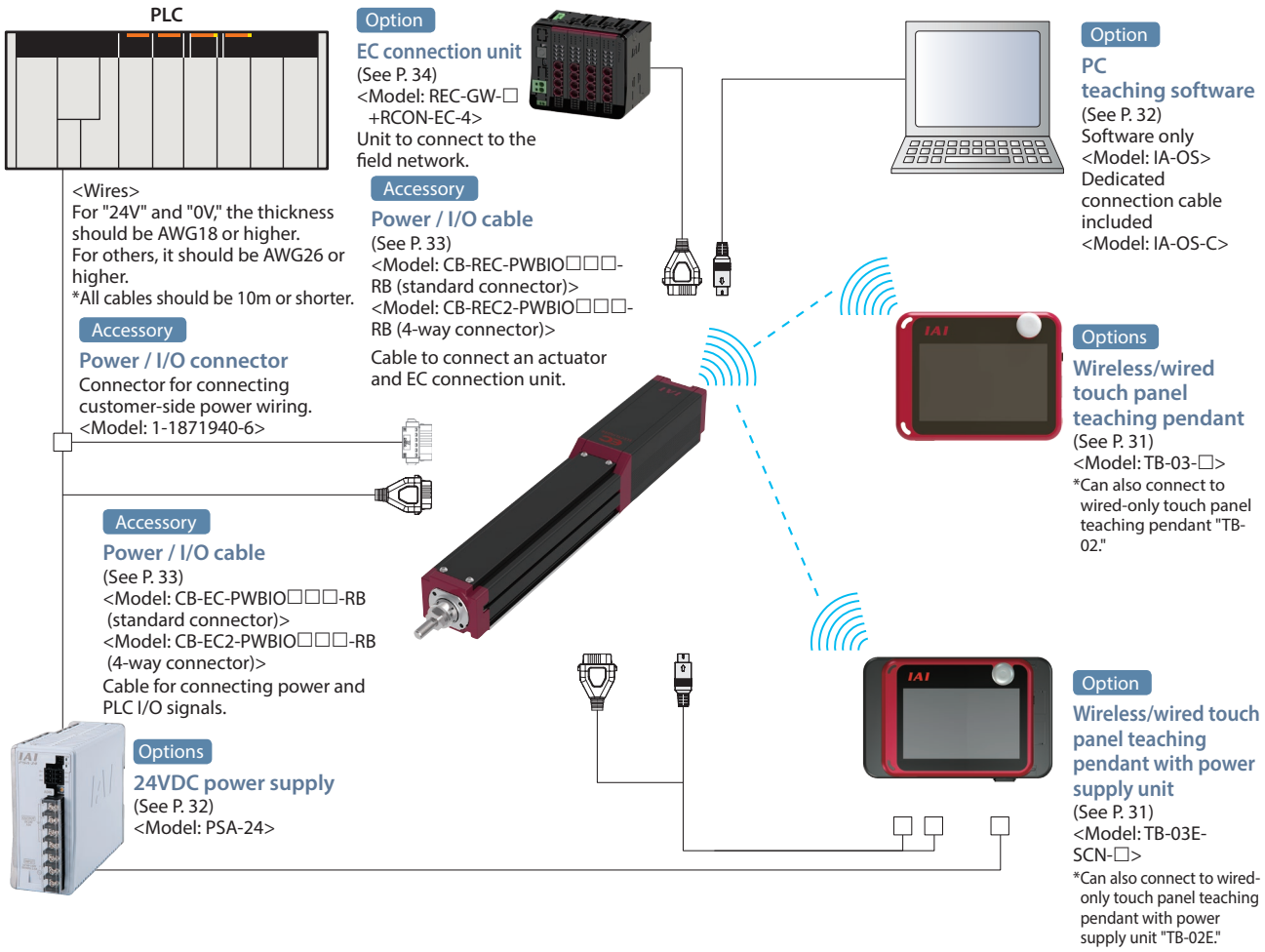


<Correlation between Push Force and Current Limit>

Caution

- **The "correlation diagrams between push force and current limit" show lower guidelines for push force for each current limit value.**
- **Individual differences in the motor and variations in machine operation may cause the push force lower limit to be exceeded by around 40%, even if the current limit value is the same.**
  This is especially true when the current limit value is 30% or lower, and the push force lower limit could be exceeded by 40% or more.

System Configuration



List of accessories

■ Power / I/O cables, connectors

[Standard connector]

Product category		Accessory
Power / I/O cable length (selected with actuator model)	RCON-EC connection specification (ACR) selection	
0	No	Power / I/O connector (1-1871940-6)
	Yes	—
1 ~ 10	No	Power / I/O cable (CB-EC-PWBIO□□□-RB)
	Yes	Power / I/O cable (CB-REC-PWBIO□□□-RB)

[Four-way connector]

Product category		Accessory
Power / I/O cable length (selected with actuator model)	RCON-EC connection specification (ACR) selection	
S1 ~ S10	No	Power / I/O cable (CB-EC2-PWBIO□□□-RB)
	Yes	Power / I/O cable (CB-REC2-PWBIO□□□-RB)

Basic Controller Specifications

Specification item			Specification content
Number of controlled axes			1 axis
Power supply voltage			24VDC ±10%
Power capacity	RR6□AH/DRR6□AH RR7□AH/DRR7□AH RR6X□AH/DRR6X□AH RR7X□AH/DRR7X□AH		With energy-saving setting disabled: Rated 3.5A, max. 4.2A With energy-saving setting enabled: Max. 2.2A
Brake release power supply			24VDC ±10%, 200mA (only for external brake release)
Generated heat			8W (at 100% duty)
Inrush current (Note 1)	RR6□AH/DRR6□AH RR7□AH/DRR7□AH RR6X□AH/DRR6X□AH RR7X□AH/DRR7X□AH		8.3A (with inrush current limit circuit)
Momentary power failure resistance			Max 500μs
Motor size			□42, □56
Motor rated current			1.2A
Motor control system			Weak field-magnet vector control
Supported encoders			Incremental (800 pulse/rev), battery-less absolute encoder (800 pulse/rev)
SIO			RS485 1ch (Modbus protocol compliant)
PIO	Input specification	No. of inputs	3 points (forward, backward, alarm clear)
		Input voltage	24VDC ±10%
		Input current	5mA per circuit
		Leakage current	Max. 1mA per point
		Isolation method	Non-isolated
	Output specification	No. of outputs	3 points (forward complete, backward complete, alarm)
		Output voltage	24VDC ±10%
		Output current	50mA per point
		Residual voltage	2V or less
		Isolation method	Non-isolated
Data setting, input method			PC teaching software, touch panel teaching pendant, digital speed controller
Data retention memory			Position and parameters are saved in non-volatile memory (no limit to number of rewrites)
LED display	Controller status display		Servo ON (green light ON) / Alarm (red light ON) / Initializing when power comes ON (orange light ON) / Minor failure alarm (green/red alternately blinking) / Operation from teaching: Stop from teaching (red light ON) / Servo OFF (light OFF)
	Wireless status display		Initializing wireless hardware, without wireless connection, or connecting from TP board (light OFF) Connecting through wireless (green blinking) / Wireless hardware error (red blinking) / Initializing when power comes ON (orange light ON)
Predictive maintenance/preventative maintenance			When the number of movements or operation distance has exceeded the set value and when the LED (right side) blinks alternately green and red at overload warning *Only when configured in advance
Ambient operating temperature			0 ~ 40°C
Ambient operating humidity			5%RH ~ 85%RH (no condensation or freezing)
Operating ambience			No corrosive gas and excessive dust
Insulation resistance			500 VDC 10MΩ
Electric shock protection mechanism			Class 1 basic insulation
Cooling method			Natural air cooling

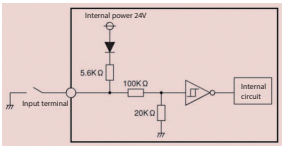
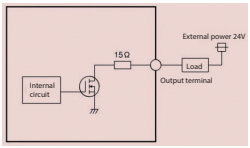
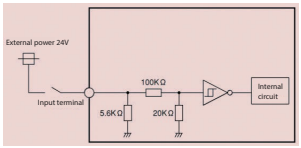
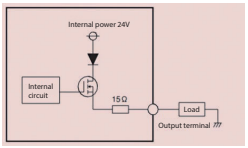
(Note 1) Inrush current flows for approximately 5ms after the power is input. (At 40°C.) Inrush current value differs depending on the impedance on the power line.

Solenoid valve method

ELECYLINDER® products normally use a double solenoid method.
Change parameter No. 9 ("solenoid valve type selection") to use the single solenoid method.

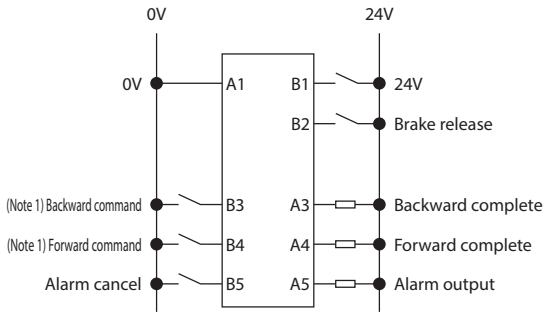
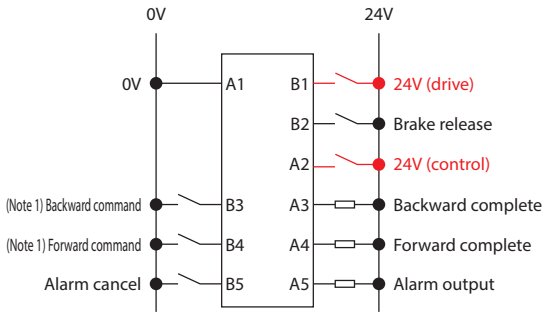
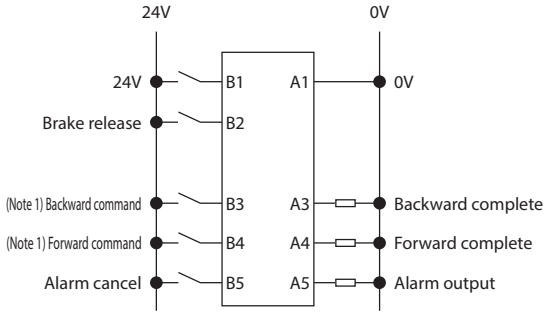
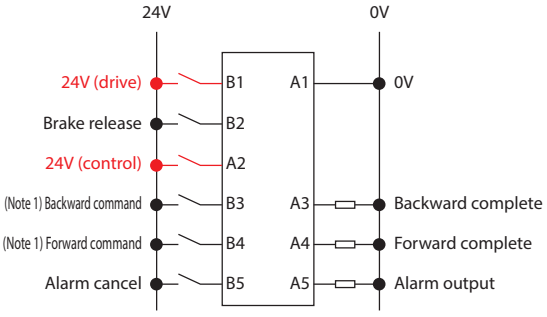
<Caution>
Operation cannot be performed using the single solenoid method when operating connected to RCON-EC.

I/O (Input/Output) Specifications

I/O		Input		Output	
Specifications		Input voltage	24VDC ±10%	Load voltage	24VDC ±10%
		Input current	5mA per circuit	Maximum load current	50mA per point
		ON/OFF voltage	ON voltage: MIN. 18VDC OFF voltage: MAX. 6VDC	Residual voltage	2V or less
		Leakage current	Max. 1mA per point	Leakage current	Max. 0.1mA per point
Isolation method		Non-isolated from external circuit		Non-isolated from external circuit	
I/O logic	NPN				
	PNP				

(Note) Isolation method is non-isolated. When grounding an external device (such as a PLC) connected to ELECYLINDER®, use the same ground as ELECYLINDER®.

I/O Signal Wiring Diagram

I/O		Standard specification	split motor and controller power supply specification (option model: TMD2)
Power / I/O connector		 0V A1 (Reserved) A2 (Note 1) Backward complete A3 (Note 1) Forward complete A4 Alarm output A5 (Reserved) A6 B1 24V B2 Brake release B3 Backward command B4 Forward command B5 Alarm cancel B6 (reserved)	Drive power and control power are separate for the TMD2 specification.  0V A1 24V (control) A2 (Note 1) Backward complete A3 (Note 1) Forward complete A4 Alarm output A5 (Reserved) A6 B1 24V (drive) B2 Brake release B3 Backward command B4 Forward command B5 Alarm cancel B6 (reserved)
I/O logic	NPN		
	PNP		

(Note 1) Switching to the single solenoid method will change B3 to "forward/backward command" and B4 to "unused."

I/O Signal Table

Power / I/O connector pin assignment			
Pin No.	Connector nameplate name	Signal abbreviation	Function overview
B3 (Note 1)	Backward	ST0	Backward command
B4 (Note 1)	Forward	ST1	Forward command
B5	Alarm cancel	RES	Alarm cancel
A3	Backward complete	LS0/PE0	Backward complete/push complete
A4	Forward complete	LS1/PE1	Forward complete/push complete
A5	Alarm	*ALM	Alarm detection (b-contact)
B2	Brake release	BKRLS	Brake forced release (for brake equipped specification)
B1 (Note 2)	24V	24V	24V input
A1	0V	0V	0V input
A2 (Note 2)	(24V)	(24V)	24V input

(Note 1) Switching to the single solenoid method will change B3 to "forward/backward" and B4 to "unused." However, the power / I/O connector display will still read "B3: Backward" and "B4: Forward."

(Note 2) B1 is 24V (drive) and A2 is 24V (control) for the split motor and controller power supply specification (TMD2).

Options

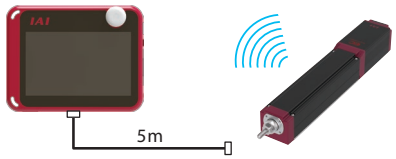
Wireless/wired touch panel teaching pendant

■ **Features** This teaching device supports wireless connections.
Start point/end point/AVD input and axis operation can be performed wirelessly.

■ **Model** **TB-03-☐** Please contact IAI for the current supported versions.

EC General Catalog P. 323

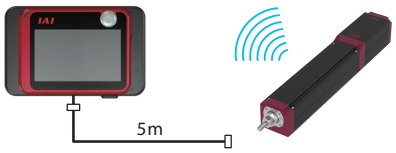
■ Conïguration Wireless or wired connection



Wired/wireless touch panel teaching pendant with power supply unit

■ **Model** **TB-03E-☐** Please contact IAI for the current supported versions.

■ Conïguration Wireless or wired connection



TB-03 body specifications

Power input voltage range	24VDC ±10% [supplied from controller]
	5.9VDC (5.7 ~ 6.3V) [supplied from AC adapter]
Power consumption	3.6W or less
Consumption current	150mA (supplied from controller)
Ambient operating temperature	0 ~ 40°C (no condensation or freezing)
Ambient operating humidity	5%RH ~ 85%RH (no condensation or freezing)
Ambient storage temperature	-20 ~ 40°C
Degree of protection	IPX0
Mass	670g (body) + approx. 285g (dedicated cable)
Charging method	Wired connection with dedicated AC adapter/controller

Power supply unit specifications

Rated input voltage	Single-phase 100 ~ 230VAC±10%
Input current (Under rated I/O conditions in ambient temperature of 25°C)	1.4A typ. (100VAC) 0.6A typ. (230VAC)
Frequency range	50/60Hz ±5%
Power capacity (Under rated I/O conditions in ambient temperature of 25°C)	141VA (100VAC) 145VA (230VAC)
Output voltage	24VDC ±10%
Load current	With energy-saving setting disabled: Rated 3.5A, max. 4.2A With energy-saving setting enabled: Rated 2.2A
Output capacity	With energy-saving setting disabled: Rated 84W, max. 98.4W With energy-saving setting enabled: Rated 52.8W
Ambient operating temperature	0 ~ 40°C (no condensation or freezing)
Ambient operating humidity	5%RH ~ 85%RH (no condensation or freezing)
Ambient storage temperature	-20 ~ 70°C
Atmosphere	No corrosive gas and excessive dust
Altitude	1000m or less above sea level
Vibration resistance	Frequency: 10 ~ 57Hz / Amplitude: 0.075mm Frequency: 57 ~ 150Hz / Acceleration: 9.8m/s^2 [XYZ directions] Sweep time: 10 minutes, Number of sweeps: 10
Degree of protection	IP30
Mass	Approx. 740g
Cooling method	Natural air cooling

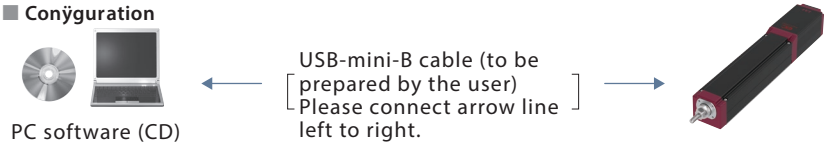
PC teaching software (Windows only)

■ **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.

■ **Model RC/EC Software** (software only, for customers who already own a dedicated connection cable)

Please contact IAI for the current supported versions.

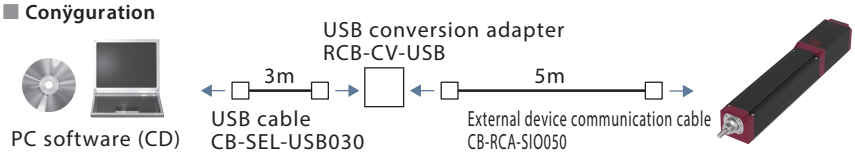
■ **Conꢀguration**



■ **Model RCM-101-USB** (with an external device communication cable + USB conversion adapter + USB cable)

Please contact IAI for the current supported versions.

■ **Conꢀguration**



24V power

■ Model **PSA-24 (without fan)**

■ Model **PSA-24L (with fan)**

▪ Specifications Table

Item	Specification	
	100VAC input	200VAC input
Power input voltage range	100VAC ~ 230 VAC ±10%	
Input power supply current	3.9A or less	1.9A or less
Power capacity	Without fan: 250VA With fan: 390VA	Without fan: 280VA With fan: 380VA
Inrush current*1	Without fan: 17A (typ.) With fan: 27.4A (typ.)	Without fan: 34A (typ.) With fan: 54.8A (typ.)
Generated heat	28.6W	20.4W
Output voltage range*2	24V ±10%	
Continuous rated output	Without fan: 8.5A (204W), with fan: 13.8A (330W)	
Peak output	17A (408W)	
Efficiency	86% or more	90% or more
Parallel connection*3	Up to 5 units	

*1 The pulse width of flowing inrush current is less than 5ms.

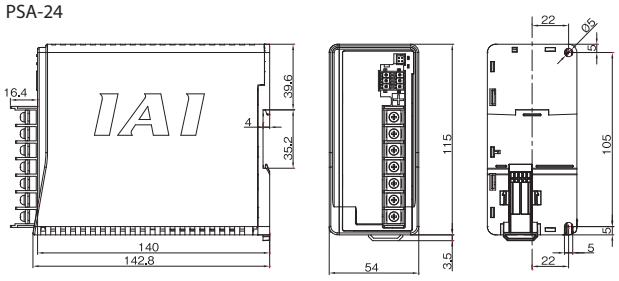
*2 This power supply can vary the output voltage according to the load in order to enable parallel operation. The power supply unit is therefore for use with IAI controllers only.

*3 Parallel connection cannot be used under the following conditions.

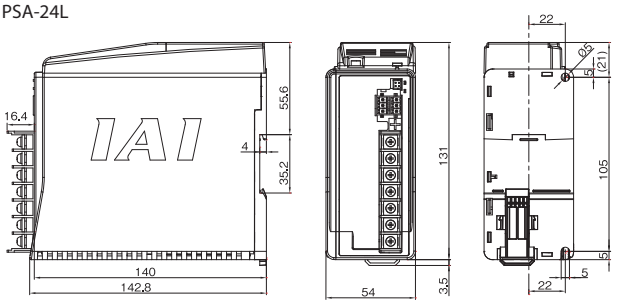
- Parallel connection of PSA-24 (specification without fan) and PSA-24L (specification with fan)
- Parallel connection with a power supply unit other than this power supply
- Parallel connection with PS-24

■ External dimensions

PSA-24



PSA-24L



Maintenance Parts

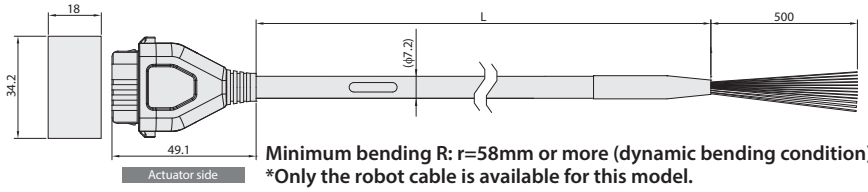
When placing an order for a replacement cable after purchasing a product, please use the model name shown below.

■ **Table of compatible cables**

Cable type	Cable model
Power / I/O cable (user-wired specification)	CB-EC-PWBIO□□□-RB
Power / I/O cable (user-wired specification, four-way connector)	CB-EC2-PWBIO□□□-RB
Power / I/O cable (RCON-EC connection specification)	CB-REC-PWBIO□□□-RB
Power / I/O cable (RCON-EC connection specification, four-way connector)	CB-REC2-PWBIO□□□-RB

Model CB-EC-PWBIO□□□-RB

*Please indicate the cable length (L) in □□□ (for example, 030 = 3m)



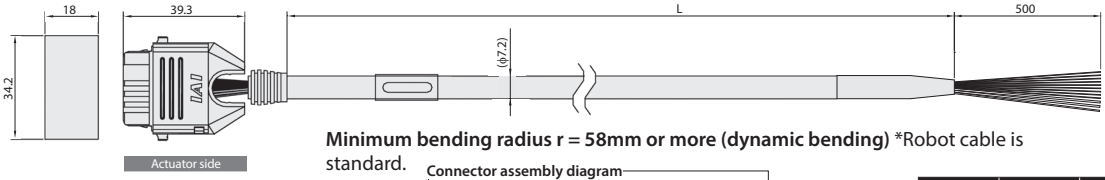
Minimum bending R: r=58mm or more (dynamic bending condition)
***Only the robot cable is available for this model.**

Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V	B1
Light blue (AWG22)	(Reserved) (Note 1)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	(Reserved)	B6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
White (AWG26)	(Reserved)	A6
Brown (AWG26)	BKRLS	B2

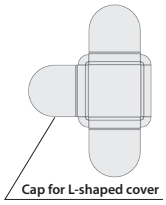
(Note 1) 24V (control) when split motor and controller power supply specification (TMD2) selected.

Model CB-EC2-PWBIO□□□-RB

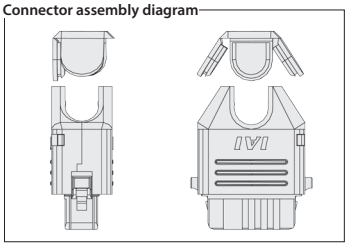
*Please indicate the cable length (L) in □□□ (for example, 030 = 3m)



Minimum bending radius r = 58mm or more (dynamic bending) *Robot cable is standard.



Connector assembly diagram

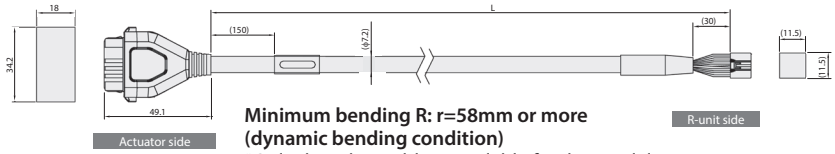


Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V	B1
Light blue (AWG22)	(Reserved) (Note 1)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	(Reserved)	B6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
White (AWG26)	(Reserved)	A6
Brown (AWG26)	BKRLS	B2

(Note 1) 24V (control) when split motor and controller power supply specification (TMD2) selected.

Model CB-REC-PWBIO□□□-RB

*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



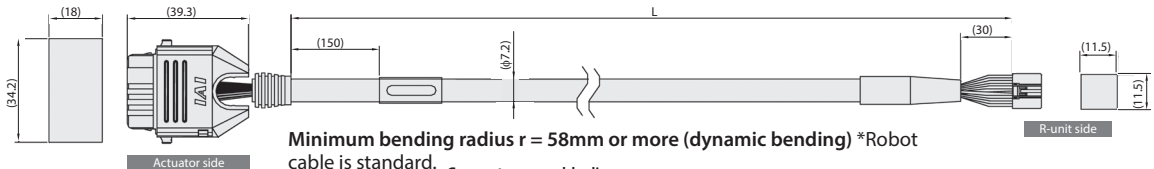
Minimum bending R: r=58mm or more (dynamic bending condition)
*Only the robot cable is available for this model.

Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V(MP)	B1
Light blue (AWG22)	24V(CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	SD+	B6
White (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2

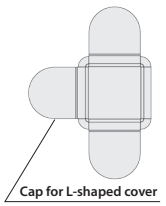
Pin No.	Signal name	Color
1	24V(MP)	Red (AWG18)
12	24V(CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Pink (AWG26)
10	SD-	White (AWG26)
3	INO	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

Model CB-REC2-PWBIO□□□-RB

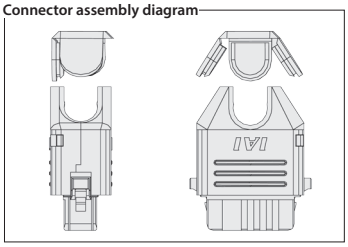
*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending radius r = 58mm or more (dynamic bending) *Robot cable is standard.



Connector assembly diagram



1-1871946-6

Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V(MP)	B1
Light blue (AWG22)	24V(CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Yellow (AWG26)	SD+	B6
Light gray (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2

DF62C-13S-2C(18)

Pin No.	Signal name	Color
2	0V	Black (AWG22)
1	24V(MP)	Red (AWG22)
12	24V(CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Yellow (AWG26)
10	SD-	Light gray (AWG26)
3	INO	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

Connect ELECYLINDER® to a ÿeld network(*)

This field network connection unit is specifically for use with ELECYLINDER®.

It allows up to 16 axes of ELECYLINDER® to be connected.

It is ideal for saving wiring and space inside the control panel.

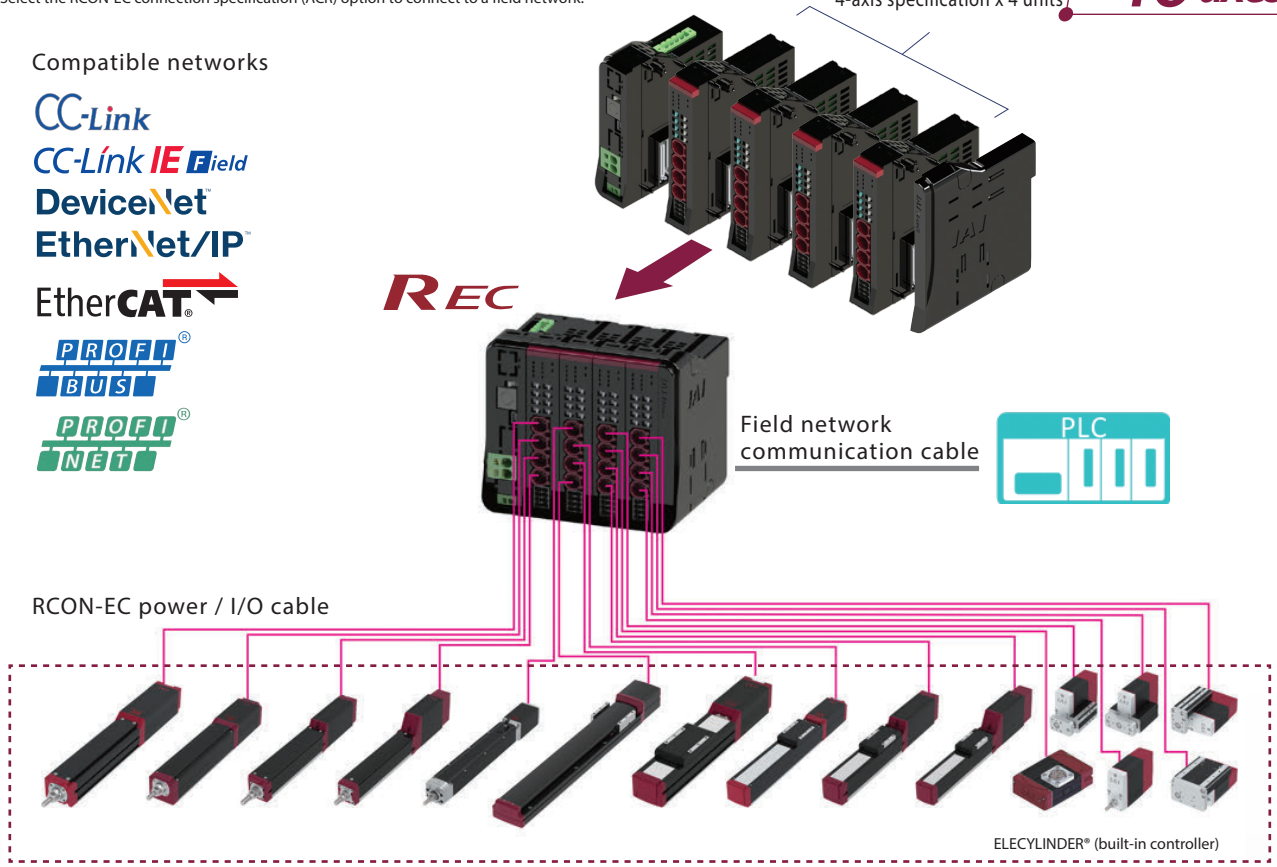
*Select the RCON-EC connection specification (ACR) option to connect to a field network.

RCON-EC
(EC connection unit) =
4-axis specification x 4 units

Max. 16 axes

Compatible networks

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



EC connection unit can be connected mixed with other driver units connected to RCON

Connect to RCON to allow mixed connections with ROBO Cylinder and single axis robots.

Refer to R-unit Catalog for details
General Catalog 2020

Catalog No. CE0282-1A (2021APR)

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.intelligentactuator.com

JAPAN Headquarters: 577-1 Obane, Shimizu-ku, Shizuoka-shi, Shizuoka, 424-0103, JAPAN

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