IAI
Quality and Innovation

GB

Simple-to-use ELECYLINDER with Built-in Controller
Small Vertical Rotary Type

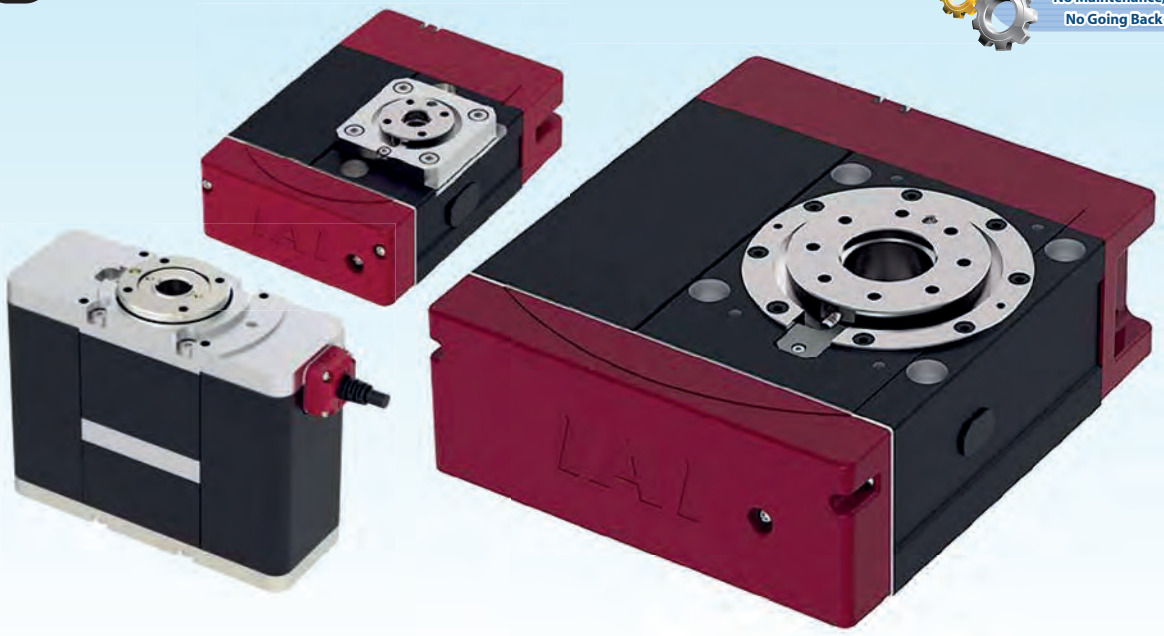
EC RTB4

Simple-to-use ELECYLINDER with Built-in Controller
Medium & Large Flat Rotary Type

EC RTC9/12/18

EC ELECYLINDER

Battery-less Absolute Encoder
No Battery,
No Maintenance, No Homing,
No Going Back to Incremental.



Simple & Wireless Operation

2 Position Actuator

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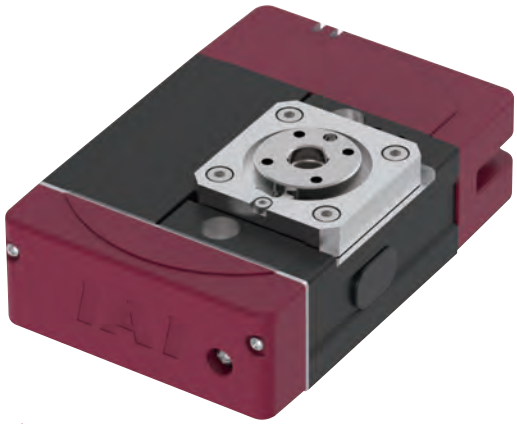
2-point positioning | Built-in controller

EleCylinder
Rotary type
EC-RTB4/RTC9/RTC12/RTC18



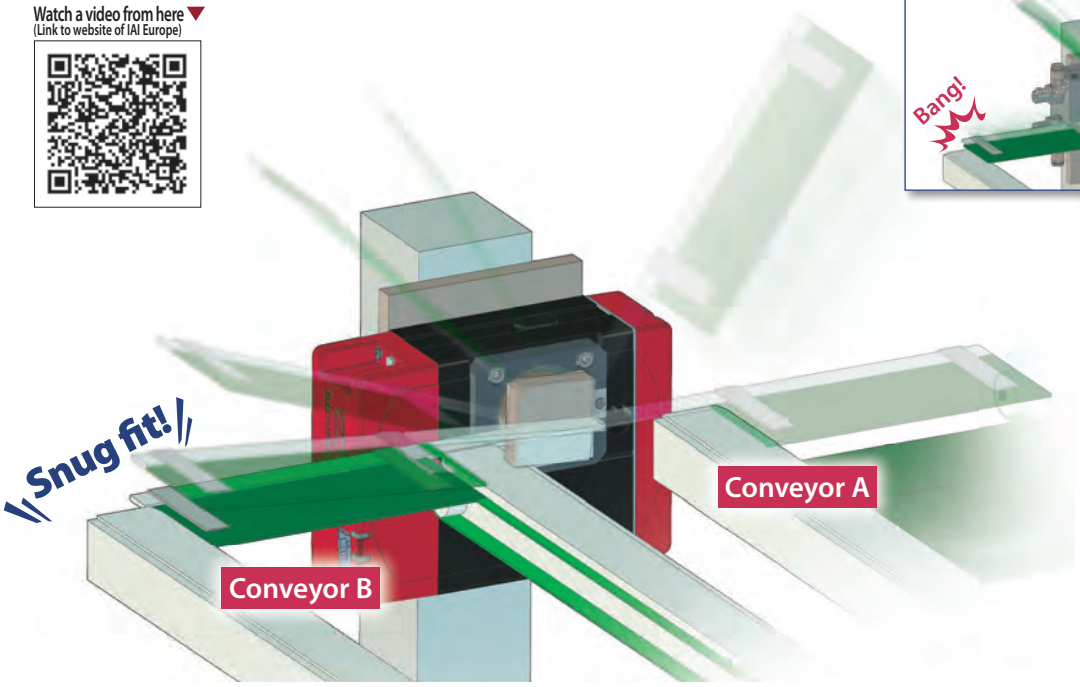
Smooth stopping without impact

EleCylinder allows the acceleration (A), velocity (V), and deceleration (D) to be set using numeric values. This allows the deceleration to be adjusted for smooth stopping without impact.

Circuit board turnover system

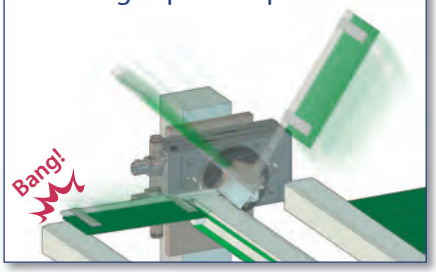
The **rotary cylinder** turns over circuit boards carried by conveyor A, and loads them on conveyor B

Watch a video from here
(Link to website of IAI Europe)



Conventional system (air rotary)

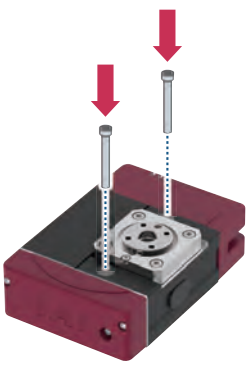
High speed impact



Can be bolted from the top

Installation bolt size	RTB4: M4 RTC9: M6 RTC12: M8 RTC18: M8

* Bolts should be prepared by the customer.
* EC-RTB4 does not have through holes.



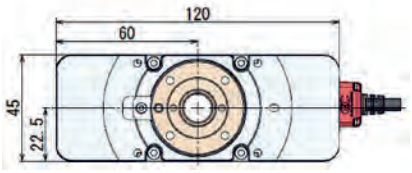
Small size vertical rotary type EC-RTB4

Vertical type with greatly reduced footprint has been added to the lineup.

Space saving

The footprint has greatly been reduced.

Footprint
5400mm^2



By mounting the built-in motor vertically, the footprint has been reduced

Large hollow shaft

The ø12 hollow shaft allows easy arrangement for wiring and piping.

Symmetric design

The rotary's rotation center is located in the center of the main unit, allowing for well-balanced mounting.

Easy programming due to the wireless teaching controller

Wireless teaching controller

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

Easy setting (10 levels)

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

AVD (Acceleration, Velocity and Deceleration) setting

Cycle time	
	Time (S)
Forward (F)	0.7
Backward (B)	1.2

Cycle time displayed

No cable connection

Operate from a remote location

Connectable up to 16 axes

The wireless teaching controller is capable of

* Basic setting (positions, acceleration, velocity and deceleration),
* Reading the current position, * Test run,
* Jog motion, * Brake release,
* Motor power ON/OFF,
* Cycle time display,
* Error display, * Alarm reset

Communication with the wireless teaching controller is possible when the EleCylinder is in the wireless communication specification (Model code: WL) or wireless axis operation specification (Model: WL2).
If the wireless option is not selected, communication is not possible. (Same for the products purchased before)

Model Specification Items

EC-RTB4

EleCylinder

EC - [Type] M - 330 - [Actuator cable length] - [Power / I/O cable length] - ([Options])

EC: Series

Type

RTB4	Vertical type 45mm width

Reduction ratio

M	1/10.5

Operation range

330	330 degrees rotation

Actuator cable length

1	1m
≀	(every 1m)
10	10m

Select the length up to 9m if an interface box is used.

Power / I/O cable length

0	No cable Power / I/O connector included (Note 1)
(S)1	1m
≀	(every 1m)
(S)9	9m

(S) 4-way connector cable
(Note) Select the cable so that the total length with the actuator cable is 10m or less.
(Note 1) Choose "0" if RCON-EC connection specification (ACR) is selected. Power / I/O connector is not included.

Options

Blank	Incremental encoder specification NPN specification, without option
ACR	RCON-EC connection specification (Note 1) (Note 2)
B	Brake
CJB	Cable exit direction (bottom)
CJL	Cable exit direction (left)
CJR	Cable exit direction (right)
CJT	Cable exit direction (top)
NM	Non-motor end specification
PN	PNP specification (Note 1)
SA	Shaft adaptor
TA	Table adaptor
TMD2	Split motor and controller power supply specification (Note 1)
WA	Battery-less absolute encoder specification
WL	Wireless communication specification (Note 2)
WL2	Wireless axis operation specification (Note 2)

(Note 1) When "ACR" is selected, "PN" and "TMD2" cannot be selected.
(Note 2) When "ACR" is selected, "WL" and "WL2" cannot be selected. (For wireless communication, an interface box and cable must be ordered separately.

EC-RTC9/12/18

EleCylinder

EC - [Type] M - 330 - [Power / I/O cable length] - ([Options])

EC: Series

Type

RTC9	Flat type 90mm width
RTC12	Flat type 117mm width
RTC18	Flat type 185mm width

Reduction ratio

<RTC9/RTC12>

M	1/45

<RTC18>

M	1/40

Operation range

330	330 degrees rotation

Power / I/O cable length

0	No cable Power / I/O connector included (Note 1)
(S)1	1m
≀	(every 1m)
(S)10	10m

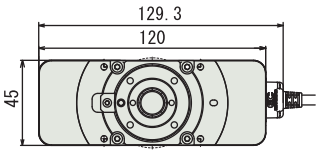
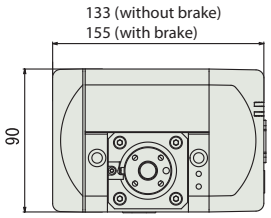
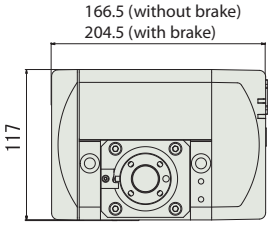
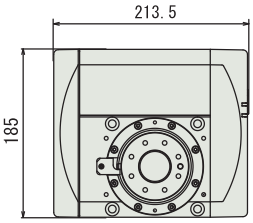
(S) 4-way connector cable
(Note 1) Choose "0" if RCON-EC connection specification (ACR) is selected. Power / I/O connector is not included.

Options

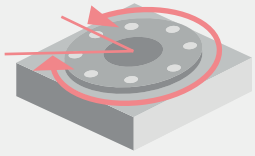
Blank	Incremental encoder specification NPN specification, without option
ACR	RCON-EC connection specification (Note 1)
B	Brake
ES	External stopper (Note 2) (Note 3)
NM	Non-motor end specification
PN	PNP specification
SA	Shaft adaptor
TA	Table adaptor (Note 3)
TMD2	Split motor and controller power supply specific.
WA	Battery-less absolute encoder specification
WL	Wireless communication specification
WL2	Wireless axis operation specification

(Note 1) When RCON-EC connection specification is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Can only be selected for EC-RTC18.
(Note 3) When the external stopper (ES) is selected for EC-RTC18, the table adaptor (TA) is delivered mounted. In this case TA option code does not need to be indicated.

Specifications

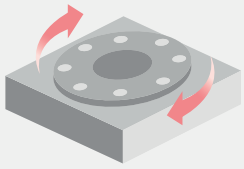
EC-RTB4	EC-RTC9	EC-RTC12	EC-RTC18
			
			

1 Operation range

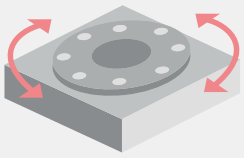


* The band length indicates rotational angles that can be operated.

2 Maximum speed (rotation speed)



3 Allowable inertia moment



* The allowable inertia moment changes according to the rotation speed.

Type	Operation range (degree) and maximum speed (degree/s) * Band length = operation range * Numbers in the band = maximum speed 330	Maximum torque (N·m)	Allowable inertia moment (kg·m^2)	Reference page
RTB4	600	0.6	0.011	P7
RTC9	600	1.5	0.02	P11
RTC12	600	8.0	0.13	P15
RTC18	450	25.2	0.49	P19

Energy-saving setting

EC-RTC12 can select enable/disable for energy-saving setting by parameter (No. 8). The enable setting will reduce the power consumption by up to 40%, compared to that for the disable setting. On the other hand, the maximum speed, maximum accel/deceleration and maximum torque will be reduced compared to that for the disable setting. If disabled, maximum speed and maximum accel/deceleration and maximum torque will become larger compared to that of the enable setting. Refer to the "Correlation diagram between rotation speed and output torque / allowable moment of inertia" in the product specification page. The factory default setting for the energy-saving is disabled.

Factory setting

Mode	Parameter name/description	Features
Power mode	Energy-saving setting disabled	High performance
Energy-saving mode	Energy-saving setting enabled	High energy-saving effect

Automatic servo OFF function

The "Auto servo OFF function" can be set by the PC software (RCM-101) or teaching pendant (TB-02/03).
When the "Auto servo OFF function" is activated, the servo is automatically turned off after a fixed time has passed since positioning is completed.
When the next move command is input, servo will be automatically turned on and positioning motion will be executed.
Because the holding current does not flow while stopping, power consumption can be reduced.

Selection Method

Rotary selection method

The following conditions must be satisfied for use. Calculate and check the following values (procedures 1 and 2).

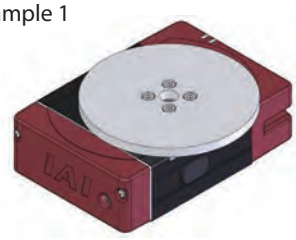
Procedure 1

Check the moment of inertia
(1) If there is no load torque
(2) If there is load torque
*The method for checking the moment of inertia differs depending on whether there is a load torque or not.

(1) If there is no load torque

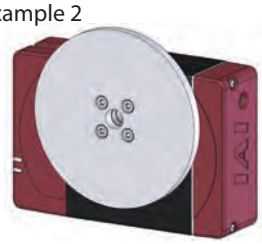
When used as shown in the figure below, there will be no load torque due to gravity. Therefore, calculate the moment of inertia of the load only, and then confirm that it does not exceed the allowable inertia moment. Use the calculation method for the applicable typical shape (P. 6) to calculate the moment of inertia for the tooling or workpiece that will be used.

Example 1



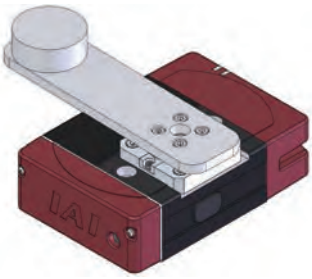
Center mass location of load: Output shaft center
Installation orientation: Horizontal on flat surface / on ceiling

Example 2



Center mass location of load: Output shaft center
Installation orientation: On side / vertical

Example 3

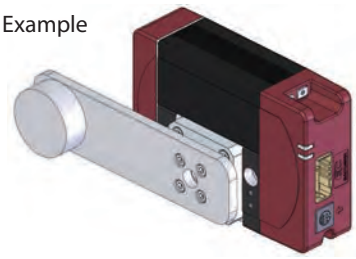


Center mass location of load: Offset from output shaft center
Installation orientation: Horizontal on flat surface / on ceiling

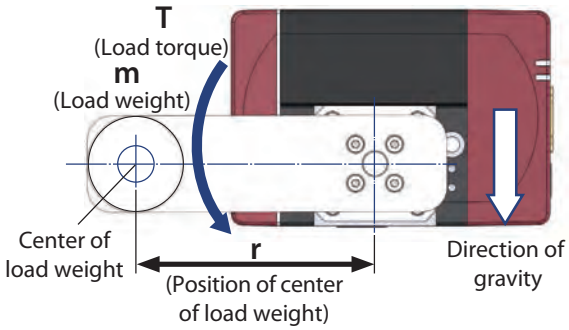
(2) If there is load torque

When used as shown in the figure below, there will be load torque due to gravity. This will cause the allowable moment of inertia to decrease by that amount.
First, calculate the load torque and obtain the corrected allowable moment of inertia. Then, calculate the moment of inertia and confirm that it does not exceed the corrected allowable moment of inertia.

Example



Position of center of load weight: Offset from output shaft center
Installation orientation: On side / vertical



Step 1 Calculate load torque T

$T = mgr \times 10^{-3}$ [N·m]

m : Load weight	[kg]
g : Gravitational acceleration	[m/s²]
r : Position of center of load weight	[mm]

Step 2 Calculate allowable moment of inertia correction factor Cj

$$Cj = \frac{Tmax - T}{Tmax}$$

Tmax: Output torque [N·m]

*See the individual product pages for the value of output torque Tmax.

Step 3 Calculate corrected allowable moment of inertia JtI

$J_{tI} = J_{max} \times C_j$ [kg·m²]

J_{max}: Allowable inertia moment (kg·m²)

*See the individual product pages for the value of allowable moment of inertia J_{max} .

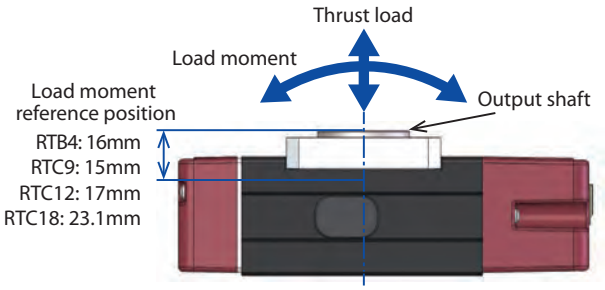
Step 4 Check moment of inertia of load

Use the "Formulas for calculating moment of inertia of typical shapes" below to calculate the moment of inertia of the load, and confirm that it does not exceed the corrected moment of inertia calculated in Step 3.

Procedure 2

Check the load moment and thrust load

Confirm that the load moment and thrust load on the output shaft are within the allowable values. If the allowable values are exceeded, it could shorten product life or cause failure.
***See the individual product pages for the values of the allowable dynamic thrust load and allowable dynamic load moment.**



Formulas for calculating moment of inertia of typical shapes

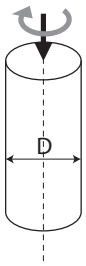
1. When the rotational axis passes through the center of the object

(1) Moment of inertia of cylinder 1

*The same formula can be applied irrespective of the height of the cylinder (also for circular plate)

<Formula> $J = M \times (D \times 10^{-3})^2 / 8$

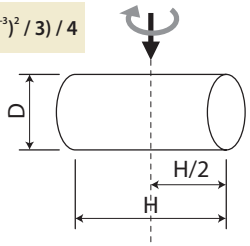
Moment of inertia of cylinder: J (kg·m²)
Cylinder weight: M (unit: kg)
Cylinder diameter: D (mm)



(2) Moment of inertia of cylinder 2

<Formula> $J = M \times ((D \times 10^{-3})^2 / 4 + (H \times 10^{-3})^2 / 3) / 4$

Moment of inertia of cylinder: J (kg·m²)
Cylinder weight: M (kg)
Cylinder diameter: D (m)
Cylinder length: H (mm)

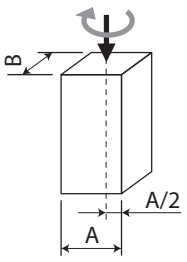


(3) Moment of inertia of prism 1

*The same formula can be applied irrespective of the height of the prism (also for rectangular plate)

<Formula> $J = M \times ((A \times 10^{-3})^2 + (B \times 10^{-3})^2) / 12$

Moment of inertia of prism: J (kg·m²)
One side of prism: A (mm)
One side of prism: B (mm)



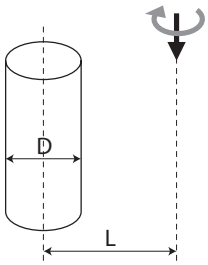
2. When the center of the object is offset from the rotational axis

(4) Moment of inertia of cylinder 3

*The same formula can be applied irrespective of the height of the cylinder (also for circular plate)

<Formula> $J = M \times (D \times 10^{-3})^2 / 8 + M \times (L \times 10^{-3})^2$

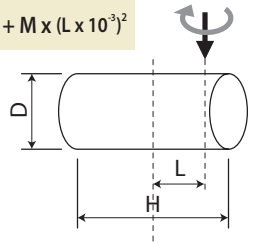
Moment of inertia of cylinder: J (kg·m²)
Cylinder weight: M (kg)
Cylinder diameter: D (m)
Distance from rotational axis to center: L (mm)



(5) Moment of inertia of cylinder 4

<Formula> $J = M \times ((D \times 10^{-3})^2 / 4 + (H \times 10^{-3})^2 / 3) / 4 + M \times (L \times 10^{-3})^2$

Moment of inertia of cylinder: J (kg·m²)
Cylinder weight: M (kg)
Cylinder diameter: D (m)
Cylinder length: H (mm)
Distance from rotational axis to center: L (mm)

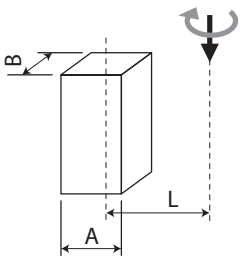


(6) Moment of inertia of prism 2

*The same formula can be applied irrespective of the height of the prism (also for rectangular plate)

<Formula> $J = M \times ((A \times 10^{-3})^2 + (B \times 10^{-3})^2) / 12 + M \times (L \times 10^{-3})^2$

Moment of inertia of prism: J (kg·m²)
Prism weight: M (kg)
One side of prism: A (mm)
One side of prism: B (mm)
Distance from rotational axis to center: L (mm)



EC-RTB4

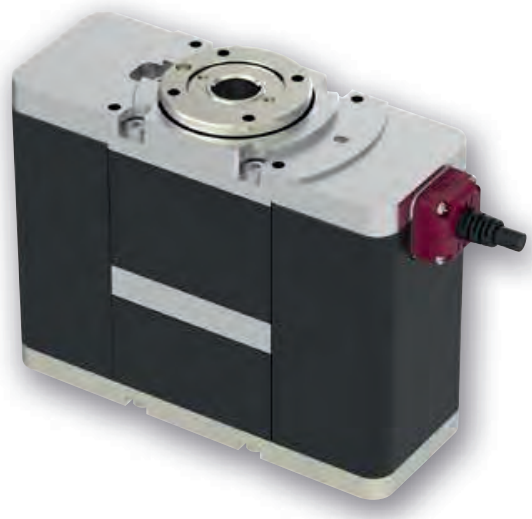
Simple Dust Proof | Rotary Type | Body Width 50 mm | 24v Pulse motor

■ Model Specification Items

EC	-	RTB4	M	-	330	-		-		-	
Series		Type	Reduction ratio M: Reduction ratio 1/10.5		Operation range 330: 330-degree rotation		Actuator cable length Refer to the Actuator cable length below		Power / I/O cable length Refer to Power / I/O cable length below		Options Refer to Options below

CE RoHS

Horizontal | Vertical | Side | Ceiling



POINT Selection Notes

(1) Output torque decreases as rotation speed increases. Refer to the "Correlation diagram between rotation speed and output torque" for details.

(2) The allowable moment of inertia of a workpiece being rotated will vary depending on the rotation speed. Refer to the "Correlation diagram between rotation speed and allowable moment of inertia" for details.

(3) The brake is used for retention purposes only. Do not use it for braking or emergency stopping.

(4) When selecting, calculate values as described in "Selection Method (from P. 5)" and check the usage conditions.

(5) If performing push-motion operations, refer to the "Correlation between push force and current limit". The push forces listed are for reference only.

Main Specifications

Item		Description
Reduction ratio		1/10.5
Max. torque (N·m)		0.6
Speed / acceleration/ deceleration (Note 1)	Max. speed (degree/s)	600
	Min. speed (degree/s)	20
	Rated acceleration/deceleration (G)	0.3
	Max. acceleration/deceleration (G)	0.5
Brake	Brake specification	Non-excitation actuating solenoid brake
	Brake holding torque (N·m) (Note 2)	0.5
Operation range (degree)		330

(Note 1) 1G≈9807°/s²

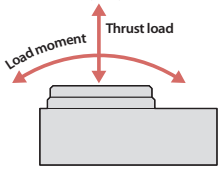
(Note 2) Both the allowable moment of inertia and brake holding torque will be fulfilled not in every case at the same time. Confirm that the load torque does not exceed the retaining torque.

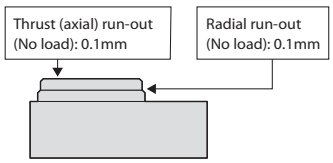
Item	Description
Drive system	Timing belt
Positioning repeatability	±0.05 degrees
Homing method	Mechanical stopper method
Homing precision	±0.05 degrees
Backlash (Note 3)	0.15° or less
Allowable thrust load	100N
Dynamic allowable load moment (Note 4)	1.5N·m
Allowable inertia moment	0.011kg·m²
Radial rotation run-out	0.1mm or less
Thrust rotation run-out	0.1mm or less
Ambient operating temperature/humidity	0 ~ 40°C, 85% RH or less (Non-condensing)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Motor type	Pulse motor (□28) (Power capacity: max. 2A)
Encoder type	Incremental / battery-less absolute
Number of encoder pulses	16384 pulse/rev

(Note 3) Due to the timing belt driving system, there is no mechanical backlash. However, there is a hysteresis loss due to the timing belt stretching.

(Note 4) 0.5N·m for the side and vertical mount.

■ Rotary Type Moment Direction





Actuator cable length

Cable code	Actuator cable length
1 ~ 3	1 ~ 3m
4 ~ 5	4 ~ 5m
6 ~ 10	6 ~ 10m (Note 1)

(Note 1) When connection is via the interface box, the maximum is 9m.
(Note) Select the cable so that the total length with the power / I/O cable is 10m or less.
(Note) Robot cable is standard

Power / I/O cable length

■Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)
0	No cable	Terminal block supplied (Note 1)
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied
4 ~ 5	4 ~ 5m	
6 ~ 9	6 ~ 9m	

(Note 1) Only terminal block connector is included.
* Choose "0" if optional RCON-EC connection specification (ACR) is selected.
Terminal block connector is not included. Refer to P. 33 for details.
(Note) Robot cable is standard

■4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m	
S6 ~ S9	6 ~ 9m	

(Note) Robot cable is standard

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1) (Note 2)	**ACR**	23
Brake	**B**	23
Cable exit direction (bottom)	**CJB**	23
Cable exit direction (left)	**CJL**	23
Cable exit direction (right)	**CJR**	23
Cable exit direction (top)	**CJT**	23
Non-motor end specification	**NM**	23
PNP specification (Note 1)	**PN**	24
Shaft adaptor	**SA**	24
Table adaptor	**TA**	24
Split motor and controller power supply specification (Note 1)	**TMD2**	24
Battery-less absolute encoder specification	**WA**	24
Wireless communication specification (Note 2)	**WL**	24
Wireless axis operation specification (Note 2)	**WL2**	24

(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. The interface box and conversion cable are not included.
(Note 2) If the RCON-EC connection specification (ACR) is selected, the wireless communication specification (WL) and wireless axis operation specification (WL2) cannot be selected. For wireless communication (WL) with RCON-EC connection, an interface box, conversion cable and power / I/O cable should be prepared separately. Refer to P26 for details. For the wireless axis operation specification (WL2), contact one of IAI representatives.

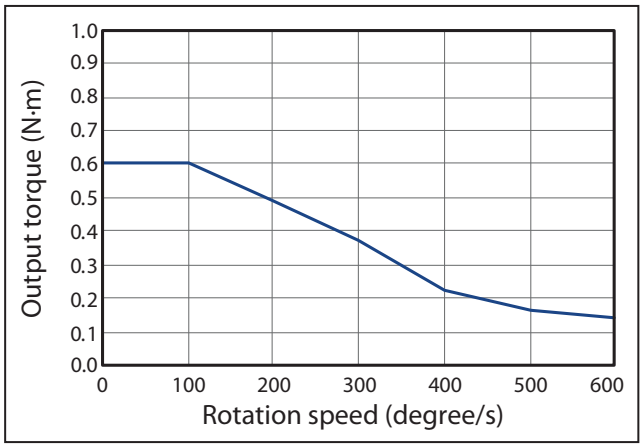
Separately sold options

Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	34
RCON-EC connection specification power / I/O cable (Standard connector cable)	CB-REC-PWBIO□□□-RB	37
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	37
RCON-EC connection specification interface box for split motor and controller power supply (Wireless specification)	ECW-CVNWL-CB-ACR	34

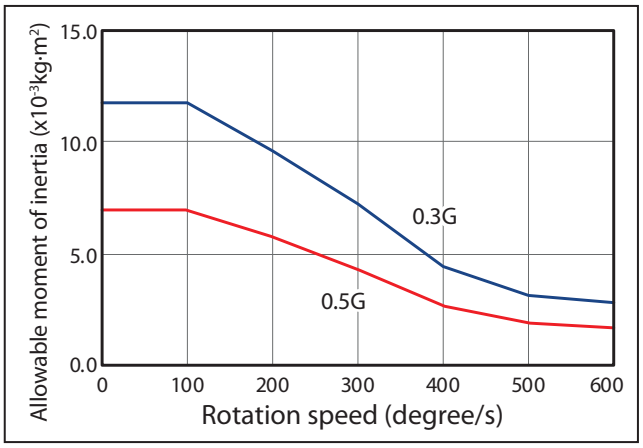
(Note) Power / I/O cable is a robot cable.
Specify the cable length in □□□. (Ex. 010=10m)

Correlation diagram between rotation speed and output torque / allowable moment of inertia

■ Correlation diagram between rotation speed and output torque

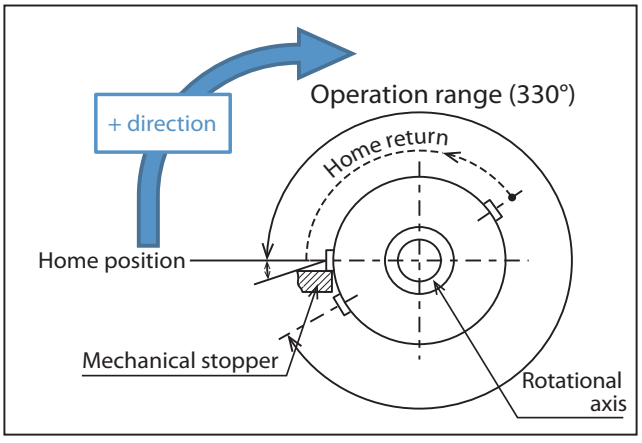


■ Correlation diagram between rotation speed and allowable moment of inertia



Homing method and positive rotation direction

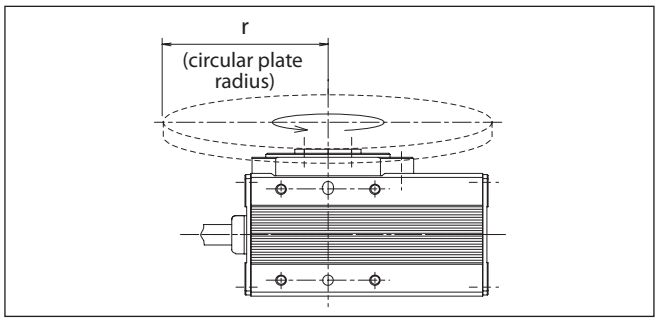
■ 330-degree rotation specification



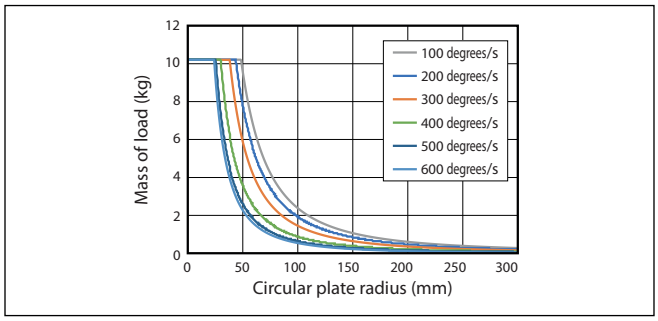
The positive rotation direction will be clockwise when viewing the rotating part from above.
During home return motion, it rotates counterclockwise.
It detects the mechanical stopper position, moves in reverse, and then stops.
(Note) For the non-motor end specification, all movement directions are in reverse.

Guideline for shape and mass of load

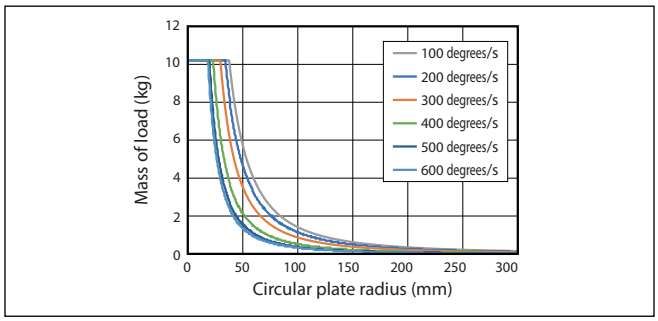
■ When the center of gravity of a circular plate load is the same as the rotational center of the output shaft



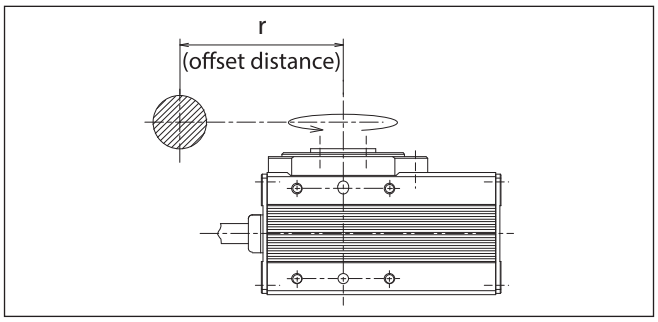
Acceleration 0.3G



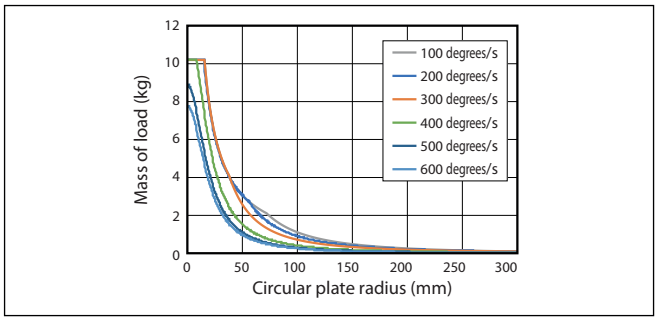
Acceleration 0.5G



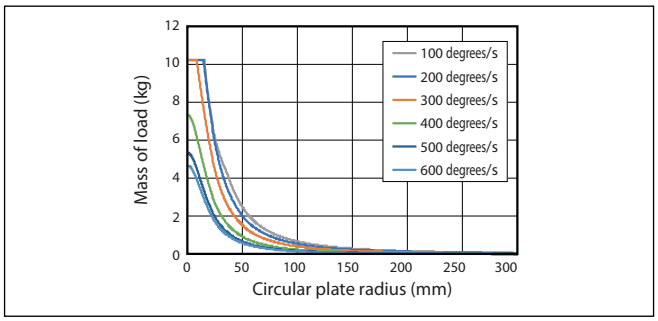
■ When the center of gravity of the load is offset from the rotational center of the output shaft



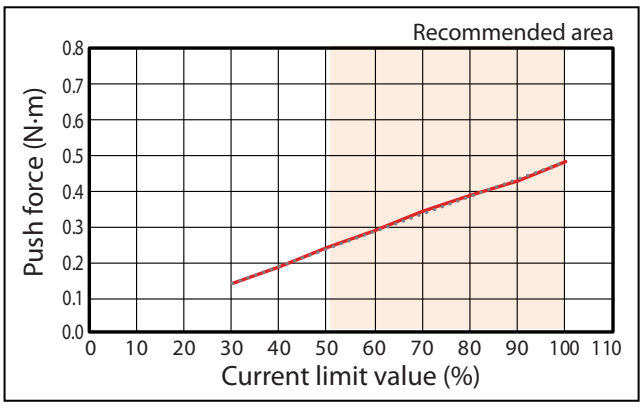
Acceleration 0.3G



Acceleration 0.5G



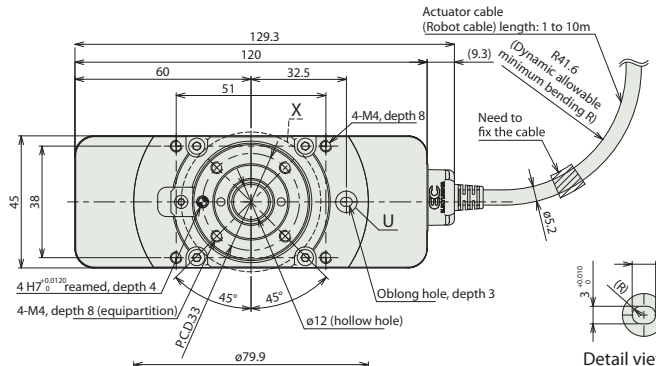
Correlation between push force and current limit



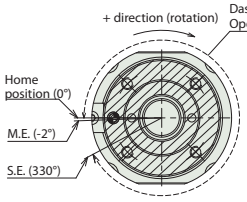
Dimensions

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

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

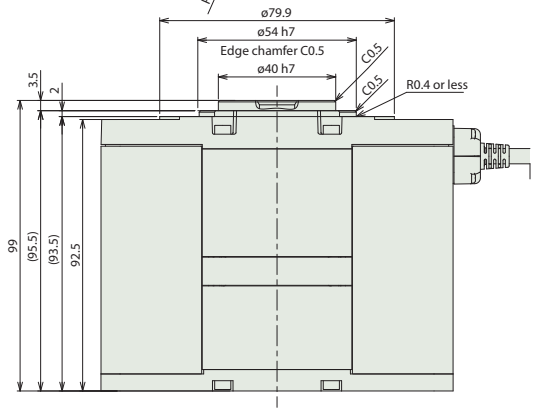


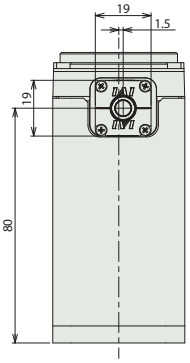
Detail view of U
Oblong hole detail

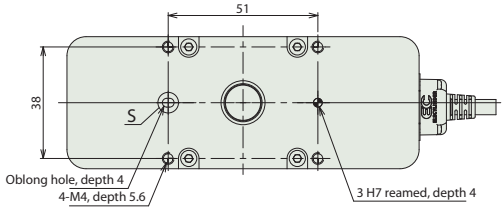


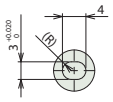
Detail view of X

(Note) The hatched part in the detail view of X is a rotational part.

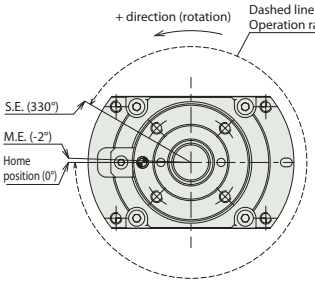




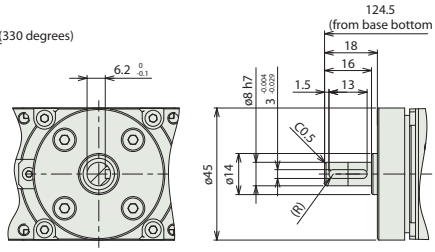




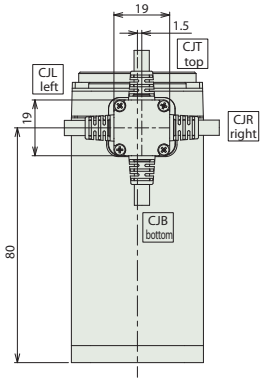
Detail view of S
Oblong hole detail



Non-motor end specification



Shaft adaptor specification



Cable exit direction specification

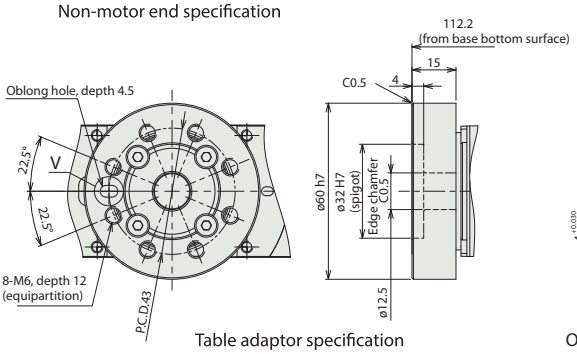
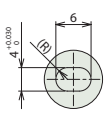
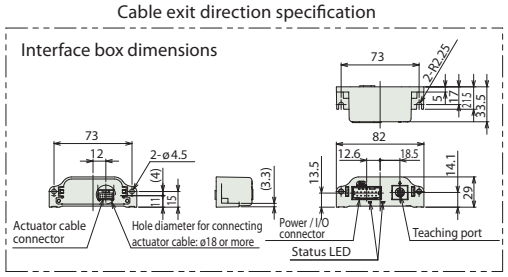


Table adaptor specification



Detail view of V
Oblong hole detail



■ Mass

Item		Description
Mass	Without brake	1.00kg
	With brake	1.10kg

(Note) The product weight is the value when RCON connection specification and actuator cable length of 1m are selected.

Applicable controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P.31 for more information on built-in controllers.

EC-RTC9

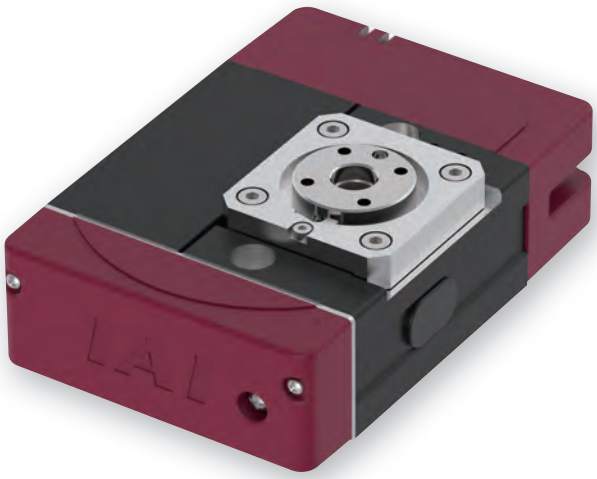
Simple Dust Proof | Rotary Type | Body Width 90 mm | 24v Pulse motor

■ Model Specification Items

EC	-	RTC9	M	-	330	-		-	
Series	-	Type	Reduction ratio	-	Operation range	-	Power / I/O cable length	-	Options
			M: Reduction ratio 1/45		330: 330-degree rotation		Refer to Power / I/O cable length below		Refer to Options table below

CE RoHS

Horizontal | Vertical | Side | Ceiling



POINT Selection Notes

(1) Output torque decreases as rotation speed increases. Refer to the "Correlation diagram between rotation speed and output torque" for details.

(2) The allowable moment of inertia of a workpiece being rotated will vary depending on the rotation speed. Refer to the "Correlation diagram between rotation speed and allowable moment of inertia" for details.

(3) The brake is used for retention purposes only. Do not use it for braking or emergency stopping.

(4) When selecting, calculate values as described in "Selection Method (from P. 5)" and check the usage conditions.

(5) If performing push-motion operations, refer to the "Correlation between push force and current limit". The push forces listed are for reference only.

(6) The maximum acceleration/deceleration is 0.5G when horizontal/on ceiling, or 0.3G when on side/vertical.

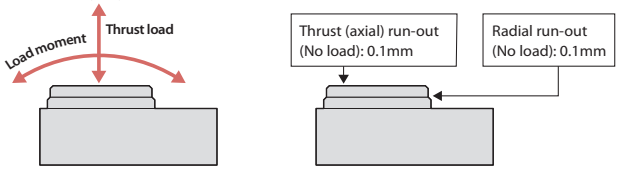
Main Specifications

Item		Description
Reduction ratio		1/45
Max. torque (N·m)		1.5
Speed / acceleration/ deceleration (Note 1)	Max. speed (degree/s)	600
	Min. speed (degree/s)	20
	Rated acceleration/deceleration (G)	0.3
	Max. acceleration/deceleration (G) (Note 2)	0.5
Brake	Brake specification	Non-excitation actuating solenoid brake
	Brake holding torque (N·m) (Note 3)	0.9
Operation range (degree)		330

(Note 1) 1G≈9807°/s²
(Note 2) Horizontal only. The maximum acceleration/deceleration will be 0.3G when on side/vertical.
(Note 3) Both the allowable moment of inertia and brake holding torque will be fulfilled not in every case at the same time. Confirm that the load torque does not exceed the retaining torque.

Item	Description
Drive system	Hypoid gear + timing belt
Positioning repeatability	±0.05 degrees
Homing method	Mechanical stopper method
Homing precision	±0.05 degrees
Backlash	0.2° or less
Allowable thrust load	50N
Dynamic allowable load moment	5N·m
Allowable inertia moment	0.02kg·m²
Radial rotation run-out	0.1mm or less
Thrust rotation run-out	0.1mm or less
Ambient operating temperature/humidity	0 ~ 40°C, 85% RH or less (Non-condensing)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Motor type	Pulse motor (□28) (Power capacity: max. 2A)
Encoder type	Incremental / battery-less absolute
Number of encoder pulses	800 pulse/rev

■ Rotary Type Moment Direction



Power / I/O cable length

■ Standard connector cable

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

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 33 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

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

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

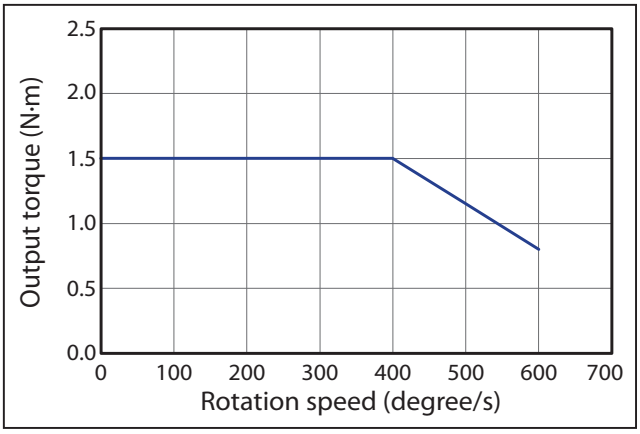
Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	23
Brake	**B**	23
Non-motor end specification	**NM**	23
PNP specification	**PN**	24
Shaft adaptor	**SA**	24
Table adaptor	**TA**	24
Split motor and controller power supply specification	**TMD2**	24
Battery-less absolute encoder specification	**WA**	24
Wireless communication specification	**WL**	24
Wireless axis operation specification	**WL2**	24

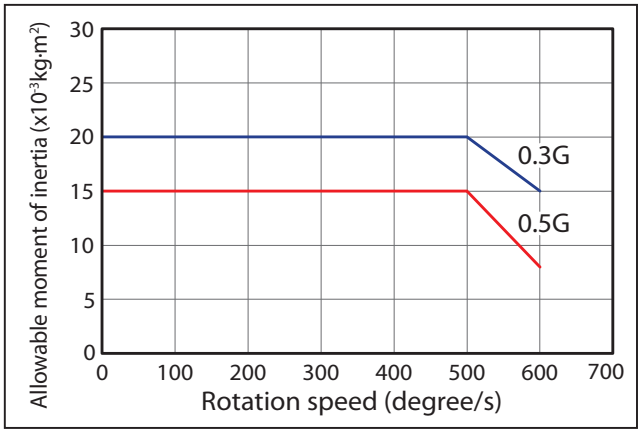
(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.

Correlation diagram between rotation speed and output torque / allowable moment of inertia

■ Correlation diagram between rotation speed and output torque



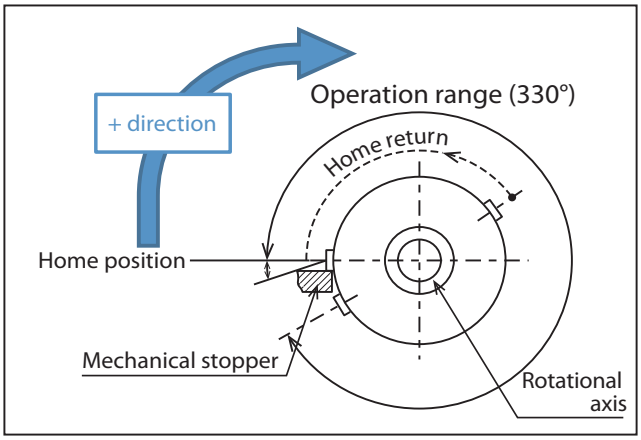
■ Correlation diagram between rotation speed and allowable moment of inertia



(Note) 0.5G can be used only when horizontal/on ceiling.

Homing method and positive rotation direction

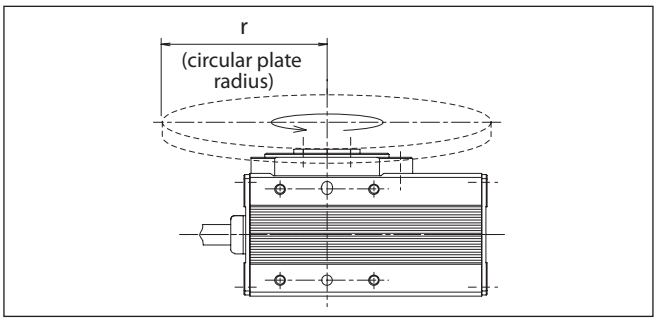
■ 330-degree rotation specification



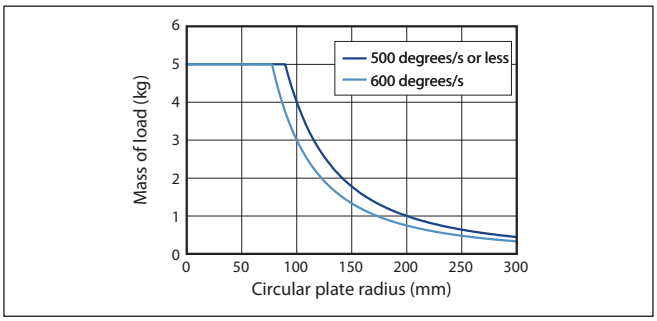
The positive rotation direction will be clockwise when viewing the rotating part from above.
During home return motion, it rotates counterclockwise.
It detects the mechanical stopper position, moves in reverse, and then stops.
(Note) For the non-motor end specification, all movement directions are in reverse.

Guideline for shape and mass of load

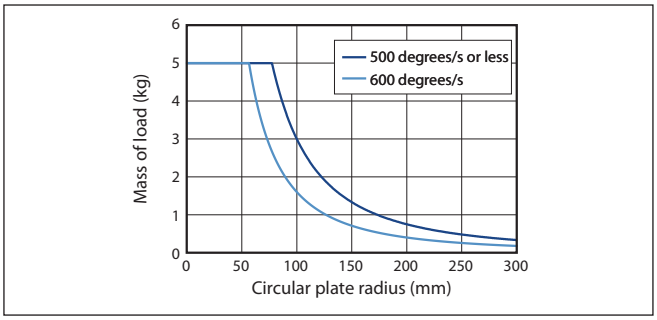
■ When the center of gravity of a circular plate load is the same as the rotational center of the output shaft



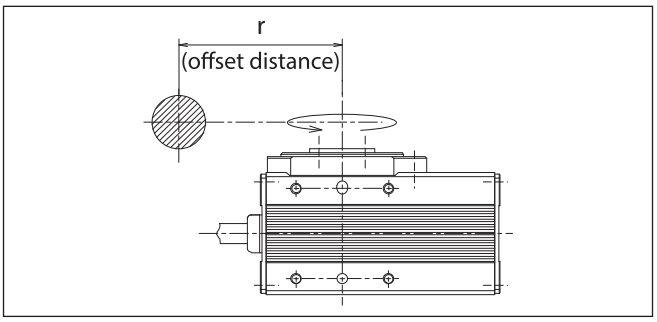
Acceleration 0.3G



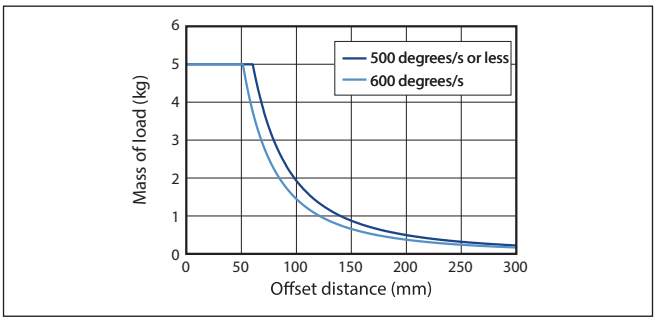
Acceleration 0.5G



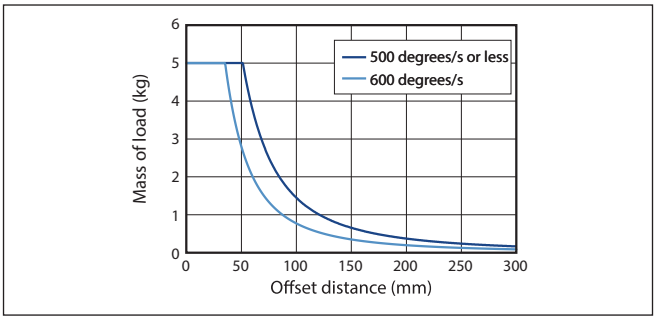
■ When the center of gravity of the load is offset from the rotational center of the output shaft



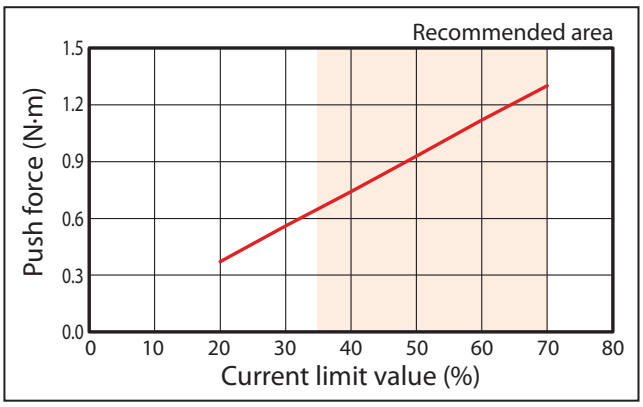
Acceleration 0.3G



Acceleration 0.5G



Correlation between push force and current limit

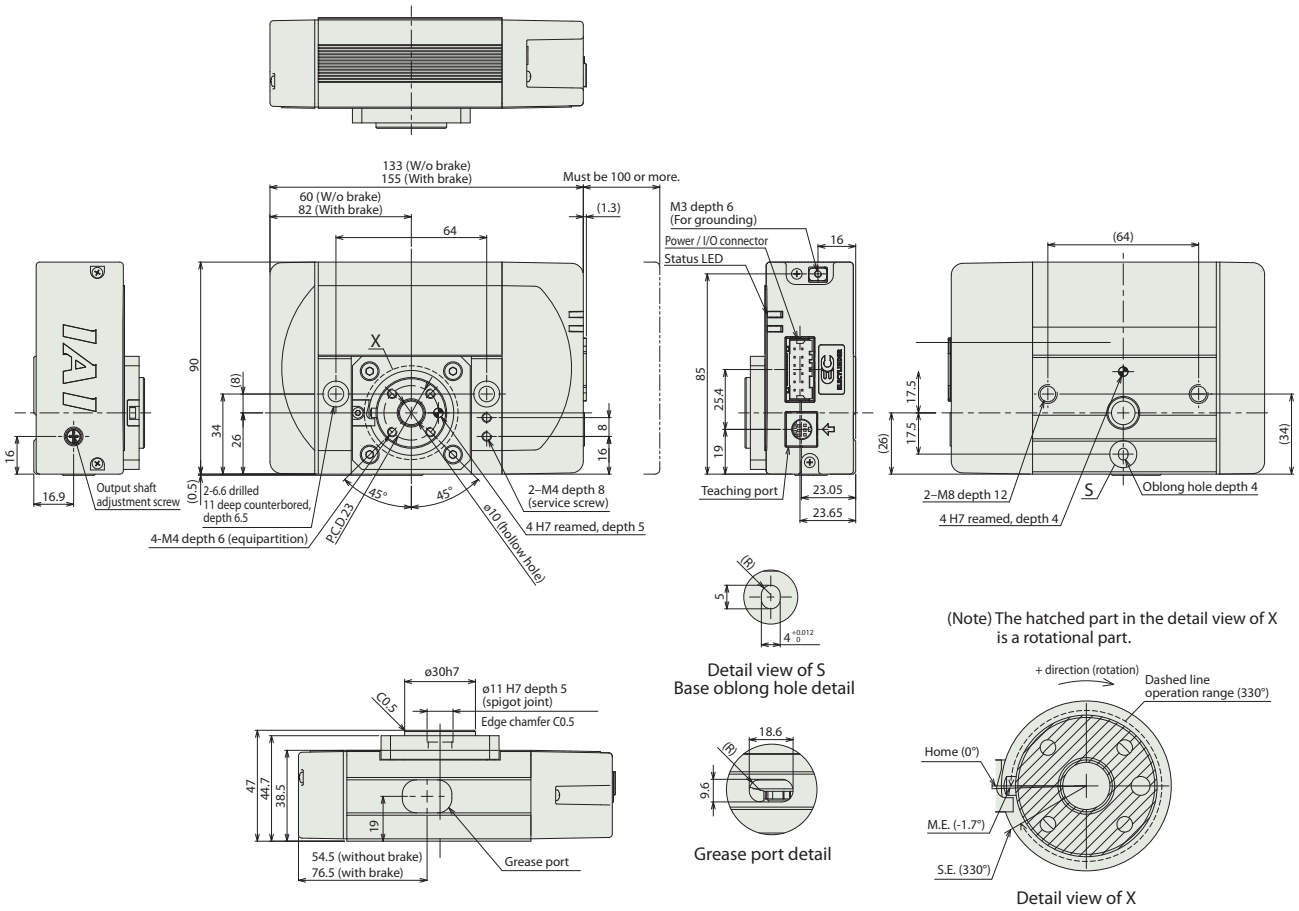


Dimensions

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

2D CAD 3D CAD

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



■ Mass

Item		Description
Mass	Without brake	0.88kg
	With brake	0.98kg

Applicable controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P.31 for more information on built-in controllers.

EC-RTC12

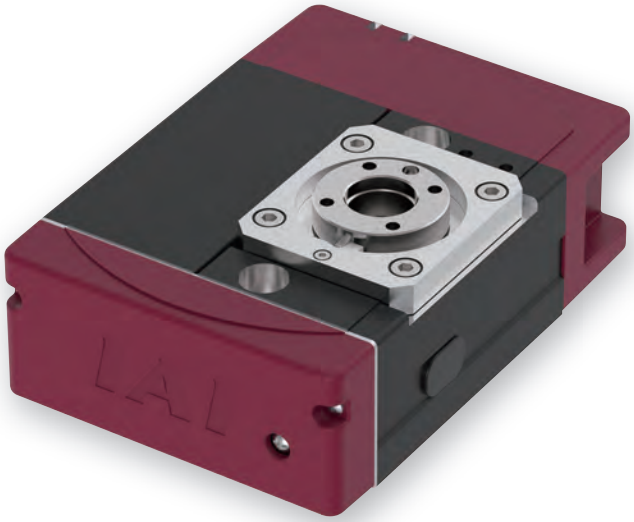
Simple Dust Proof | Rotary Type | Body Width 120 mm | 24V Pulse motor

■ Model Specification Items

EC	-	RTC12	M	-	330	-		-	
Series		Type	Reduction ratio		Operation range		Power / I/O cable length		Options
			M: Reduction ratio 1/45		330: 330-degree rotation		Refer to Power / I/O cable length below		Refer to Options table below

CE RoHS

Horizontal | Vertical | Side | Ceiling



POINT Selection Notes

(1) Output torque decreases as rotation speed increases. Refer to the "Correlation diagram between rotation speed and output torque" for details.
(2) The allowable moment of inertia of a workpiece being rotated will vary depending on the rotation speed. Refer to the "Correlation diagram between rotation speed and allowable moment of inertia" for details.
(3) The brake is used for retention purposes only. Do not use it for braking or emergency stopping.
(4) When selecting, calculate values as described in "Selection Method (from P. 5)" and check the usage conditions.
(5) If performing push-motion operations, refer to the "Correlation between push force and current limit". The push forces listed are for reference only.
(6) The maximum acceleration/deceleration is 0.7G when horizontal/on ceiling or 0.5G when on side/vertical with the energy-saving setting disabled, or 0.5G when horizontal/on ceiling or 0.3G on side/vertical with the energy-saving setting enabled.

Main Specifications

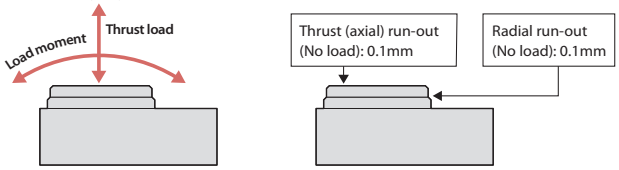
Item		Description
Reduction ratio		1/45
Max. torque (N·m)		8.0
Speed / acceleration/ deceleration (Note 1)	Max. speed (degree/s)	600
	Min. speed (degree/s)	20
	Rated acceleration/deceleration (G)	0.3
	Max. acceleration/deceleration (G) (Note 2)	0.7
Brake	Brake specification	Non-excitation actuating solenoid brake
	Brake holding torque (N·m) (Note 3)	5.3
Operation range (degree)		330

(Note 1) 1G≈9807°/s²
(Note 2) Horizontal only. The maximum acceleration/deceleration will be 0.5G when on side/vertical.
(Note 3) Both the allowable moment of inertia and brake holding torque will be fulfilled not in every case at the same time. Confirm that the load torque does not exceed the retaining torque.

Item	Description
Drive system	Hypoid gear + timing belt
Positioning repeatability	±0.01 degrees
Homing method	Mechanical stopper method
Homing precision	±0.01 degrees
Backlash	0.2° or less
Allowable thrust load	400N
Dynamic allowable load moment (Note 4)	18N·m
Allowable inertia moment	0.13kg·m²
Radial rotation run-out	0.1mm or less
Thrust rotation run-out	0.1mm or less
Ambient operating temperature/humidity	0 ~ 40°C, 85% RH or less (Non-condensing)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Motor type	Pulse motor (□42) (Power capacity: max. 4.2A)
Encoder type	Incremental / battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 4) 12N·m when on side/vertical.

■ Rotary Type Moment Direction



Power / I/O cable length

■ Standard connector cable

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

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 33 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

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

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

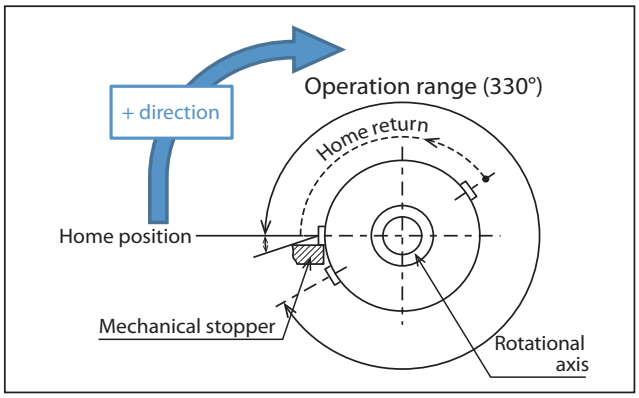
Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	23
Brake	**B**	23
Non-motor end specification	**NM**	23
PNP specification	**PN**	24
Shaft adaptor	**SA**	24
Table adaptor	**TA**	24
Split motor and controller power supply specification	**TMD2**	24
Battery-less absolute encoder specification	**WA**	24
Wireless communication specification	**WL**	24
Wireless axis operation specification	**WL2**	24

(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.

Homing method and positive rotation direction

■ 330-degree rotation specification

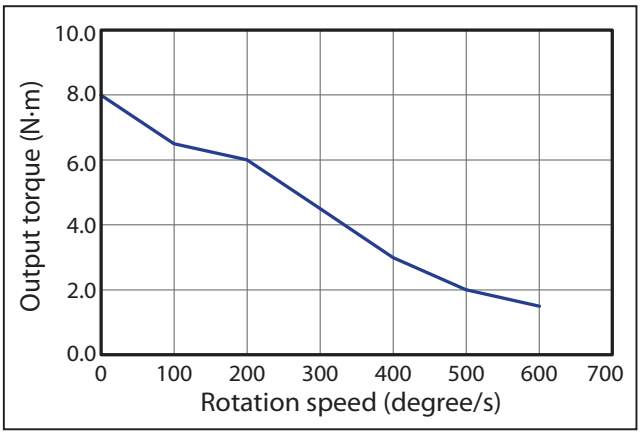


The positive rotation direction will be clockwise when viewing the rotating part from above.
During home return motion, it rotates counterclockwise.
It detects the mechanical stopper position, moves in reverse, and then stops.
(Note) For the non-motor end specification, all movement directions are in reverse.

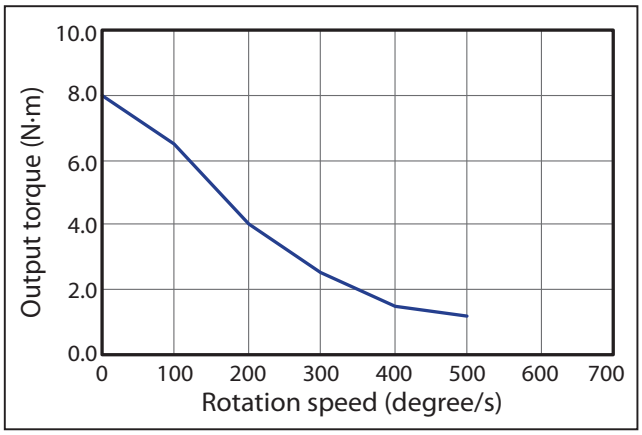
Correlation diagram between rotation speed and output torque / allowable moment of inertia

■ Correlation diagram between rotation speed and output torque

Energy-saving setting disabled

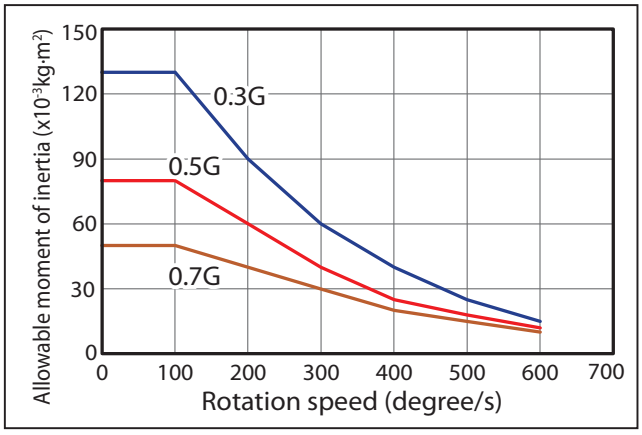


Energy-saving setting enabled



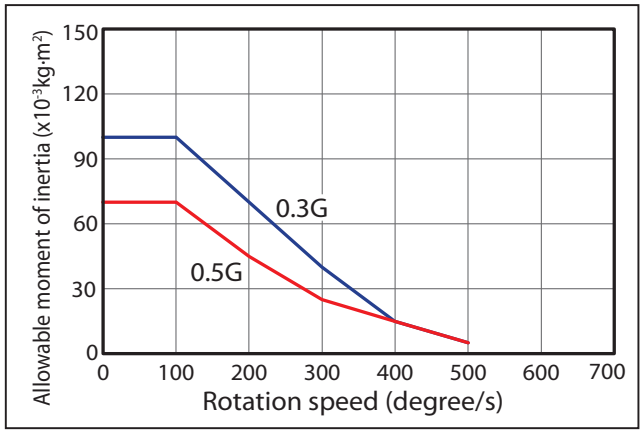
■ Correlation diagram between rotation speed and allowable moment of inertia

Energy-saving setting disabled



(Note) 0.7G can be used only when horizontal/on ceiling.

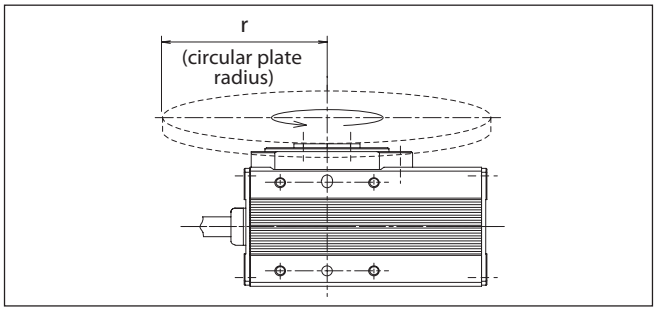
Energy-saving setting enabled



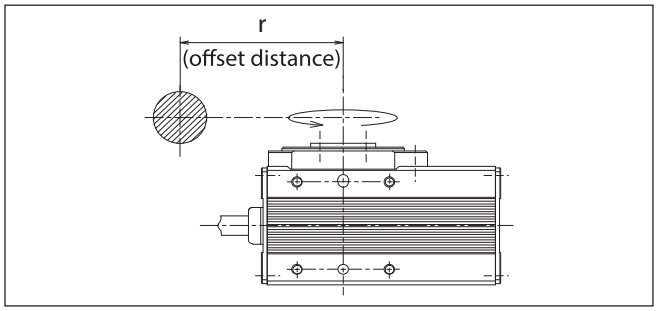
(Note) 0.5G can be used only when horizontal/on ceiling.

Guideline for shape and mass of load

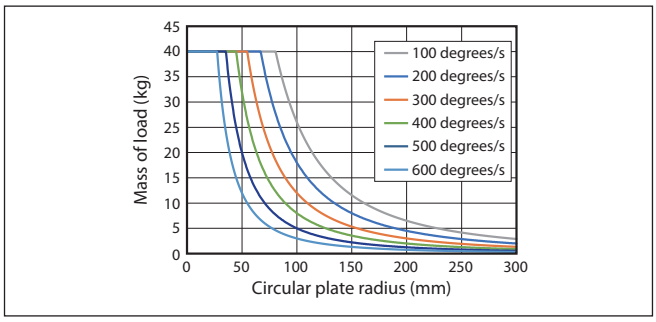
■ When the center of gravity of a circular plate load is the same as the rotational center of the output shaft



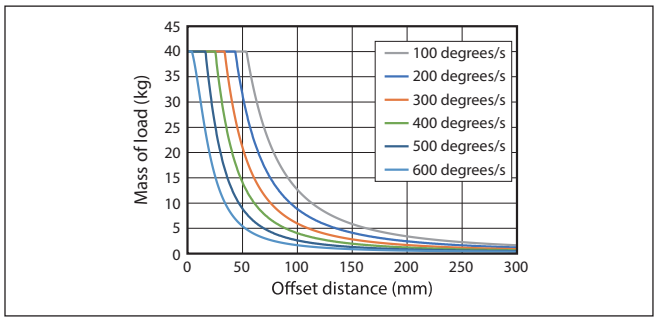
■ When the center of gravity of the load is offset from the rotational center of the output shaft



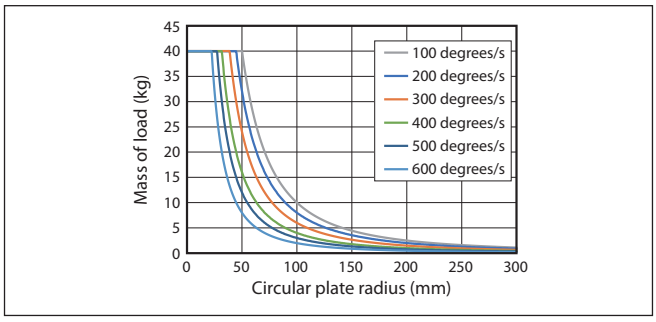
Acceleration 0.3G (energy-saving setting disabled)



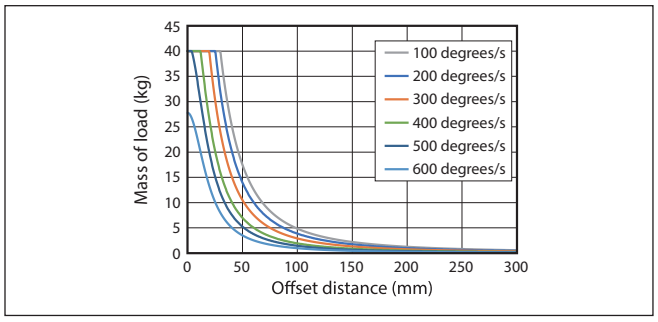
Acceleration 0.3G (energy-saving setting disabled)



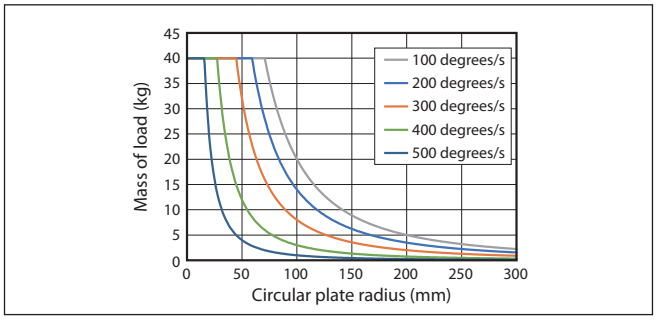
Acceleration 0.7G (energy-saving setting disabled)



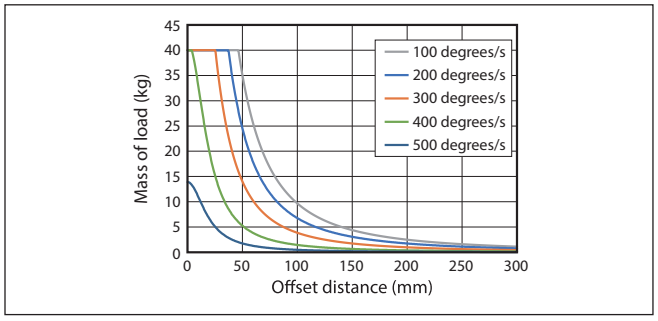
Acceleration 0.7G (energy-saving setting disabled)



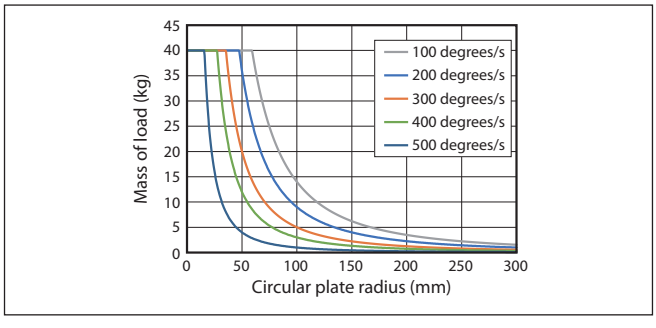
Acceleration 0.3G (energy-saving setting enabled)



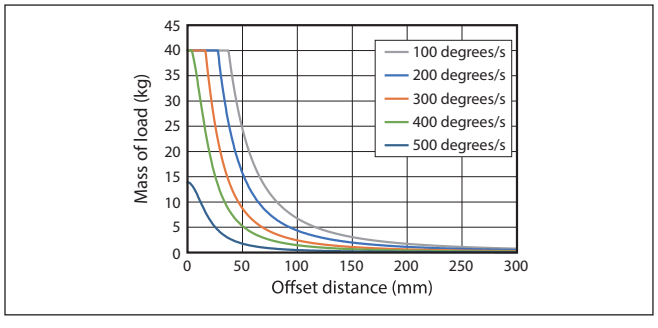
Acceleration 0.3G (energy-saving setting enabled)



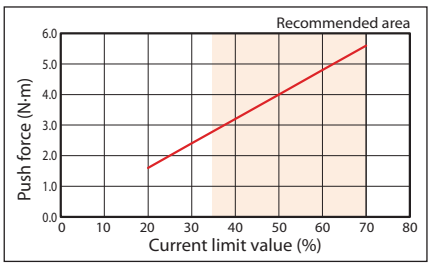
Acceleration 0.5G (energy-saving setting enabled)



Acceleration 0.5G (energy-saving setting enabled)



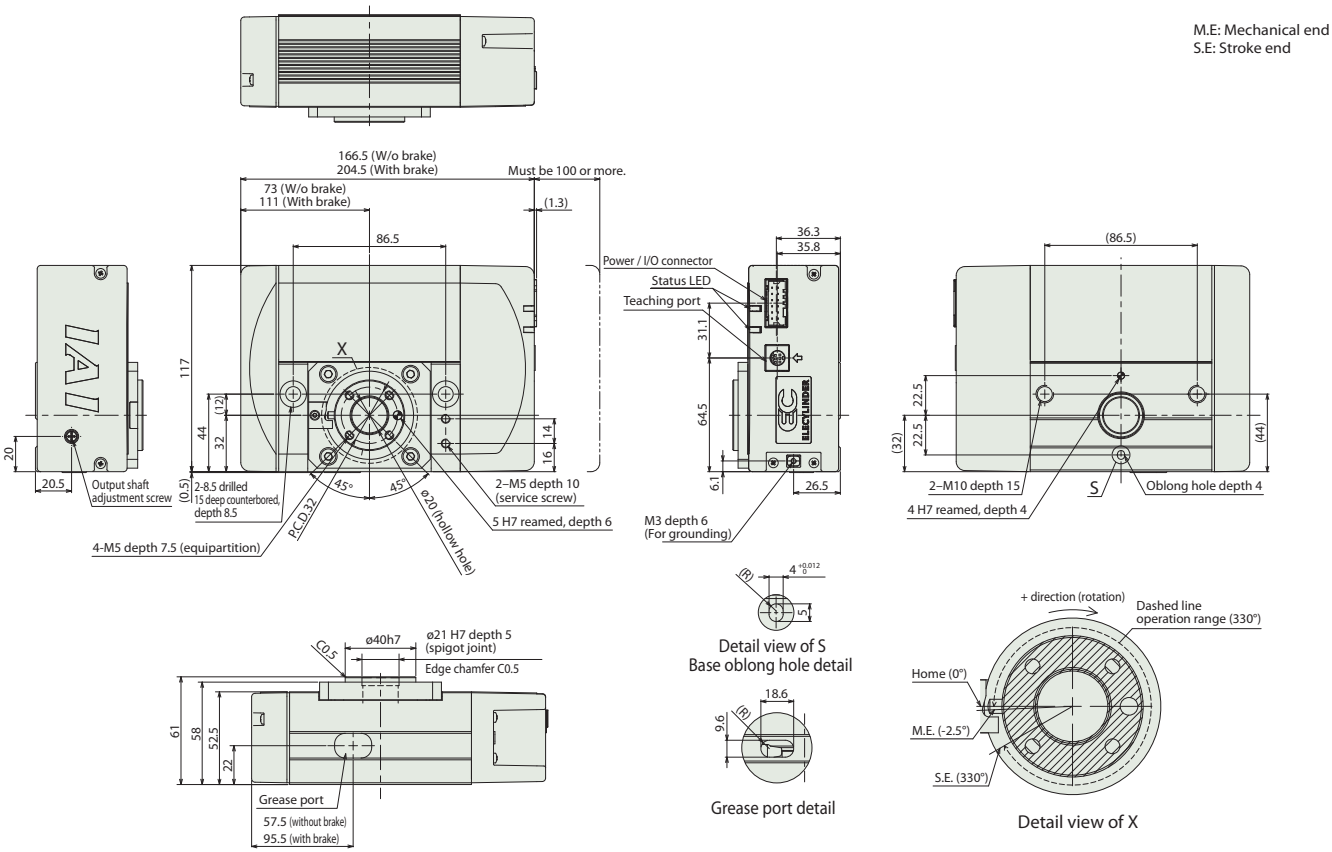
Correlation between push force and current limit



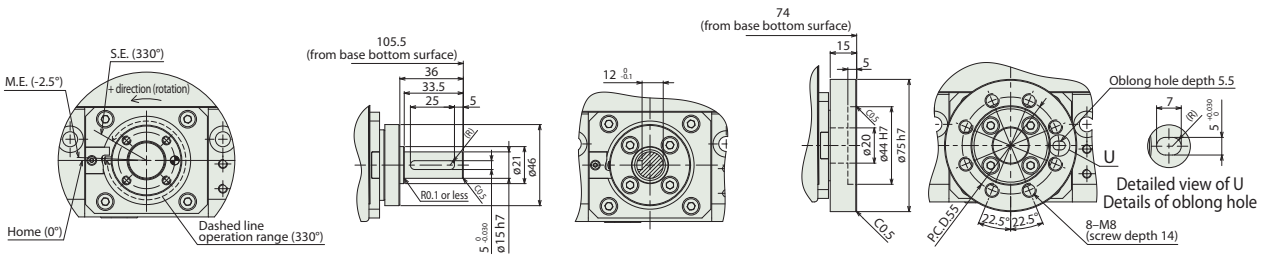
Dimensions

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

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



(Note) The hatched part in the detail view of X is a rotational part.



Non-motor end specification | Shaft adapter specification | Table adapter specification

■ Mass

Item		Description
Mass	Without brake	1.74kg
	With brake	1.90kg

Applicable controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P.31 for more information on built-in controllers.

EC-RTC18

Simple Dust Proof | Rotary Type | Body Width 190 mm | 24v Pulse motor

■ Model Specification Items

EC	-	RTC18	M	-	330	-		-	
Series		Type	Reduction ratio		Operation range		Power / I/O cable length		Options
			M: Reduction ratio 1/40		330: 330-degree rotation		Refer to Power / I/O cable length below		Refer to Options table below

CE RoHS

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) Output torque decreases as rotation speed increases. Refer to the "Correlation diagram between rotation speed and output torque" for details.
(2) The allowable moment of inertia of a workpiece being rotated will vary depending on the rotation speed. Refer to the "Correlation diagram between rotation speed and allowable moment of inertia" for details.
(3) The brake is used for retention purposes only. Do not use it for braking or emergency stopping.
(4) When selecting, calculate values as described in "Selection Method (from P. 5)" and check the usage conditions.
(5) If performing push-motion operations, refer to the "Correlation between push force and current limit". The push forces listed are for reference only.
(6) The maximum acceleration/deceleration is 0.7G for horizontal/on ceiling, or 0.5G for on side/vertical.
(7) When RCON-EC connection specification (ACR) is connected to the EC connection unit (RCON-EC-4), there is a limit to the number of connections. Refer to P34 for details.

Main Specifications

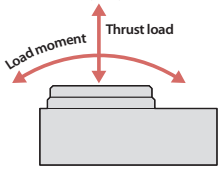
Item		Description
Reduction ratio		1/40
Max. torque (N·m)		25.2
Speed / acceleration/ deceleration (Note 1)	Max. speed (degree/s)	450
	Min. speed (degree/s)	20
	Rated acceleration/deceleration (G)	0.3
	Max. acceleration/deceleration (G) (Note 2)	0.7
Brake	Brake specification	Non-excitation actuating solenoid brake
	Brake holding torque (N·m) (Note 3)	16
Operation range (degree)		330

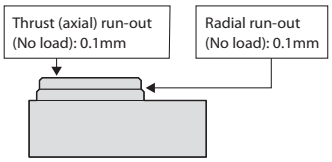
(Note 1) 1G≈9807°/s²
(Note 2) Horizontal only. The maximum acceleration/deceleration will be 0.5G when on side/vertical.
(Note 3) Both the allowable moment of inertia and brake holding torque will be fulfilled not in every case at the same time. Confirm that the load torque does not exceed the retaining torque.

Item	Description
Drive system	Hypoid gear + timing belt
Positioning repeatability	±0.02 degrees
Homing method	Mechanical stopper method
Homing precision	±0.02 degrees
Backlash	0.2° or less
Allowable thrust load	1000N
Dynamic allowable load moment (Note 4)	25N·m
Allowable inertia moment	0.49kg·m²
Radial rotation run-out	0.1mm or less
Thrust rotation run-out	0.1mm or less
Ambient operating temperature/humidity	0 ~ 40°C, 85% RH or less (Non-condensing)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Motor type	Pulse motor (□56SP) (Power capacity: max. 6A)
Encoder type	Incremental / battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 4) 16N·m when on side/vertical.

■ Rotary Type Moment Direction





Power / I/O cable length

■ Standard connector cable

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

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 33 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

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

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

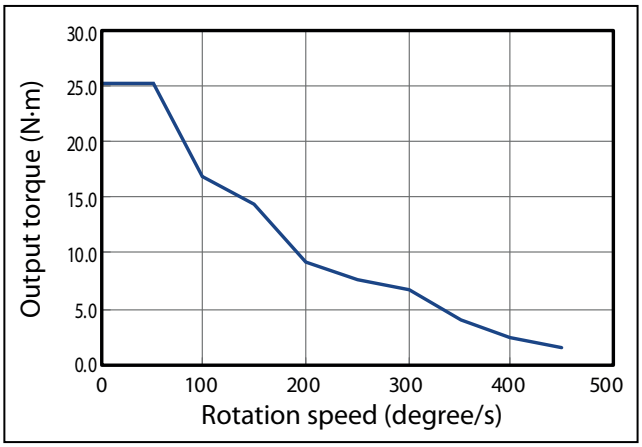
Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	23
Brake	**B**	23
External stopper (Note 2)	**ES**	23
Non-motor end specification	**NM**	23
PNP specification	**PN**	24
Shaft adaptor	**SA**	24
Table adaptor	**TA**	24
Split motor and controller power supply specification	**TMD2**	24
Battery-less absolute encoder specification	**WA**	24
Wireless communication specification	**WL**	24
Wireless axis operation specification	**WL2**	24

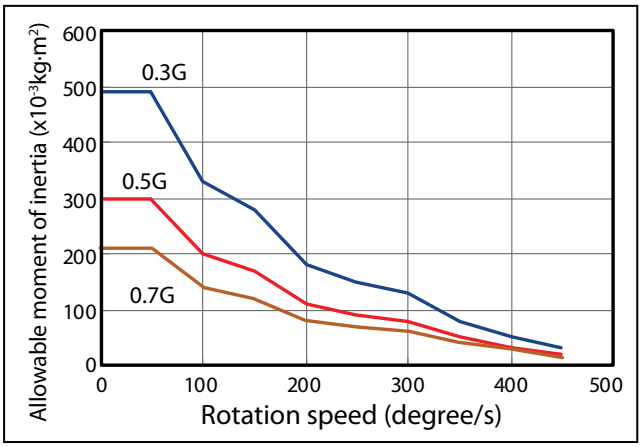
(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) When the external stopper (ES) is selected, the table adaptor (TA) will be delivered mounted.

Correlation diagram between rotation speed and output torque / allowable moment of inertia

■ Correlation diagram between rotation speed and output torque



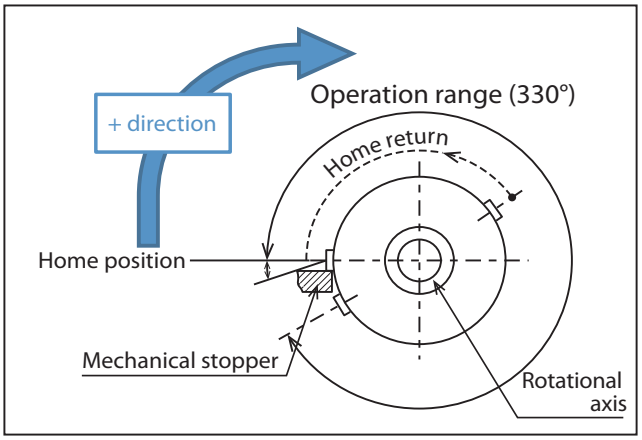
■ Correlation diagram between rotation speed and allowable moment of inertia



(Note) 0.7G can be used only when horizontal/on ceiling.

Homing method and positive rotation direction

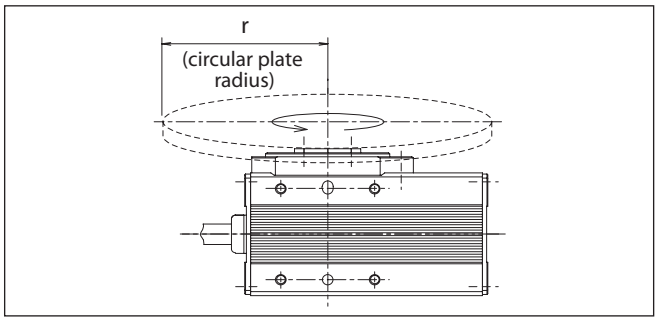
■ 330-degree rotation specification



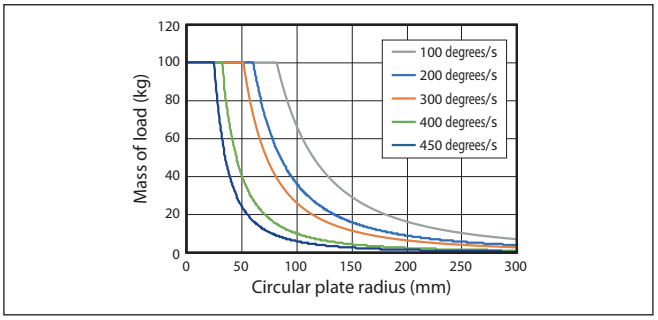
The positive rotation direction will be clockwise when viewing the rotating part from above.
During home return motion, it rotates counterclockwise.
It detects the mechanical stopper position, moves in reverse, and then stops.
(Note) For the non-motor end specification, all movement directions are in reverse.

Guideline for shape and mass of load

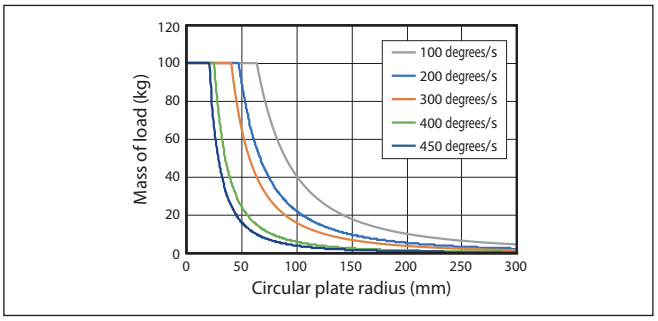
■ When the center of gravity of a circular plate load is the same as the rotational center of the output shaft



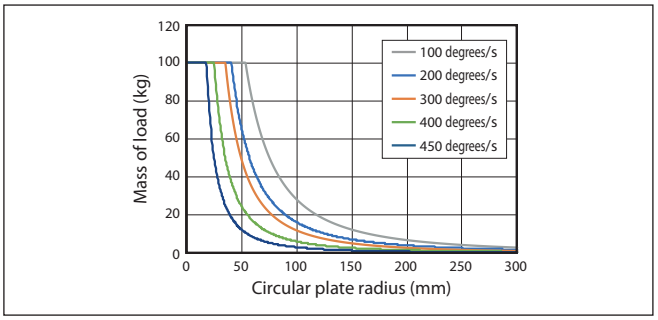
Acceleration 0.3G



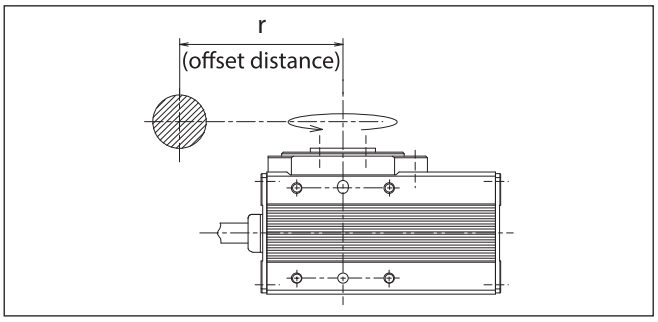
Acceleration 0.5G



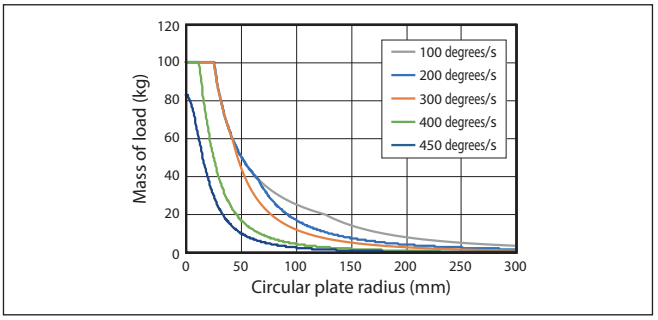
Acceleration 0.7G



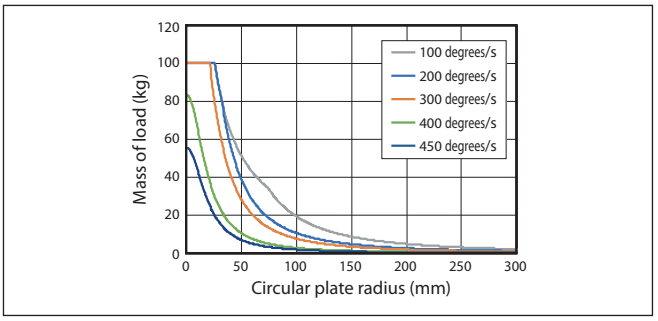
■ When the center of gravity of the load is offset from the rotational center of the output shaft



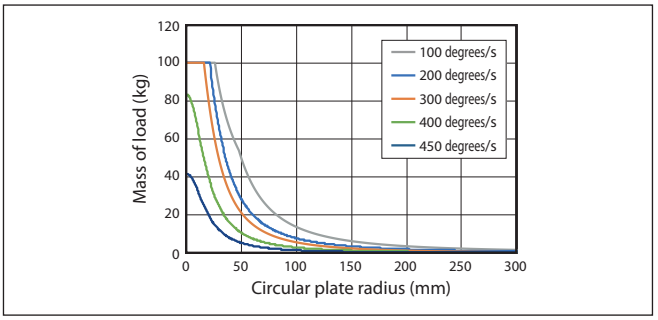
Acceleration 0.3G



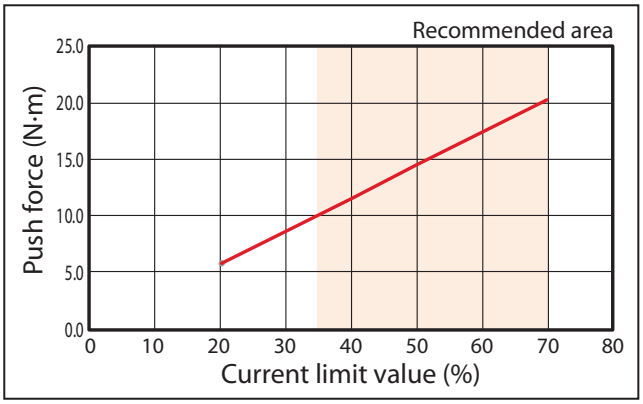
Acceleration 0.5G



Acceleration 0.7G



Correlation between push force and current limit

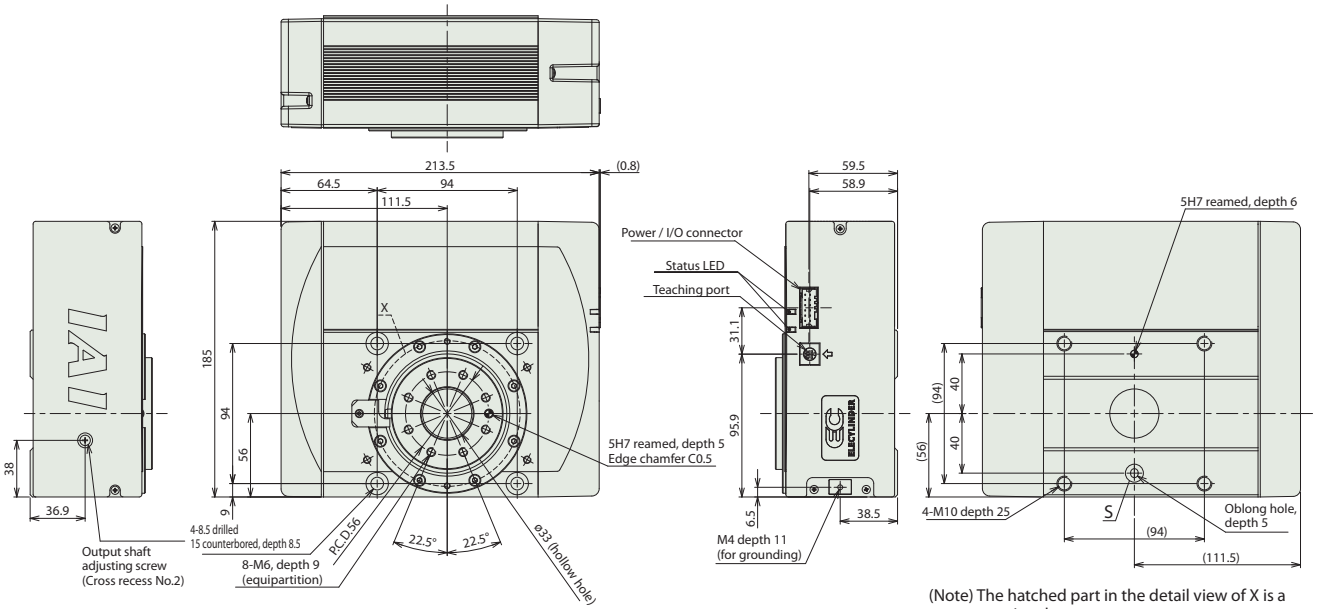


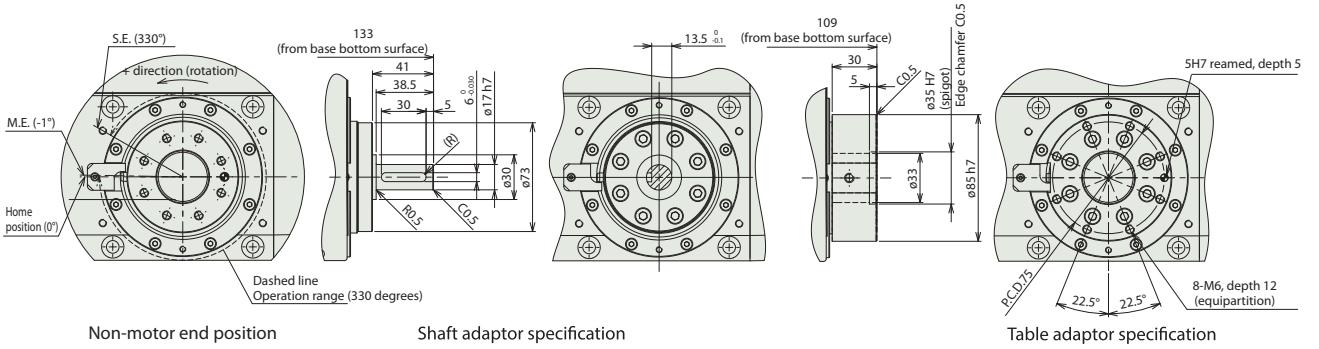
Dimensions

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

2D CAD 3D CAD

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





■ Mass

Item		Description
Mass	Without brake	6.16kg
	With brake	6.54kg

Applicable controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P.31 for more information on built-in controllers.

Options

RCON-EC connection spec.

* TMD2 and PN options cannot be selected at the same time (ACR option includes split motor and controller power supply spec.)

Model **ACR** Applicable models **All models**

Description This option is for connecting field networks via RCON-EC. This option provides split motor and controller power supply specification.
The input/output specification is fixed to NPN, so it cannot be selected simultaneously with the TMD2 or PN options.

Brake

Model **B** Applicable models **All models**

Description When the rotary is mounted on side or vertically, this works as a holding mechanism that prevents the output shaft from unexpected rotating by the load and damaging any attachments when the power or servo is turned off.

Cable exit direction

Model **CJB / CJL / CJR / CJT** Applicable models **EC-RTB4**

Description The exit direction of the actuator cable can be changed to top, bottom, left and right.

Bottom: CJB　Left: CJL　Right: CJR　Top: CJT

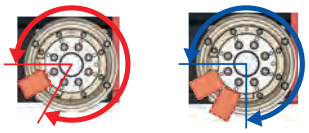
External stopper

Model **ES** Applicable models **EC-RTC18**

Description Stopper for dedicated use of push stop.
The stop position can be freely adjusted by mounting the stopper at any position.
(Note 1) The external stopper is a dedicated stopper for push motion (including homing operation). Do not use it for positioning operation. If used in positioning operation, the stopper may be damaged or misaligned, causing an unexpected accident.
(Note 2) When adjusting both the forward/backward ends, the second stopper block should be ordered as a single item. (The push operation is for one direction only. The position in the other direction is determined by the homing operation.)

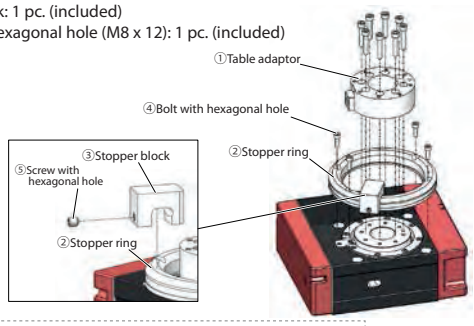
Operable range

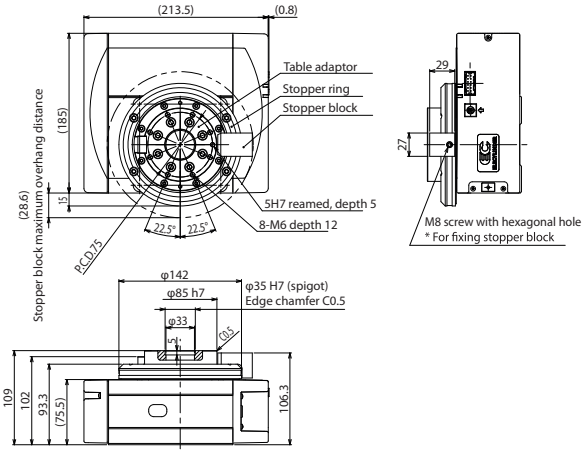
Stopper 1 set: 0 to 300 degrees　Stopper 2 sets: 0 to 270 degrees



For EC-RTC18
Single unit model EC-ESBR-RTC18 (Single unit mass: 0.18kg / Material: steel [nickel plated])

◆ Component parts (when purchased as a single unit)
③ Stopper block: 1 pc. (included)
⑤ Screw with hexagonal hole (M8 x 12): 1 pc. (included)





◆ Component parts (when selected as an option)
① Table adaptor: 1 pc. (delivered mounted)
② Stopper ring: 1 pc. (included)
③ Stopper block: 1 pc. (included)
④ Bolt with hexagonal hole (M5 x 15): 4 pcs. (included)
⑤ Screw with hexagonal hole (M8 x 12): 1 pc. (included)

Non-motor end specification

Model **NM** Applicable models **All models**

Description The positive rotation direction will normally be clockwise when viewing the rotating part from above.
Counterclockwise can optionally be set as the positive rotation direction.
Contact IAI if you would like to change the rotation direction after shipment.

Options

PNP specification

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

Model **PN** Applicable models **All models**

Description EC series offers NPN specification input/output for connecting external devices as standard.
Specifying this option changes input/output to PNP specification.

Shaft adapter

Model **SA** Applicable models **All models**

Description This adapter is used to mount jigs, etc. to the rotating parts.
Refer to the dimensions on the individual product page for detailed dimensions. (Delivered mounted)

For EC-RTB4 Single unit model EC-SA-RTB4
(Single unit mass: 0.1kg / Material: cupper [nickel plated])
Inertia moment 0.02× 10^{-3}kg・m^2

For EC-RTC9 Single unit model EC-SA-RTC9
(Single unit mass: 0.06kg / Material: steel [nickel plated])
Inertia moment 0.006×10^{-3}kg・m^2

◆ Component parts (when purchased as a single unit)
Shaft adaptor: 1 pc.

For EC-RTC12 Single unit model EC-SA-RTC12
(Single unit mass: 0.16kg / Material: cupper [nickel plated])
Inertia moment 0.05×10^{-3}kg・m^2

For EC-RTC18 Single unit model EC-SA-RTC18
(Single unit mass: 0.39kg / Material: steel [nickel plated])
Inertia moment 0.19× 10^{-3}kg・m^2

Table adapter

Model **TA** Applicable models **All models**

Description This adapter is used to mount jigs, etc. to the rotating parts.
Refer to the dimensions on the individual product page for detailed dimensions. (Delivered mounted)

For EC-RTB4 Single unit model EC-TA-RTB4
(Single unit mass: 0.09kg / Material: Aluminum [white alumited])
Inertia moment 0.04×10^{-3}kg・m^2

For EC-RTC9 Single unit model EC-TA-RTC9
(Single unit mass: 0.08kg / Material: Aluminum [white alumited])
Inertia moment 0.04×10^{-3}kg・m^2

◆ Component parts (when purchased as a single unit)
Table adaptor: 1 pc.

For EC-RTC12 Single unit model EC-TA-RTC12
(Single unit mass: 0.13kg / Material: Aluminum [white alumited])
Inertia moment 0.11×10^{-3}kg・m^2

For EC-RTC18 Single unit model EC-TA-RTC18
(Single unit mass: 0.32kg / Material: Aluminum [white alumited])
Inertia moment 0.34×10^{-3}kg・m^2

Split motor and controller power supply specification

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

Model **TMD2** Applicable models **All models**

Description This option provides an input for actuator motion stop. Use this option to cut off only the actuator power source.
Please refer to P.33 for more information on wiring.

Battery-less absolute encoder specification

Model **WA** Applicable models **All models**

Description EC series offers incremental encoder specification as standard. Specify this option to have a built-in battery-less absolute encoder installed.

Wireless communication specification

Model **WL** Applicable models **All models**

Description This option supports wireless communication. Specifying this option enables wireless connection with the TB-03 teaching pendant or wireless teaching controller. The start point, end point and AVD can be adjusted by wireless communication.

Wireless axis operation specification

Model **WL2** Applicable models **All models**

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. 118 of the EC main catalogue V10 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.

Push-motion operation

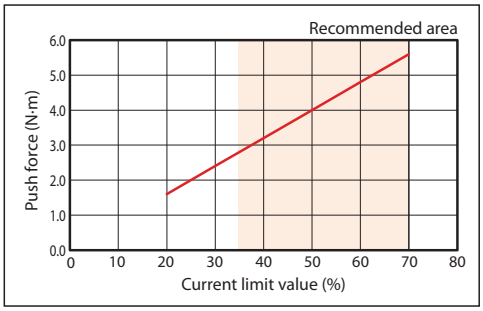
Push-motion operation is a function for pushing and stopping, as with an air rotary.

[Push force adjustment]

* The push force during push-motion can be adjusted by changing the push force (%) of the EleCylinder.
* Check the push force in the diagram "Correlation between push force and current limit" on each product page and select the optimal model that suits the required conditions.

(Example)

EC-RTC12



<Correlation between push force and current limit>

Precaution

* The "Correlation between push force and current limit" shows a guideline for the push force at each current limit.
* Even if the current limit value is the same, the push force may become larger due to individual motor differences and variations in mechanical efficiency. Especially, when the current limit value is 30% or lower (42% for EC-RTB4 only), the push force in the correlation diagram could be exceeded by 40% or more.

Duty ratio

The duty ratio is the operation rate in % of the time the actuator is operating in one cycle.

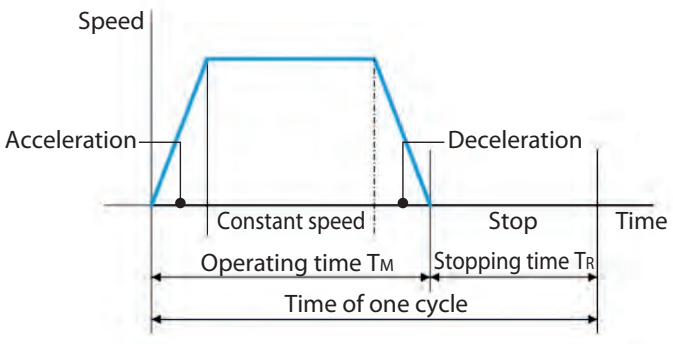
The EleCylinder rotary types can operate at 100% duty ratio.

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

D : Duty ratio

T_M: Operating time (including push-operation)

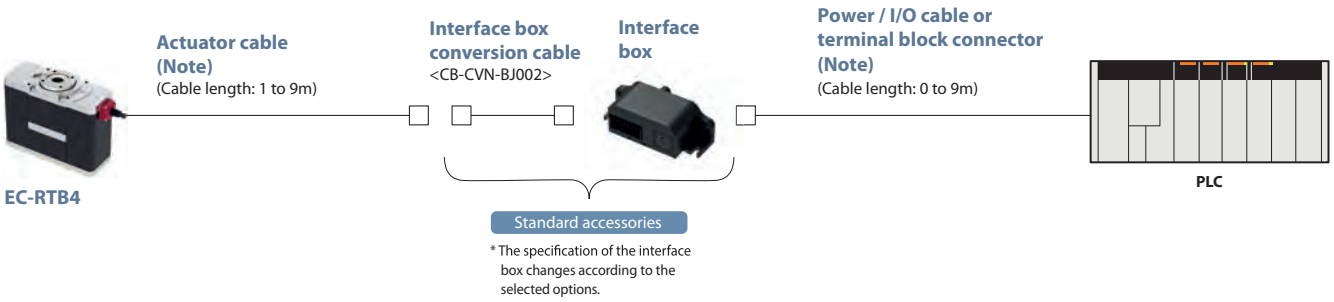
T_R: Stop time



Connection method to PLC

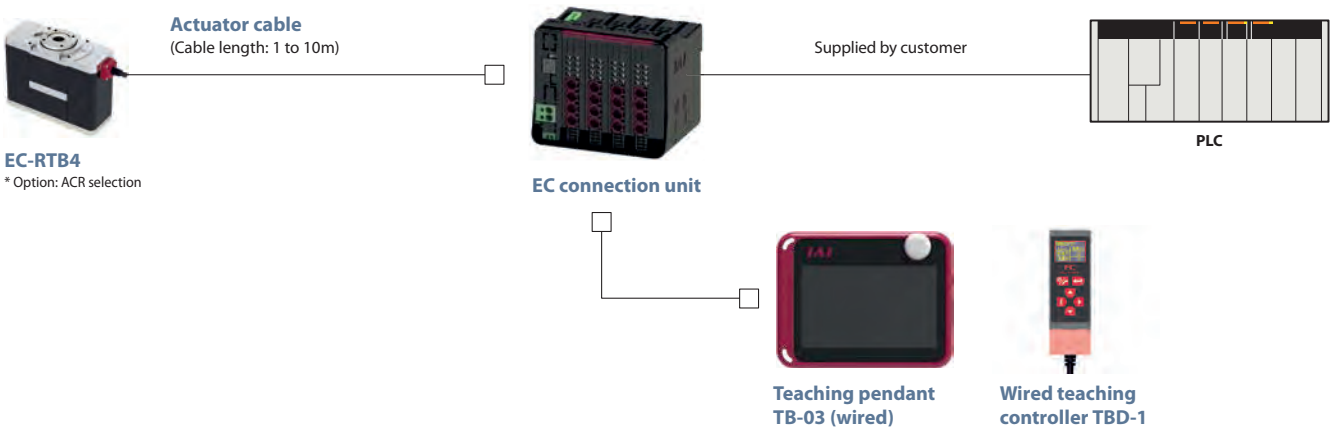
There are three connection methods for connecting EC-RTB4 and PLC. Choose one of these three connection methods. Be aware of connection limit and parts to be ordered separately. * When changing the connection method, contact IAI.

1. When connecting directly to PLC (NPN/PNP specification)



(Note) Select the cable so that the total length of the actuator cable and power / I/O cable (customer's cable in case of the terminal connector) is 10m or less.

2. When connecting to PLC via EC connection unit (RCON-EC connection specification) [Wired connection of the teaching pendant]



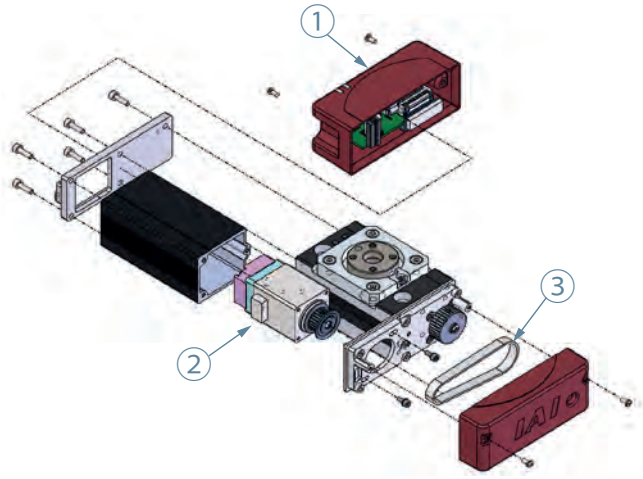
3. When connecting to PLC via EC connection unit (RCON-EC connection specification) [Teaching pendant wireless connection]

The following configuration shows wireless communication specification (WL).
For wireless axis operation specification (WL2), contact IAI.

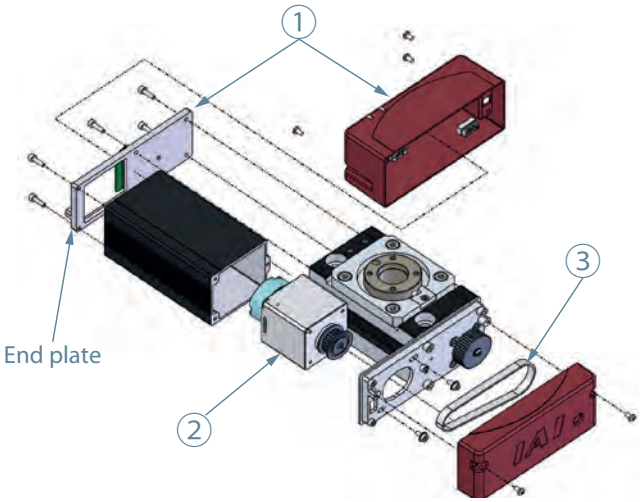
(Note) Select the cable so that the total length of the actuator cable and power / I/O cable of the RCON-EC connection specification is 10m or less.

Maintenance parts

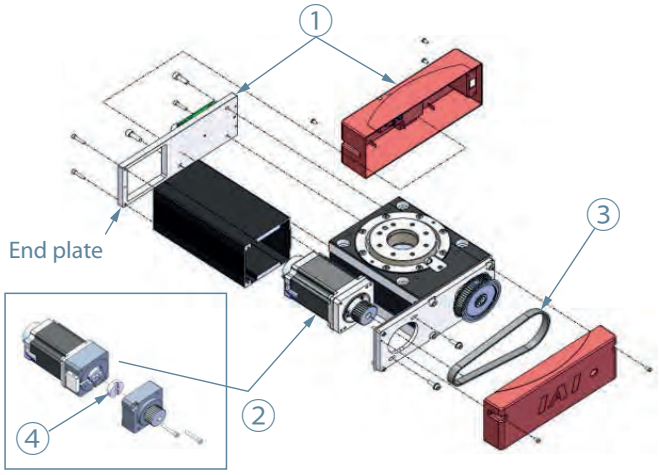
RTC9



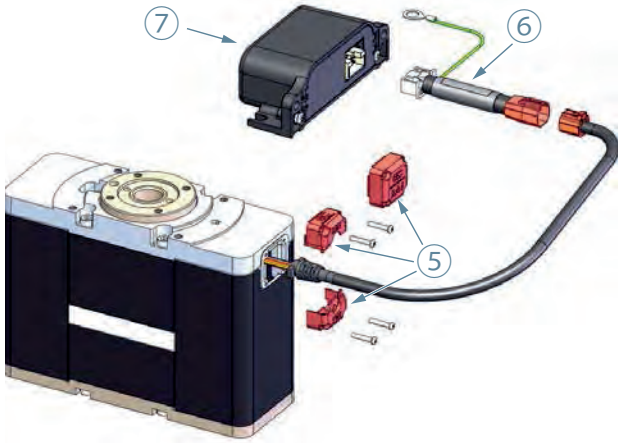
RTC12



RTC18



RTB4



① Controller cover assembly
(RTC9: Controller cover/connection cable)
(RTC12: Controller cover/connection cable/end plate)
(RTC18: Controller cover/connection cable/end plate)
② Motor unit
③ Timing belt
④ Coupling spacer
⑤ Actuator cable mounting box
⑥ Interface box conversion cable
⑦ Interface box

Numbers at the table correspond to those in the schematic drawings.
(Note) Maintenance parts do not include mounting screws (except for ⑤).
For a modification purpose, contact IAI.

①-1 Controller cover assembly

Type	I/O	Wireless	Model
RTC9	NPN	No	CCA-EC-RTC9
		WL	CCA-EC-RTC9-WL
		WL2	CCA-EC-RTC9-WL2
	PNP	No	CCA-EC-RTC9-P
		WL	CCA-EC-RTC9-P-WL
		WL2	CCA-EC-RTC9-P-WL2
RTC12	NPN	No	CCA-EC-RTC12
		WL	CCA-EC-RTC12-WL
		WL2	CCA-EC-RTC12-WL2
	PNP	No	CCA-EC-RTC12-P
		WL	CCA-EC-RTC12-P-WL
		WL2	CCA-EC-RTC12-P-WL2
RTC18	NPN	No	CCA-EC-RTC18
		WL	CCA-EC-RTC18-WL
		WL2	CCA-EC-RTC18-WL2
	PNP	No	CCA-EC-RTC18-P
		WL	CCA-EC-RTC18-P-WL
		WL2	CCA-EC-RTC18-P-WL2

①-2 Controller cover assembly for split motor and controller power supply (Option code: TMD2)

Type	I/O	Wireless	Model
RTC9	NPN	No	CCA-EC-RTC9-TMD2
		WL	CCA-EC-RTC9-TMD2-WL
		WL2	CCA-EC-RTC9-TMD2-WL2
	PNP	No	CCA-EC-RTC9-P-TMD2
		WL	CCA-EC-RTC9-P-TMD2-WL
		WL2	CCA-EC-RTC9-P-TMD2-WL2
RTC12	NPN	No	CCA-EC-RTC12-TMD2
		WL	CCA-EC-RTC12-TMD2-WL
		WL2	CCA-EC-RTC12-TMD2-WL2
	PNP	No	CCA-EC-RTC12-P-TMD2
		WL	CCA-EC-RTC12-P-TMD2-WL
		WL2	CCA-EC-RTC12-P-TMD2-WL2
RTC18	NPN	No	CCA-EC-RTC18-TMD2
		WL	CCA-EC-RTC18-TMD2-WL
		WL2	CCA-EC-RTC18-TMD2-WL2
	PNP	No	CCA-EC-RTC18-P-TMD2
		WL	CCA-EC-RTC18-P-TMD2-WL
		WL2	CCA-EC-RTC18-P-TMD2-WL2

①-3 Controller cover assembly for split motor and controller power supply in RCON-EC connection specification (Option code: ACR)

Type	I/O	Wireless	Model
RTC9	NPN_ REC	No	CCA-EC-RTC9-ACR
		WL	CCA-EC-RTC9-ACR-WL
		WL2	CCA-EC-RTC9-ACR-WL2
RTC12		No	CCA-EC-RTC12-ACR
		WL	CCA-EC-RTC12-ACR-WL
		WL2	CCA-EC-RTC12-ACR-WL2
RTC18		No	CCA-EC-RTC18-ACR
		WL	CCA-EC-RTC18-ACR-WL
		WL2	CCA-EC-RTC18-ACR-WL2

② Motor unit

Type	Encoder	Brake	Model
RTC9	Incremental	No	EC-MURTC9
	Battery-less absolute	No	EC-MURTC9-WA
RTC12	Incremental	No	EC-MURTC12
	Battery-less absolute	No	EC-MURTC12-WA
RTC18	Incremental	No	EC-MURTC18
		Yes	EC-MURTC18-B
	Battery-less absolute	No	EC-MURTC18-WA
		Yes	EC-MURTC18-WA-B

* When the motor unit with brake has to be replaced, contact IAI.

③ Timing belt

Type	Model
RTC9	TB-EC-RTC9
RTC12	TB-EC-RTC12
RTC18	TB-EC-RTC18

* When the timing belt for type with brake has to be replaced, contact IAI.

④ Coupling spacer

Type	Model
RTC18	CPG-EC-SR7

⑤ Actuator cable mounting box

Type	Cable exit direction	Model
RTB4	Rear	EC-CASBR-RTB4
	Side	EC-CASBS-RTB4

* The supplied screws are M2 x 10 knob screws with cross recess.

⑥ Interface box conversion cable

Type	Model
RTB4	CB-CVN-BJ002

⑦-1 Interface box

Type	Wireless	I/O	Model
RTB4	No	NPN	ECW-CVN-CB
		PNP	ECW-CVP-CB
	WL/WL2	NPN	ECW-CVNWL-CB
		PNP	ECW-CVPWL-CB

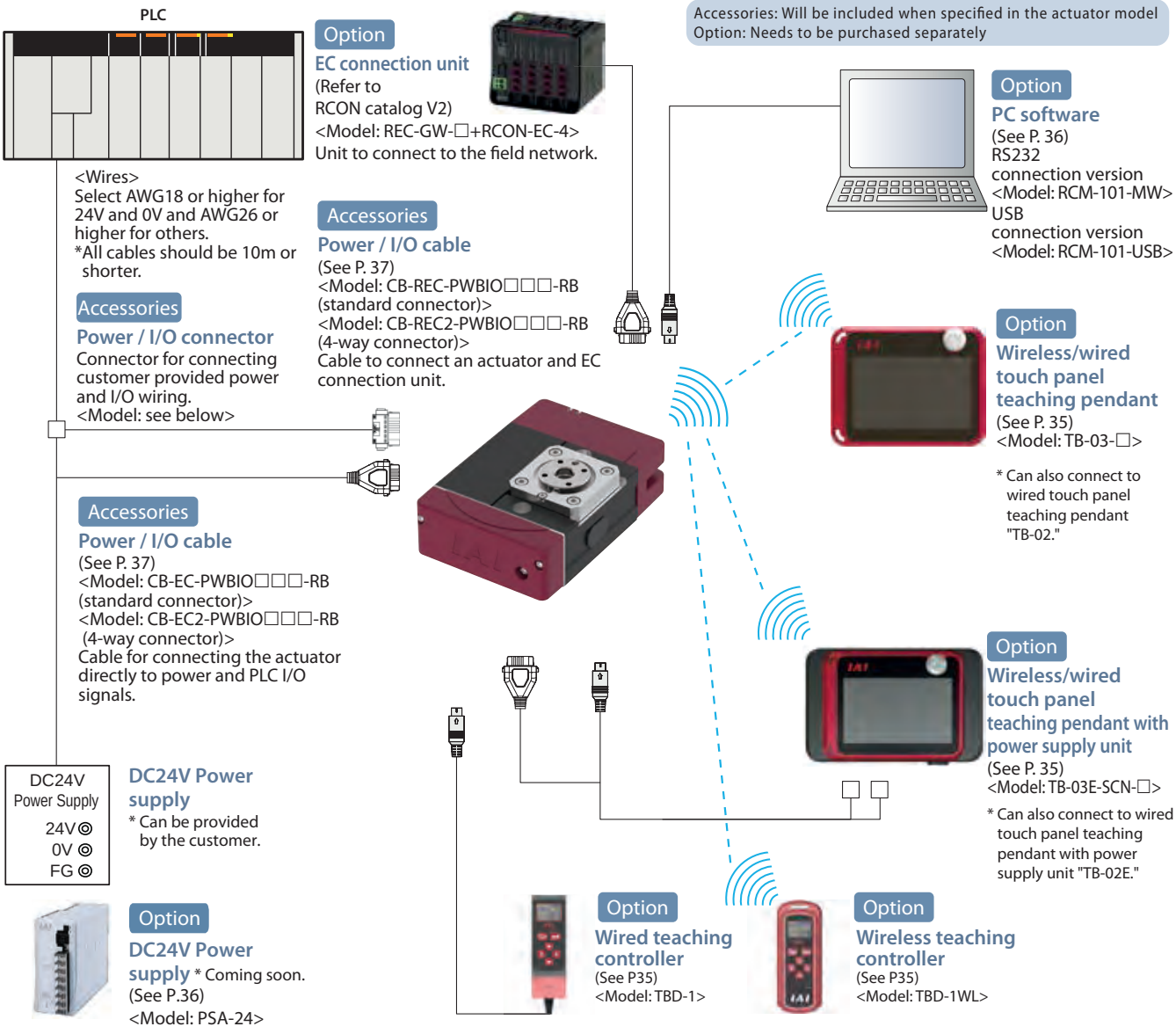
⑦-2 Interface box for split motor and controller power supply (Option code: TMD2)

Type	Wireless	I/O	Model
RTB4	No	NPN	ECW-CVN-CB-TMD2
		PNP	ECW-CVP-CB-TMD2
	WL/WL2	NPN	ECW-CVNWL-CB-TMD2
		PNP	ECW-CVPWL-CB-TMD2

⑦-3 Interface box for split motor and controller power supply in RCON-EC connection specification (Option code: ACR)

Type	Wireless	I/O	Model
RTB4	WL WL2	NPN _REC	ECW-CVNWL-CB-ACR

System configuration EC-RTC9/12/18



List of Accessories

■ Power / I/O cable and connector

[Standard connector]

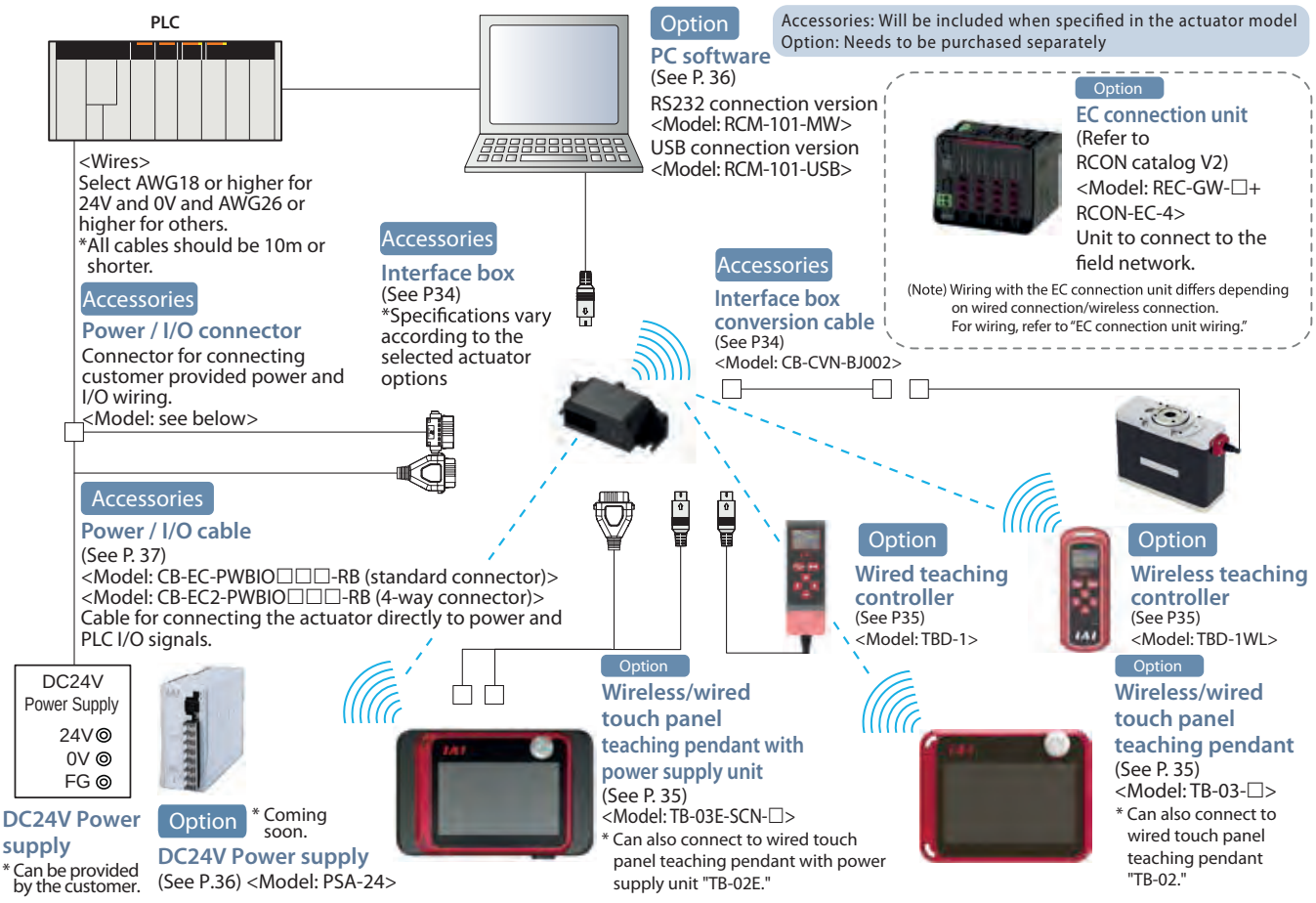
Product category		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
0	Not selected	Power / I/O connector *
	Selected	—
1 ~ 10	Not selected	Power / I/O cable (CB-EC-PWBIO□□□-RB)
	Selected	Power / I/O cable (CB-REC-PWBIO□□□-RB)

* Model code: 81702010-03-000-00 in case of TMD2 selection; otherwise 1-1871940-6-ENG

[4-way connector]

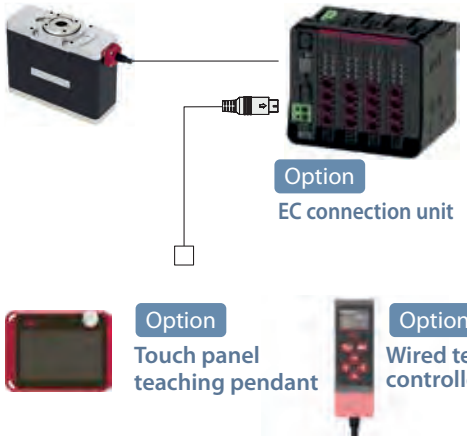
Product category		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
S1 ~ S10	Not selected	Power / I/O cable (CB-EC2-PWBIO□□□-RB)
	Selected	Power / I/O cable (CB-REC2-PWBIO□□□-RB)

System configuration EC-RTB4

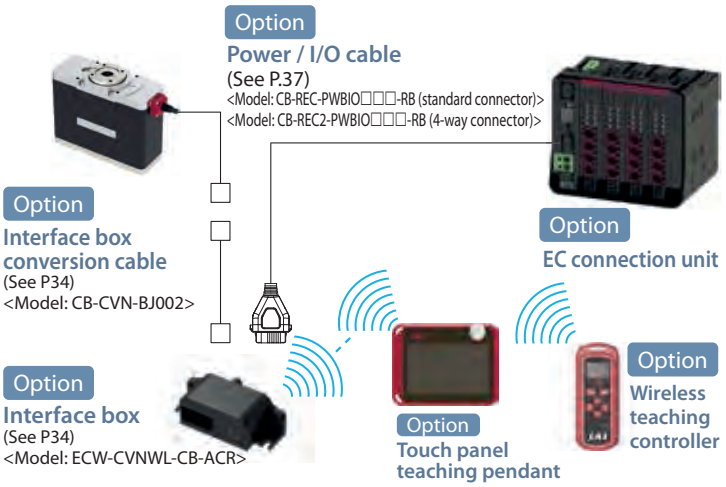


EC connection unit wiring

(Wired connection)



(Wireless connection)



List of Accessories

■ Power / I/O cable and connector

[Standard connector]

Product category		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
0	Not selected	Power / I/O connector *
	Selected	-
1 ~ 9	Not selected	Power / I/O cable (CB-EC-PWBIO□□□-RB)

* Model code: 81702010-03-000-00 in case of TMD2 selection; otherwise 1-1871940-6-ENG

[4-way connector]

Product category		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
S1 ~ S9	Not selected	Power / I/O cable (CB-EC2-PWBIO□□□-RB)

Basic Controller Specifications

Specification item			Specification content
Number of controlled axes			1 axis
Power supply voltage			24VDC ±10%
Power capacity (Including 0.3A control power) (Note 1)		RTB4	Rated 1.5A, maximum 2A (only with enabled energy-saving setting)
		RTC9	Max. 2A (only with enabled energy-saving setting)
		RTC12	With disabled energy-saving setting: Rated 3.5A, maximum 4.2A With enabled energy-saving setting: Max. 2.2A
		RTC18	Max. 6A (only with disabled energy-saving setting)
Brake release power			24VDC±10%, 200mA (only for external brake release)
Generated heat (at duty ratio 100%)		RTB4	5W
		RTC9	5W
		RTC12	8W / 5W
		RTC18	19.2W
Inrush current (Note 2)		RTB4	2A
		RTC9	8.3A
		RTC12	8.3A (with inrush current limit circuit)
		RTC18	10A
Momentary power failure resistance			Max. 500μs
Motor size			□28, □42, □56SP
Motor rated current		RTB4/RTC9/12	1.2A
		RTC18	4A
Motor control system			Weak field-magnet vector control
Supported encoders			Incremental, battery-less absolute encoder
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 / 1 point
		Isolation method	Non-isolated
	Output specification	No. of outputs	3 points (forward complete, backward complete, alarm)
		Output voltage	24VDC ±10%
		Output current	50mA / 1 point
		Residual voltage	2V or less
		Isolation method	Non-isolated
Data setting, input method			PC 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 (Note 3)	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) / AUTO Servo OFF (green blinking)
	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 (Note 3)			When the number of movements or operation distance has exceeded the set value or in case of overload warning, the LED (right side) blinks alternately green and red. *Only when configured in advance
Ambient operating temperature			0 ~ 40°C
Ambient operating humidity			5%RH - 85%RH or less (no condensation or freezing)
Operating environment			No corrosive gas or excessive dust
Insulation resistance			500VDC 10MΩ
Electric shock protection mechanism			Class 1 basic insulation
Cooling method			Natural air cooling

(Note 1) When connecting RCON-EC, the value will be subtracted by 0.3A of control current.
(Note 2) The inrush current flows for 5ms after power is turned on (at 40°C). Inrush current value varies depending on the impedance of the power line.
(Note 3) EC-RTB4 has no LED indicator on the main unit. It can be checked on the interface box or EC connection unit.

Solenoid valve method

EleCylinder products normally use a double solenoid method.
Change parameter to No.9 "Solenoid valve type selection" to use the single solenoid method.
(Note) When connecting RCON-EC, the single solenoid method cannot be operated.

Table of connectability for EleCylinder and teaching tools

■ EleCylinder single unit

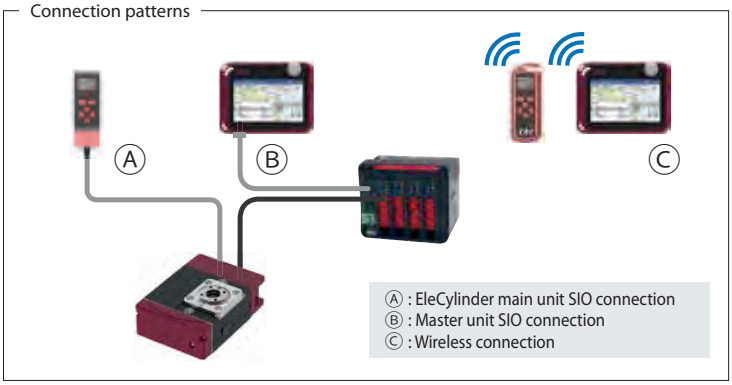
○ : Connection/Operation possible

Teaching tool			Connection/Operation possibility	Priority order (When connected simultaneously)
Wired connection	TB-02/03		○	1
	Wired teaching controller (TBD-1)		○	1
Wireless connection	TB-03		○ *1 *2	2
	Wireless teaching controller (TBD-1WL)		○ *1 *2	2

*1 Connectable only when EleCylinder is of the wireless connection specification (WL or WL2 is suffixed to the option code).
*2 Trial operations are not possible when connected with WL specification, but possible when connected with WL2 specification.

■ When EleCylinder is connected to REC/RCON/RSEL (RCON-EC-4 connection).

Connection patterns

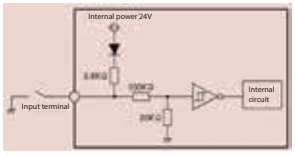
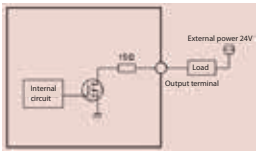
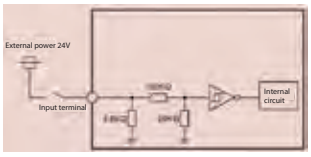
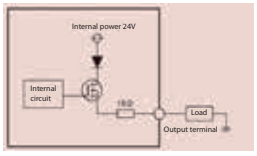


○ : Connection/Operation possible, △ : Connection possible/Operation partially possible, — : Connection/Operation impossible

Teaching tool			Connection patterns	Auto (during automatic operation)		Manual	
				Connection/Operation possibility	Priority order (when connected simultaneously)	Connection/Operation possibility	Priority order (when connected simultaneously)
Wired connection	TB-02/03		Ⓐ	—		—	
			Ⓑ	△ *3	1	○	1
	Wired teaching controller (TBD-1)		Ⓐ	—		—	
			Ⓑ	—		—	
Wireless connection	TB-03		Ⓒ	△ *1 *3	2	○ *1 *2	2
	Wireless teaching controller (TBD-1WL)		Ⓒ	△ *1 *4	2	○ *1 *2	2

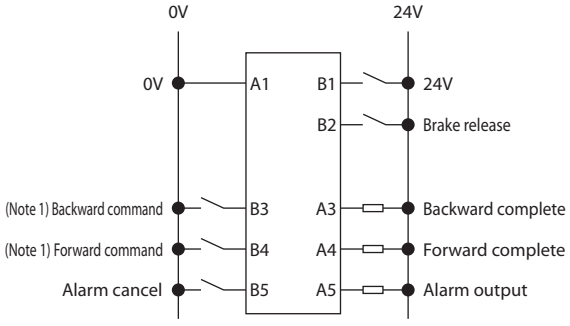
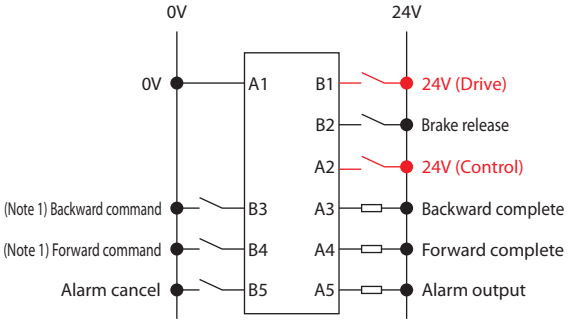
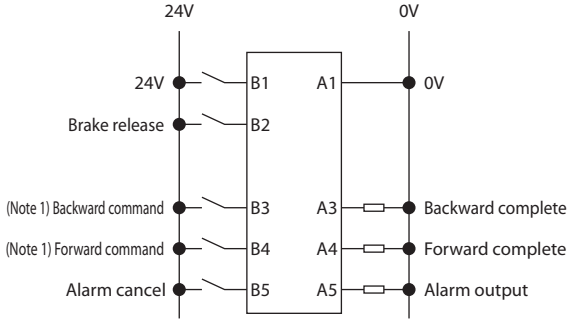
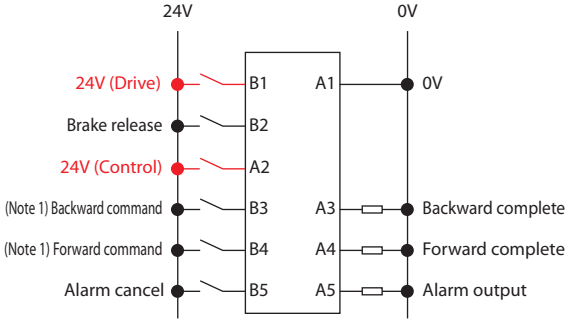
*1 Connectable only when EleCylinder is of the wireless connection specification (WL or WL2 is suffixed to the option code).
*2 Trial operations are not possible when connected with WL specification, but possible when connected with WL2 specification.
*3 Only monitoring is possible (operations are not possible).
*4 Setting of speed and acceleration/deceleration is possible. Position edits and trial operations are not possible.

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/1 point
		ON/OFF voltage	ON voltage: Min. 18VDC OFF voltage: Max. 6VDC	Residual voltage	2V or less
		Leakage current	Max. 1mA/1 point	Leakage current	Max. 0.1mA/1 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 Backward complete A3 Forward complete A4 Alarm output A5 (Reserved) A6 B1 24V B2 Brake release B3 Backward command (Note 1) B4 Forward command (Note 1) B5 Alarm cancel B6 (Reserved)	 0V A1 24V (Control) A2 Backward complete A3 Forward complete A4 Alarm output A5 (Reserved) A6 B1 24V (Drive) B2 Brake release B3 Backward command (Note 1) B4 Forward command (Note 1) B5 Alarm cancel B6 (Reserved)
I/O logic	NPN	 0V 24V 0V A1 B1 24V B2 Brake release (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output	 0V 24V 0V A1 B1 24V (Drive) B2 Brake release A2 24V (Control) (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output
	PNP	 24V 0V 24V B1 A1 0V Brake release B2 (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output	 24V 0V 24V (Drive) B1 A1 0V Brake release B2 24V (Control) A2 (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output

(Note 1) Switching to the single solenoid mode 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 mode 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).

Limit on connectable axes

* The number of all the connected axes should be 16 or less.
* When connecting EC-RTC18 to one of EC connection units (RCON-EC-4), the number of maximum connectable axes is 2.

RTC18 Number of connections	RCON-EC-4 (1 unit)	EleCylinders other than the model listed on the left
1 axis	○	3 axes
2 axes	○	Cannot be connected

○ : compatible

Option [EC-RTB4]

RCON-EC connection specification split motor and controller power supply interface box (wireless)

Model **ECW-CVNWL-CB-ACR** **Applicable models** EC-RTB4

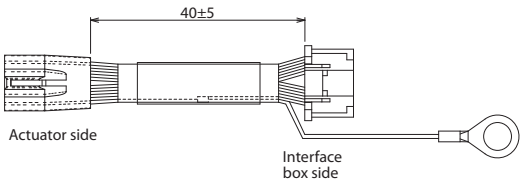
Description Necessary for connecting to the EC connection unit and also performing wireless teaching.

* Wireless communication (WL).
For wireless axis operation specification (WL2), contact one of IAI representatives.

Interface box conversion cable

Model **CB-CVN-BJ002** **Applicable models** EC-RTB4

Description Cable for connecting the actuator cable and interface box.



DF62B-13EP-2.2C(18) (Hirose)

Color	Size	Signal name	No.
Yellow	AWG26	MP	1
Black	AWG26	GND	2
Pink	AWG26	IN0	3
White	AWG26	IN1	4
Purple	AWG26	SD+	6
Green	AWG26	SD-	10
Sky blue	AWG26	OUT0	7
Orange	AWG26	OUT1	8
Brown	AWG26	OUT2	9
Blue	AWG26	BKRLS	11
Gray	AWG26	CP	12
Red	AWG26	FG	13

PUDP-12V-S(JST)

No.	Signal name	Size	Color
4	MP	AWG26	Yellow
10	GND	AWG26	Black
11	sub_SD+	AWG26	Pink
9	sub_SD-	AWG26	White
7	main_SD+	AWG26	Purple
5	main_SD-	AWG26	Green
12	STOP_EXT	AWG26	Sky blue
3	rsv(VPS)	AWG26	Orange
1	rsv	AWG26	Brown
6	BK_EXT	AWG26	Blue
8	VP24	AWG26	Gray
2	FG	AWG26	Red

0.5-5

No.	Signal name	Size	Color
1	FG	AWF22	Green

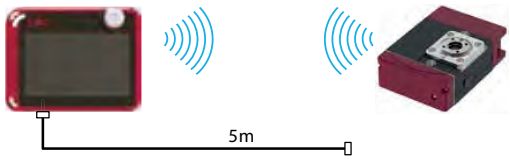
Option

Wireless/wired touch panel teaching pendant

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

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

Configuration Wireless or wired connection



Specifications

Rated voltage	24VDC ±10%
Power consumption	3.6W or less (150mA or less)
Operating ambient temperature	0 - 40°C (non-condensing, no frost)
Operating ambient humidity	5 - 85%RH (non-condensing, no frost)
Degree of protection	IPX0
Mass	Approx. 485g (body) + approx. 175g (battery)
Charging method	Wired connection with dedicated adapter/controller
Wireless connection	Bluetooth4.2 class2

Wireless teaching controller (wireless digital teaching controller)

Features Start point/end point/AVD input and jog motions can be performed remotely.
(Only for the EleCylinder with wireless option)

Model **TBD-1WL-□**

Configuration Wireless connection

Specifications

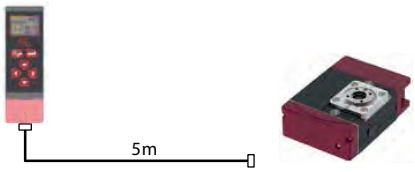
Power input voltage range	5.9VDC (5.7 - 6.3V) [Supplied from the dedicated AC adapter]
Operating ambient temperature	0 - 40°C (non-condensing, no frost)
Operating ambient humidity	5 - 85%RH (non-condensing, no frost)
Degree of protection	IPX0
Mass	Approx. 115g (including 55g battery)
Charging method	Dedicated adapter
Wireless connection	Bluetooth4.2 class2

Wired teaching controller

Features Start point/end point/AVD input and jog motions can be performed easily.
Can be used for all EleCylinder models.

Model **TBD-1**

Configuration Wired connection



Specifications

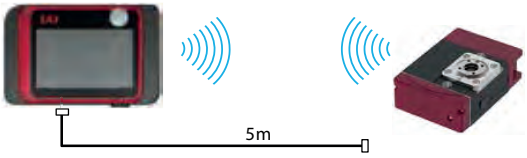
Rated voltage	24VDC ±10% [supplied from the controller]
Power consumption	1.44W or less (60mA or less)
Operating ambient temperature	0 - 40°C (non-condensing, no frost)
Operating ambient humidity	5 - 85%RH (non-condensing, no frost)
Degree of protection	IP20
Mass	Approx. 21g (main unit) + 184g (5m main unit integrated cable)

Wireless/wired touch panel teaching pendant with power supply unit

Features Since the TB-03 has a separate power unit, brake release, trial operation and data setting can be performed even before the machine wiring has been completed.

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

Configuration Wireless or wired connection



Specifications

Rated voltage		Single-phase 100-230VAC ±10%
Input current	Under rated input/output conditions at an ambient temperature of 25°C	1.4A typ. (100VAC) 0.6A typ. (230VAC)
Frequency range		50/60Hz ±5%
Power capacity	Under rated input/output conditions at an ambient temperature of 25°C	141VA (100VAC) 145VA (230VAC)
Output voltage		24VDC ±10%
Mass		Approx. 740g
Cooling system		Natural air cooling

PC software (Windows only)

Features This start-up support software provides functions such as position teaching, trial operation, and monitoring.
A complete range of functions needed for making adjustments contributes to shortened start-up time.

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

Configuration

Please contact IAI for the current supported versions.

PC software (CD)

RS232 conversion adapter
RCB-CV-MW

0.3m

5m

External device communication cable
CB-RCA-SIO050

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

Configuration

Please contact IAI for the current supported versions.

PC software (CD)

USB conversion adapter
RCB-CV-USB

3m

USB cable
CB-SEL-USB030

5m

External device communication cable
CB-RCA-SIO050

24V power supply

Model **PSA-24** (without fan) Coming soon

Model **PSA-24L** (with fan) Coming soon

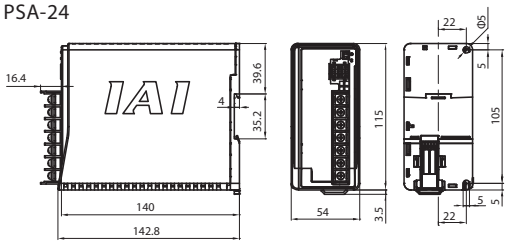
Specifications

Item	Specification for 230VAC input
Power input voltage range	230VAC ±10%
Input power current	1.9A or less
Power capacity	Without fan: 280VA With fan: 380VA
Inrush current *1	Without fan: 34A (typ) With fan: 54.8A (typ)
Generated heat	23W (at 204W continuous rated) 37W (at 330W continuous rated)
Output voltage range *2	24V ±10%
Continuous rated output	Without fan: 8.5A (204W) With fan: 13.8A (330W)
Peak output	17A (408W)
Efficiency	90% or higher
Parallel connection *3	Up to 5 units

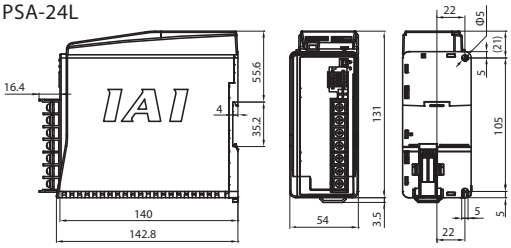
*1 The pulse width of inrush current flow is 5ms or less.
*2 This power source can change output voltage according to the load to enable parallel operations. Therefore, this power unit is only for IAI controllers.
*3 Parallel connections under the following conditions are not possible.
- Parallel connection of PSA-24 (without fan) and PSA-24L (with fan).
- Parallel connection with power supply units other than this unit.

External dimensions

PSA-24



PSA-24L



Maintenance Parts (Cables)

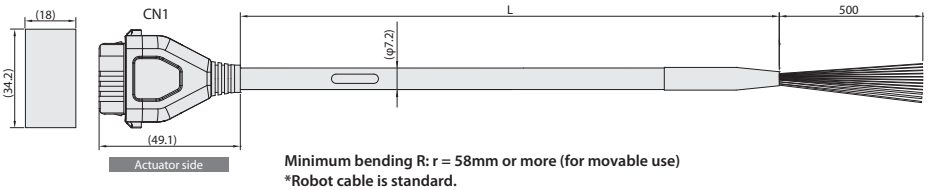
When placing an order for a replacement cable after purchasing a product, please use the model name shown below.

■ 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 □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use)
***Robot cable is standard.**

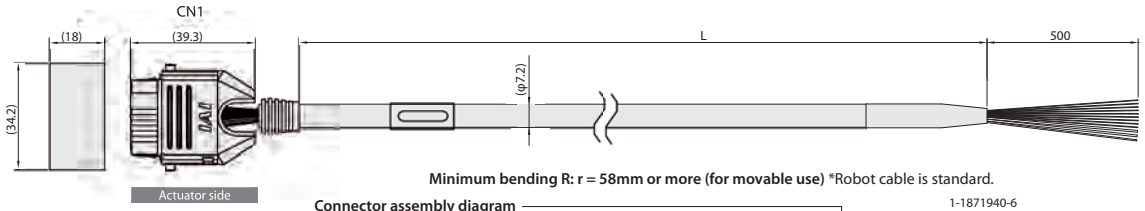
1-1871940-6

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) is selected.

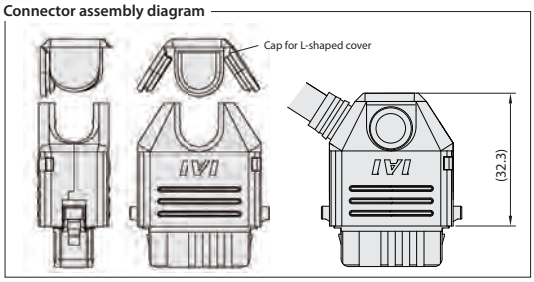
Model CB-EC2-PWBIO□□□-RB

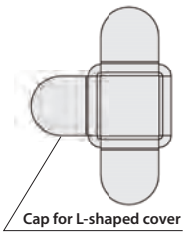
*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use) *Robot cable is standard.

Connector assembly diagram





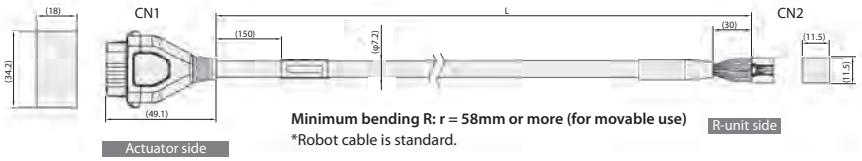
1-1871940-6

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) is 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 (for movable use)
*Robot cable is standard.

1-1871940-6

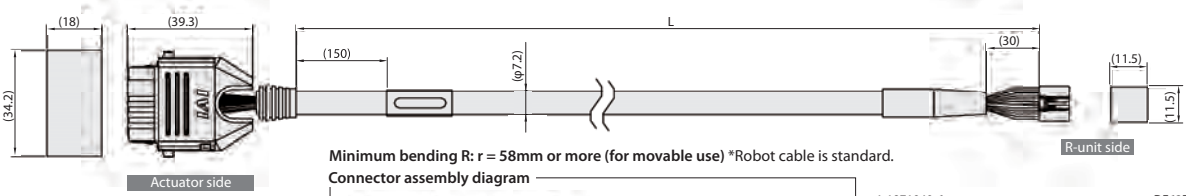
Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V (MP)	B1
Light blue (AWG22)	24V (CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Yellow (AWG26)	SD+	B6
Light gray (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2

DF62E-13S-2.2C(18)

Pin No.	Signal name	Color
2	0V	Black (AWG18)
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+	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)

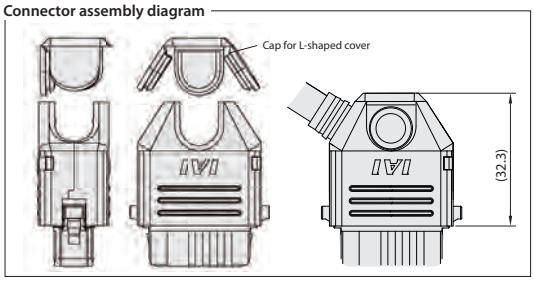
Model CB-REC2-PWBIO□□□-RB

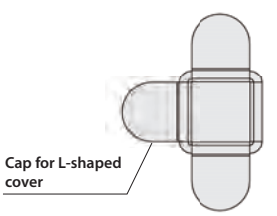
*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use) *Robot cable is standard.

Connector assembly diagram





1-1871940-6

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

DF62E-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)

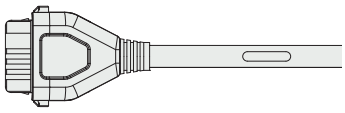
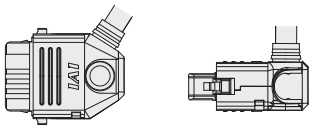
Maintenance Parts (Cables)

■ Four-way connector cable

The cable exit direction from the connector can be freely selected from four directions.
The cable wiring for the connector is the same as that of power / I/O cable CB-EC-PWBIO□□□-RB / CB-REC-PWBIO□□□-RB.

■Model

Indicate the cable length (L) in □□□,
(e.g.) 050=5m

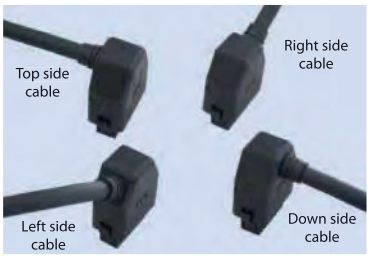
	Standard connector (actuator side)	4-way connector (actuator side)
External view		
User wiring specification	CB-EC-PWBIO□□□-RB	CB-EC**2**-PWBIO□□□-RB
RCON-EC connection specification	CB-REC-PWBIO□□□-RB	CB-REC**2**-PWBIO□□□-RB

■Ordering method

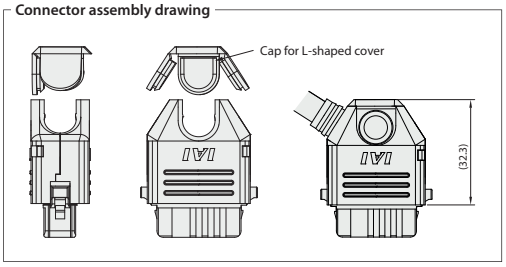
The cable length is minimum 1m and maximum 10m.
Can be specified in 1m units.

(ex.) When ordering a 4-way connector with a 3m/10m cable.
Cable length **3**m : CB-EC2-PWBIO**030**-RB
Cable length **10**m : CB-EC2-PWBIO**100**-RB

■Assembling method



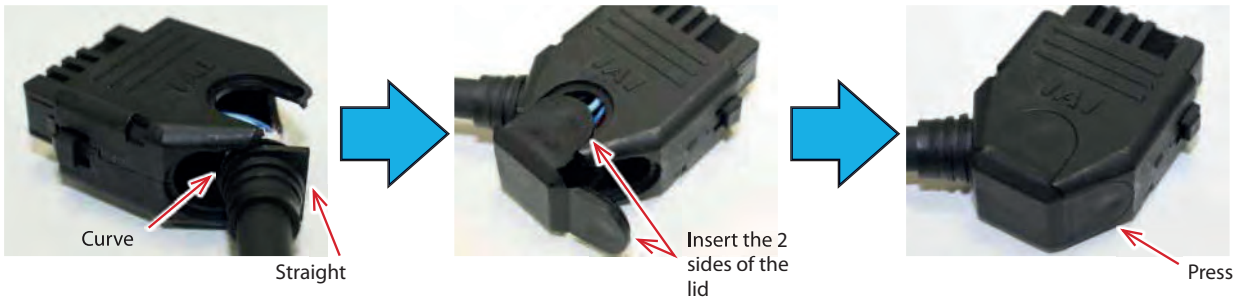
Cable direction can be set to any of 4 directions



① Insert while sliding along the groove in the desired direction from the semi-cylindrical curved portion.

② Confirm that the cable has been firmly inserted, and then insert the 2 sides of the lid along the groove.

③ Finally, press the remaining side of the lid.



EC EleCylinder Series
Rotary Type V3
Catalogue No. 0624-E

The information contained in this catalog is subject to change without notice for the purpose of product improvement

ELECYLINDER

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