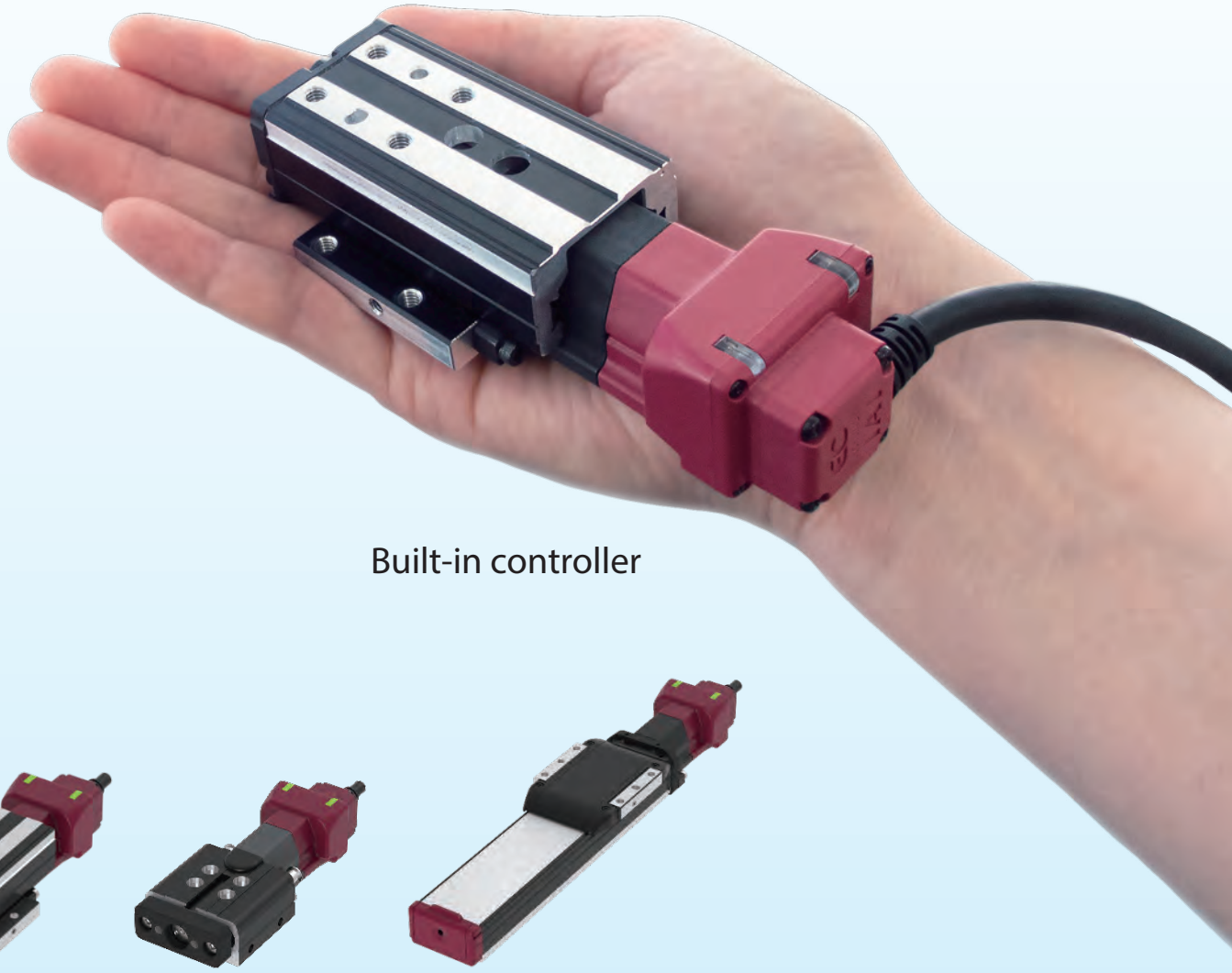
IAI
Quality and Innovation

Ultra-Mini ELECYLINDER®

EC-SL3
EC-GDS3/GDB3
EC-T3



Built-in controller

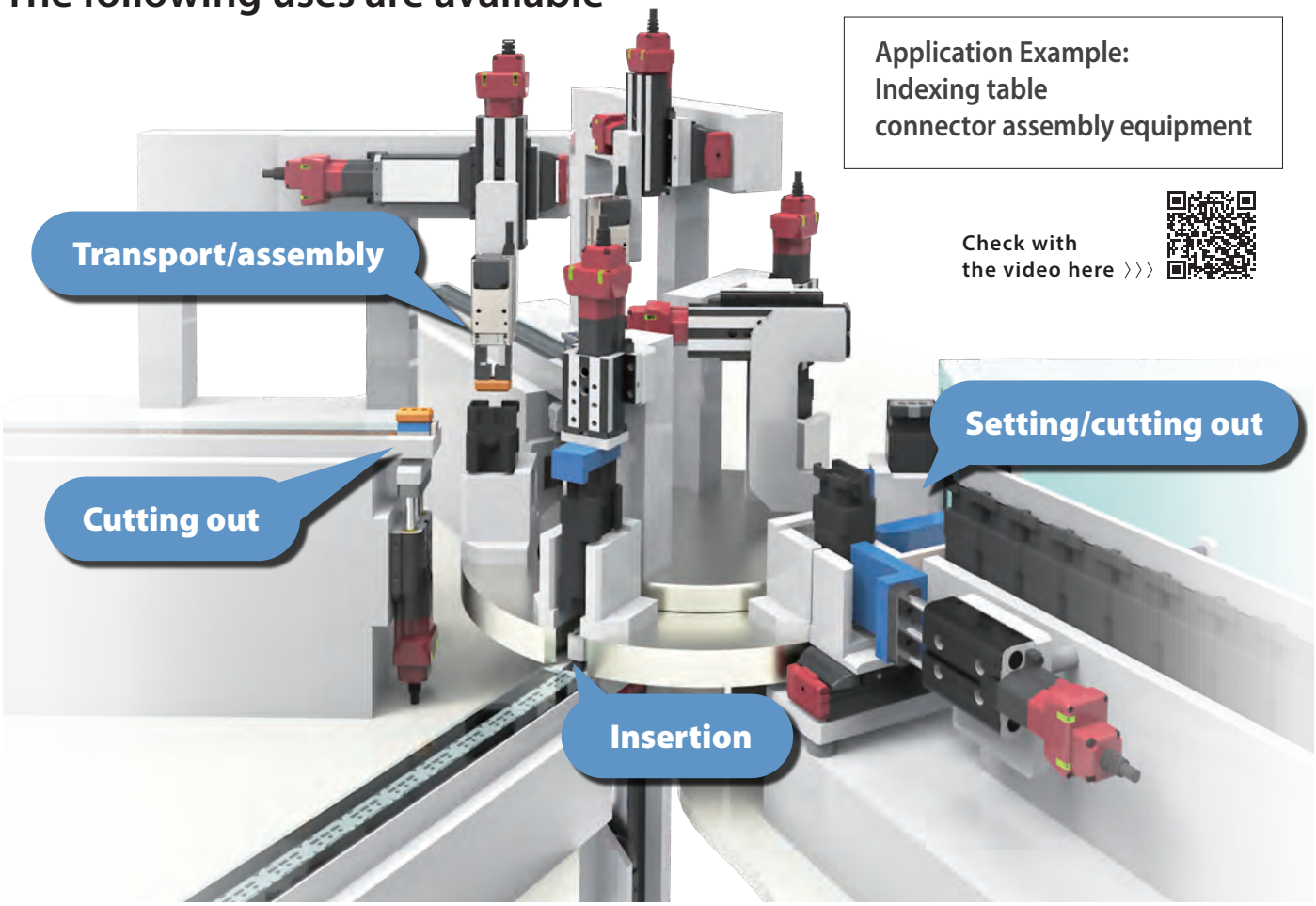
www.intelligentactuator.com

Believe it:
A built-in controller at this size!

ELECYLINDER

Ultra-Mini ELECYLINDER® EC-T3

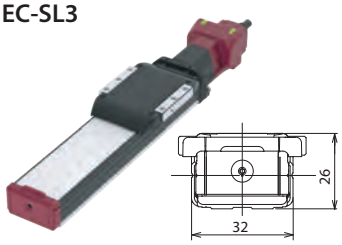
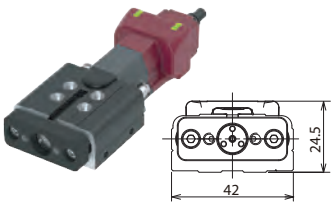
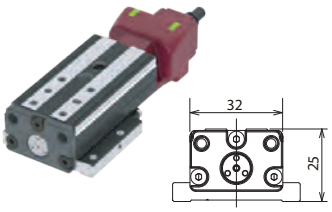
The following uses are available



Application Example:
Indexing table
connector assembly equipment

Check with
the video here 〉〉〉

Select from three types according to the application

Type	Slider	Rod	Table
Products	EC-SL3 	EC-GDS3/GDB3 	EC-T3 
Max. speed	200 mm/s	200 mm/s	200 mm/s
Max. push force	16N	17N	17N
Max. payload [Horizontal/vertical]	2 kg/0.7 kg	2 kg/0.8 kg	2 kg/0.8 kg

*Vertical only for GDS3

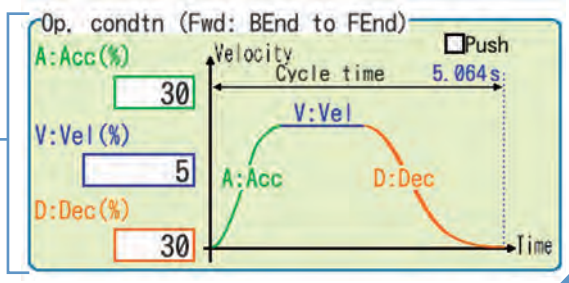
The Ultra-Mini ELECYLINDER resolves all kinds of small air cylinder problems!

Problem — Speed adjustment is difficult with small cylinders...

Problem solved!

ELECYLINDER speed can be set easily at any value needed, from low speed to high-speed operation

Teaching pendant (TB-03)



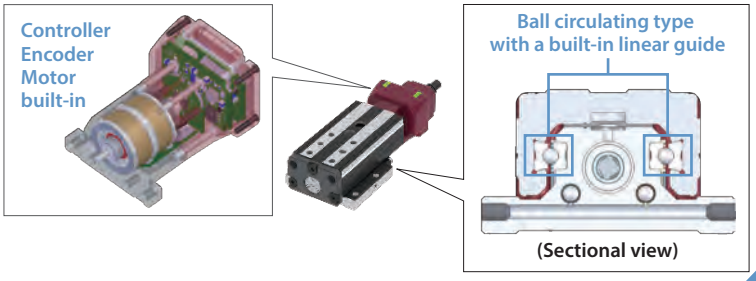
Features

Speed can be set with numbers from 1% (low speed) to 100% (high speed), enabling the same motion regardless of the operator.

Problem — Water builds up too fast in the drain...

Problem solved!

The ELECYLINDER is electric and thus airless
What's more, it is an all-in-one machine with controller and guide built-in



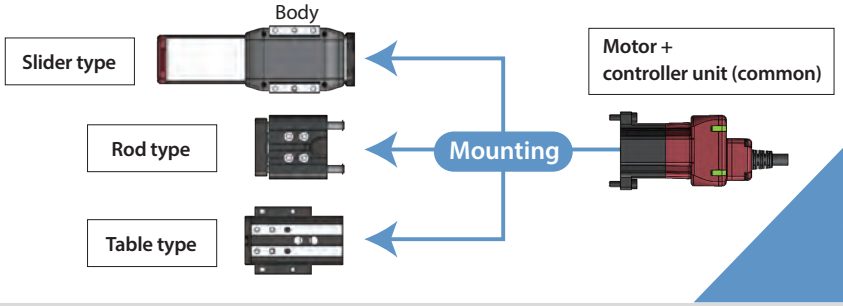
Features

Design is easy with all the necessary components already assembled.

Problem — The whole cylinder has to be replaced when the packing or stopper breaks...

Problem solved!

The Ultra-Mini ELECYLINDER has a life of five million cycles
(For vertical mounting)
What's more, maintenance is simple



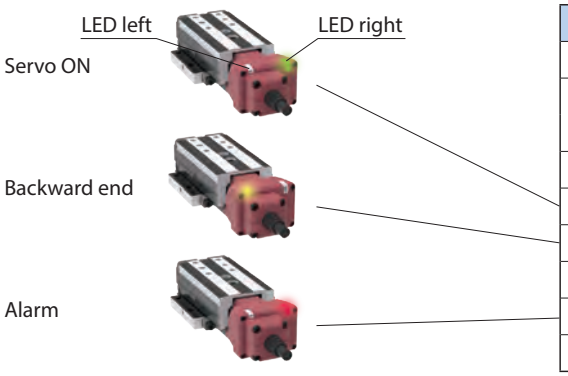
Features

Modular structure makes replacement easy.

Introducing the functions made possible by ELECYLINDER

◆ Status shown by body LEDs

LEDs on the body clarify the operation status.
With forward end/backward end display added, the status is clear at a glance.



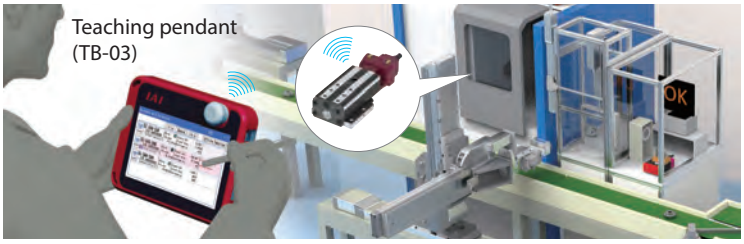
LED left	LED right	Color	Operation status
●	●	Orange	Initializing at power ON
×	×	—	Power OFF
			Servo OFF
★	×	Green	Wirelessly connected
×	●	Green	Servo ON
●	×	Orange	Backward end [LS0]*
×	●	Orange	Forward end [LS1]*
×		Red	Alarm
×			Stopped for emergency

●: Lit ×: Off ★: Blinking

*Display is possible with parameter switching

◆ Simple operation with wireless connection

The teaching pendant (TB-03) can be connected wirelessly to an ELECYLINDER within a 5m radius.
This enables status confirmation, position/speed setting, test runs and so on.



◆ Multi-axis control and network connection with RCON-EC connection specification

Use of the ELECYLINDER dedicated drive unit REC enables connection with up to 16 axes, reducing wiring and saving control panel space.

Up to 16 connectable axes

Supported field networks

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

For the RCON-EC connection specification, see the R-unit catalog

Catalog data is here

Model Specification Items

ELECYLINDER®

EC – [Type] [Lead] – [Stroke] – [Actuator cable length] – [Power I/O cable connector length] – ([Options])

Series

Type

SL3	Slider type (base width 32mm)
GDS3	Rod type with rolling bushing (width 42mm)
GDB3	Rod type with ball bearing (width 42mm)
T3	Table type (table width 32mm)

Lead

L	Lead 2mm
M	Lead 4mm

(Note) Only lead 2 is available for GDS3.

Stroke

<SL3>

50	50mm
	≀
200	200mm

(every 25mm)

<GDS3>

10	10mm
	≀
30	30mm

(every 10mm)

<GDB3>

10	10mm
	≀
50	50mm

(every 10mm)

<T3>

10	10mm
	≀
50	50mm

(every 10mm)

Actuator cable length

1	1m
	≀
10	10m

(Note) When using the interface box, 9m is the maximum available.

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

(every 1m)

(S) 4-way connector cable

(Note) Make sure that the total length along with the actuator cable is 10m or less.

(Note 1) When selecting RCON-EC connection specification (ACR), select "0." Power / I/O connector is not included.

Power I/O cable connector length

Left blank	NPN specification (interface box connection), no options
ACR	RCON-EC connection specification (Note 2) (Note 3)
B	Brake specification
CJB	Cable exit direction specification (bottom)
CJL	Cable exit direction specification (left)
CJR	Cable exit direction specification (right)
CJT	Cable exit direction specification (top)
NM	Non-motor end specification
PN	PNP specification (interface box connection) (Note 2)
TMD2	Split motor and controller power specification (interface box connection) (Note 2)
WL	Wireless communication specification (interface box connection) (Note 3)
WL2	Wireless communication axis operation specification (interface box connection) (Note 3)

(Note 2) "PN" and "TMD2" cannot be selected when "ACR" is selected.

(Note 3) "WL" and "WL2" cannot be selected when "ACR" is selected. (When using wireless communication, an interface box and cable must be provided separately.)

Options

*Please refer to the reference page of each type for details.

Specification Tables

Slider

Product type	Type	Lead Model	Lead mm	Stroke (mm) and max speed (mm/s) *Length of band = Stroke; *Numbers in band = Maximum speed by stroke 50	75	100	125	150	175	200	Max. payload (kg) Horizontal	Vertical	Reference Page
Slider	SL3	M-	4	200							1	0.3	P7
		L-	2	100							2	0.7	

Rod

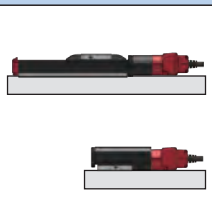
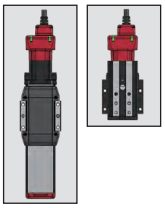
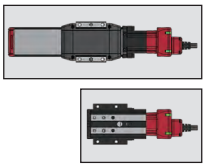
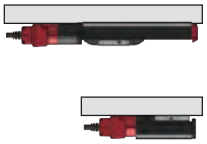
Product type	Type	Lead Model	Lead mm	Stroke (mm) and max speed (mm/s) *Length of band = Stroke; *Numbers in band = Maximum speed by stroke 10	20	30	40	50	Max. push force (N)	Max. payload (kg) Horizontal	Vertical	Reference Page
Rod	GDS3	L-	2	100					17	-	0.8	P11
	GDB3	M-	4	200					10	1	0.4	P15
		L-	2	100					17	2	0.8	

Table

Product type	Type	Lead Model	Lead mm	Stroke (mm) and max speed (mm/s) *Length of band = Stroke; *Numbers in band = Maximum speed by stroke 10	20	30	40	50	Max. push force (N)	Max. payload (kg) Horizontal	Vertical	Reference Page
Table	T3	M-	4	200					10	1	0.4	P19
		L-	2	100					17	2	0.8	

Mounting Orientation

○: Can be mounted ×: Cannot be mounted

Series	Type	Mounting orientation			
					
		Horizontal mounting on flat surface	Vertical mounting (Note 1)	Horizontal mounting to side	Horizontal mounting suspended
EC	SL3	○	○	○ (Note 2)	○ (Note 2)
	GDS3	×	○	×	×
	GDB3	○	○	○	○
	T3	○	○	○	○

(Note 1) When mounting vertically, be sure to install the motor on the top. Installing with the motor on the bottom could cause grease to separate and base oil to leak into the motor, which could cause controller or motor encoder failure. It is therefore not recommended to install the motor on the bottom side.
(Note 2) Installing the product horizontal to side or horizontally ceiling mounted may cause slack or misalignment in the stainless steel sheet, so inspect regularly and adjust as needed.
(Note) Keep the body installation surface and workpiece mounting surface flatness and straightness at or below the values below.

Type	Body installation surface		Workpiece mounting surface	
	Flatness	Straightness	Flatness	Straightness
SL3	0.02mm/m or less	0.01mm or less	0.02mm/m or less	—
GDS3 GDB3		—		—
T3		—		0.01mm or less

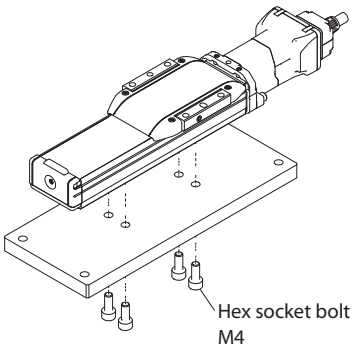
If the body installation surface and workpiece mounting surface flatness and straightness do not satisfy the figures above, the sliding resistance will increase, leading to malfunctions.

Mounting Methods

Mount according to the mounting method for the applicable type.

Slider type (SL3)

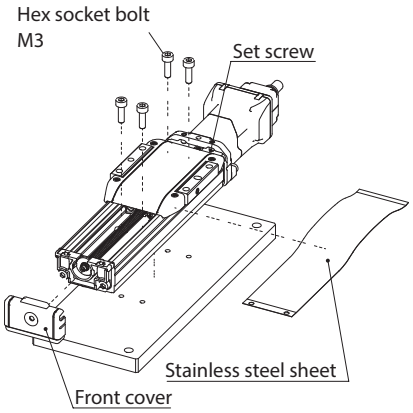
● Using base bottom surface screw hole



*Be careful, as the screw depth will interfere with the interior components if it exceeds 6mm.

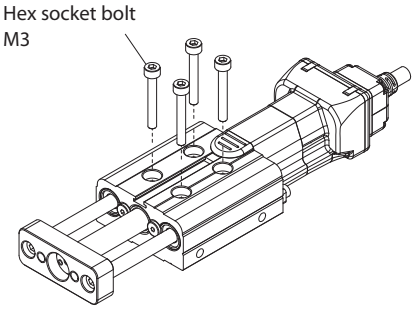
● Using base interior counterbored hole

*The stainless steel sheet must be removed during the process.

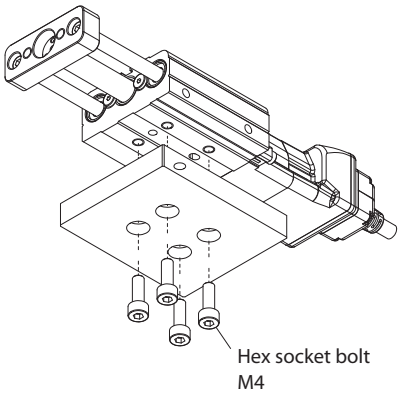


Rod type (GDS3/GDB3)

● Using body top surface through hole



● Using body bottom surface screw hole



● Using body side surface screw hole

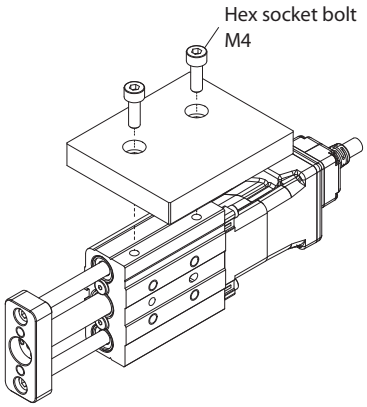
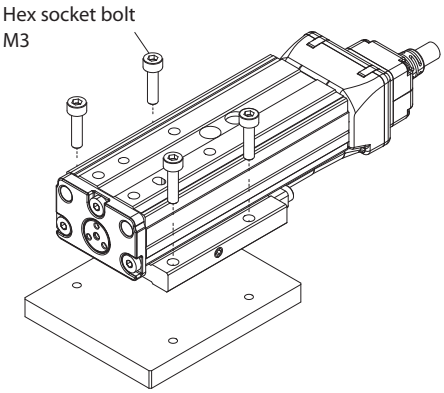
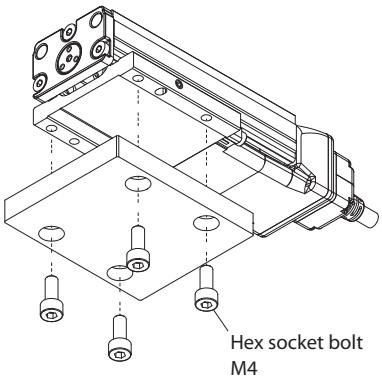


Table type (T3)

● When fixing from body top surface



● Using body bottom surface mounting hole



EC-SL3

Coupled Motor | Body Width 30 mm | 24v Stepper Motor | Lead Screw

Model Specification Items

EC - SL3 - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Series	Type	Lead	Stroke	Actuator cable length	Power I/O cable connector length	Options
EC	SL3	M: 4mm L: 2mm	50: 50mm ~ 200: 200mm (every 25mm)	See actuator cable length table below	See power I/O cable connector length table below	See options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Stroke

Stroke (mm)	RCON-EC connection specification (Note 1)	NPN/PNP specifications
50	○	○
75	○	○
100	○	○
125	○	○
150	○	○
175	○	○
200	○	○

(Note 1) Be sure to select "ACR" as an option.

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

Name	Option code	Reference page
RCON-EC connection specification (Note 2) (Note 3)	**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 2)	**PN**	23
Split motor and controller power supply specification (Note 2)	**TMD2**	23
Wireless communication specification (Note 3)	**WL**	23
Wireless axis operation specification (Note 3)	**WL2**	23

(Note 2) 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. As well, the interface box and conversion cable are not included.

(Note 3) When selecting the RCON-EC connection specification (ACR), the wireless communication specification (WL) and wireless axis operation supported specification (WL2) cannot be selected. When using wireless communication with RCON-EC connection, separately prepare the interface box, conversion cable, and power / I/O cable connector which are available as options. Please refer to P. 27 for details.

Separately Sold Options

Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	32
RCON-EC connection specification power / I/O cable (standard connector cable)	CB-REC-PWBIO□□□-RB	33
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	33
RCON-EC connection specification interface box for split motor and controller power supply (wireless specification)	ECW-CVNWL-CB-ACR	32

(Note) The power / I/O cable connector is a robot cable.
Please indicate the cable length in □□□. (Ex.: 010 = 1m)

Selection Notes

(1) "Main Specifications" displays the payload's maximum value. Please refer to "Table of Payload by Speed/Acceleration" for more details.

(2) If performing push-motion operations, refer to the "Correlation Diagrams between Push Force and Current Limit." The push forces listed are only reference values. Please refer to P. 26 for applicable notes.

(3) Pay close attention to the mounting orientation. Refer to P. 5 for details.

(4) Reference value of the overhang load length is under 100mm in the Ma, Mb, and Mc directions. Please refer to the explanation on P. 26 for the overhang load length.

(5) The center mass location of the attached object should be less than 1/2 of the overhang distance. Operating conditions should be moderated if abnormal vibration or noise is observed, even if the overhang distance and load moment are within allowable values.

Actuator Cable Length

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

(Note 4) When connecting via the interface box, 9m is the maximum available.
(Note) Make sure that the total length along with the power I/O cable connector is 10m or less.

Power I/O Cable Connector Length

Standard Connector Cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC-PWBIO□□□-RB supplied
0	Without cable	○ (Note 5)
1 ~ 3	1 ~ 3m	○
4 ~ 5	4 ~ 5m	○
6 ~ 7	6 ~ 7m	○
8 ~ 9	8 ~ 9m	○

(Note 5) Only terminal block connector is included. When selecting RCON-EC connection specification (ACR) as an option, select "0." Terminal block connector is not included. Refer to P. 30 for details.
(Note) Robot cable.

4-way Connector Cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○
S4 ~ S5	4 ~ 5m	○
S6 ~ S7	6 ~ 7m	○
S8 ~ S9	8 ~ 9m	○

(Note) Robot cable.

Main Specifications

Item			Description	
Lead		Ball screw lead (mm)	4	2
Horizontal	Payload	Max. payload (kg)	1	2
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200	100
		Min. speed (mm/s)	20	10
		Rated acceleration/deceleration (G)	0.5	0.3
		Max. acceleration/deceleration (G)	0.5	0.3
Vertical	Payload	Max. payload (kg)	0.3	0.7
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200	100
		Min. speed (mm/s)	20	10
		Rated acceleration/deceleration (G)	0.5	0.3
		Max. acceleration/deceleration (G)	0.5	0.3
Push		Max. push force (N)	9	16
		Max. push speed (mm/s)	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake	
		Brake holding force (kgf)	0.3	0.7
Stroke		Min. stroke (mm)	50	50
		Max. stroke (mm)	200	200
		Stroke pitch (mm)	25	25

Item	Description
Drive system	Rolling screw ϕ4mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (notation not available due to 2-point positioning function)
Base	Dedicated aluminum extruded material (A6063SS-T5 equivalent), black alumite treatment
Linear guide	Linear motion infinite circulating type
Allowable static moment	Ma: 11.7N·m
	Mb: 11.7N·m
	Mc: 22.0N·m
Allowable dynamic moment (Note 6)	Ma: 4.71N·m
	Mb: 4.71N·m
	Mc: 8.84N·m
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor (ϕ20)
Encoder type	Incremental
Number of encoder pulses	32768 pulse/rev

(Note 6) Based on the standard rated operation life of 5,000km. Operation life varies according to operating and mounting conditions. Please refer to General Catalog 2021 P. 1-244 for details on operation life.

Slider Type Moment Direction

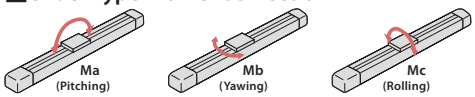


Table of Payload by Speed/Acceleration

The unit for payload is kg.

Lead 4

Orientation	Horizontal	Vertical
Speed	Acceleration (G)	
(mm/s)	0.5	0.5
0	1	0.3
100	1	0.3
150	1	0.3
200	1	0.3

Lead 2

Orientation	Horizontal	Vertical
Speed	Acceleration (G)	
(mm/s)	0.3	0.3
0	2	0.7
20	2	0.7
50	2	0.7
100	2	0.7

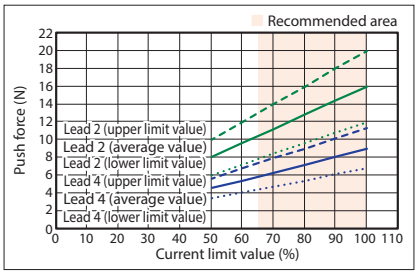
Stroke and Max. Speed

Lead (mm)	50 (mm)	75 (mm)	100 (mm)	125 (mm)	150 (mm)	175 (mm)	200 (mm)
4	200 <200>						
2	100 <100>						

(Unit: mm/s)

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

Correlation Diagrams between Push Force and Current Limit

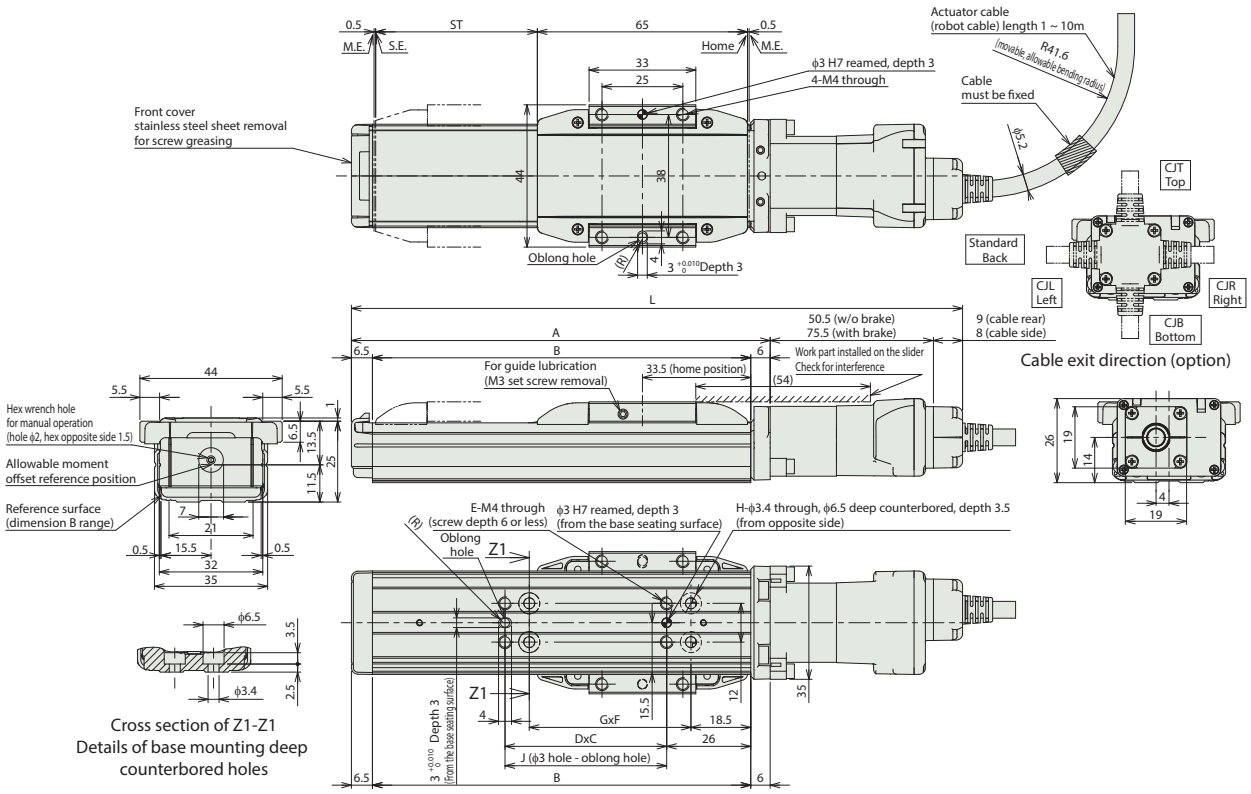


Dimensions

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

(Note) When the slider is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the M.E.
(Note) Fix the cable so that its base does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (option) can be changed by changing the cable box direction.

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



Dimensions by Stroke

Stroke		50	75	100	125	150	175	200
L (Note 8)	Without brake	189	214	239	264	289	314	339
	With brake	214	239	264	289	314	339	364
A		129.5	154.5	179.5	204.5	229.5	254.5	279.5
B		117	142	167	192	217	242	267
C		50	100	100	100	100	100	100
D		1	1	1	1	1	2	2
E		4	4	4	4	4	6	6
F		50	100	100	100	100	100	100
G		1	1	1	1	1	2	2
H		4	4	4	4	4	6	6
J		50	75	100	125	150	175	200

(Note 8) When selecting cable exit direction (option), 1 is subtracted from the dimensions.

Mass by Stroke

Stroke		50	75	100	125	150	175	200
Mass (kg)	Without brake	0.25	0.28	0.31	0.32	0.35	0.37	0.40
	With brake	0.27	0.30	0.33	0.34	0.37	0.39	0.42

Applicable Controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 28 for details on built-in controllers.

EC-GDS3

Coupled Motor | Body Width 40 mm | 24v Stepper Motor | Lead Screw

Model Specification Items

EC	-	GDS3	L	-		-		-		-	
Series		Type	Lead		Stroke		Actuator cable length		Power I/O cable connector length		Options
			L 2mm		10 ~ 30: 10mm ~ 30mm (every 10mm)		See actuator cable length table below		See power I/O cable connector length table below		See options below

CE RoHS 10

Horizontal | Horizontal | Side | Ceiling

Stroke

Stroke (mm)	RCON-EC connection specification (Note 1)	NPN/PNP specifications
10	○	○
20	○	○
30	○	○

(Note 1) Be sure to select "ACR" as an option.

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

Name	Option code	Reference page
RCON-EC connection specification (Note 2) (Note 3)	**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 2)	**PN**	23
Split motor and controller power supply specification (Note 2)	**TMD2**	23
Wireless communication specification (Note 3)	**WL**	23
Wireless axis operation specification (Note 3)	**WL2**	23

(Note 2) 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. As well, the interface box and conversion cable are not included.
(Note 3) When selecting the RCON-EC connection specification (ACR), the wireless communication specification (WL) and wireless axis operation supported specification (WL2) cannot be selected. When using wireless communication with RCON-EC connection, separately prepare the interface box, conversion cable, and power / I/O cable connector which are available as options. Please refer to P. 27 for details.

Separately Sold Options

Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	32
RCON-EC connection specification power / I/O cable (standard connector cable)	CB-REC-PWBIO□□□-RB	33
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	33
RCON-EC connection specification interface box for split motor and controller power supply (wireless specification)	ECW-CVNWL-CB-ACR	32

(Note) The power / I/O cable connector is a robot cable.
Please indicate the cable length in □□□. (Ex.: 010 = 1m)

Selection Notes

(1) "Main Specifications" displays the payload's maximum value. Please refer to "Table of Payload by Speed/Acceleration" for more details.
(2) If performing push-motion operations, refer to the "Correlation Diagrams between Push Force and Current Limit." The push forces listed are only reference values. Please refer to P. 26 for applicable notes.
(3) Pay close attention to the mounting orientation. Please refer to P. 5 for details.
(4) Recommended for use in stopper applications. Refer to the instruction manual for the usage range.

Actuator Cable Length

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

(Note 4) When connecting via the interface box, 9m is the maximum available.
(Note) Make sure that the total length along with the power I/O cable connector is 10m or less.

Power I/O Cable Connector Length

Standard Connector Cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC-PWBIO□□□-RB supplied
0	Without cable	○ (Note 5)
1 ~ 3	1 ~ 3m	○
4 ~ 5	4 ~ 5m	○
6 ~ 7	6 ~ 7m	○
8 ~ 9	8 ~ 9m	○

(Note 5) Only terminal block connector is included. When selecting RCON-EC connection specification (ACR) as an option, select "0." Terminal block connector is not included. Refer to P. 30 for details.
(Note) Robot cable.

4-way Connector Cable

Cable code	Cable length	User wiring specification (flying leads) CB-EC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○
S4 ~ S5	4 ~ 5m	○
S6 ~ S7	6 ~ 7m	○
S8 ~ S9	8 ~ 9m	○

(Note) Robot cable.

Main Specifications

Item			Description
Lead		Ball screw lead (mm)	2
Vertical	Payload	Max. payload (kg)	0.8
	Speed / acceleration/ deceleration	Max. speed (mm/s)	100
		Min. speed (mm/s)	10
		Rated acceleration/deceleration (G)	0.3
		Max. acceleration/deceleration (G)	0.3
Push		Max. push force (N)	17
		Max. push speed (mm/s)	20
Brake		Brake specification	Non-excitation actuating solenoid brake
		Brake holding force (kgf)	0.8
Stroke		Min. stroke (mm)	10
		Max. stroke (mm)	30
		Stroke pitch (mm)	10

Item	Description
Drive system	Rolling screw ϕ4mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (notation not available due to 2-point positioning function)
Rod non-rotation precision	-
Operation life	Vertical 5 million operating cycles
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor (ϕ20)
Encoder type	Incremental
Number of encoder pulses	32768 pulse/rev

Table of Payload by Speed/Acceleration

The unit for payload is kg.

Lead 2

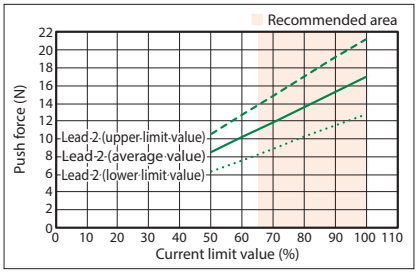
Orientation	Vertical
Speed (mm/s)	Acceleration (G)
	0.3
0	0.8
30	0.8
70	0.8
100	0.8

Stroke and Max. Speed

Lead (mm)	10 (mm)	20 (mm)	30 (mm)
2	100		

(Unit: mm/s)

Correlation Diagrams between Push Force and Current Limit

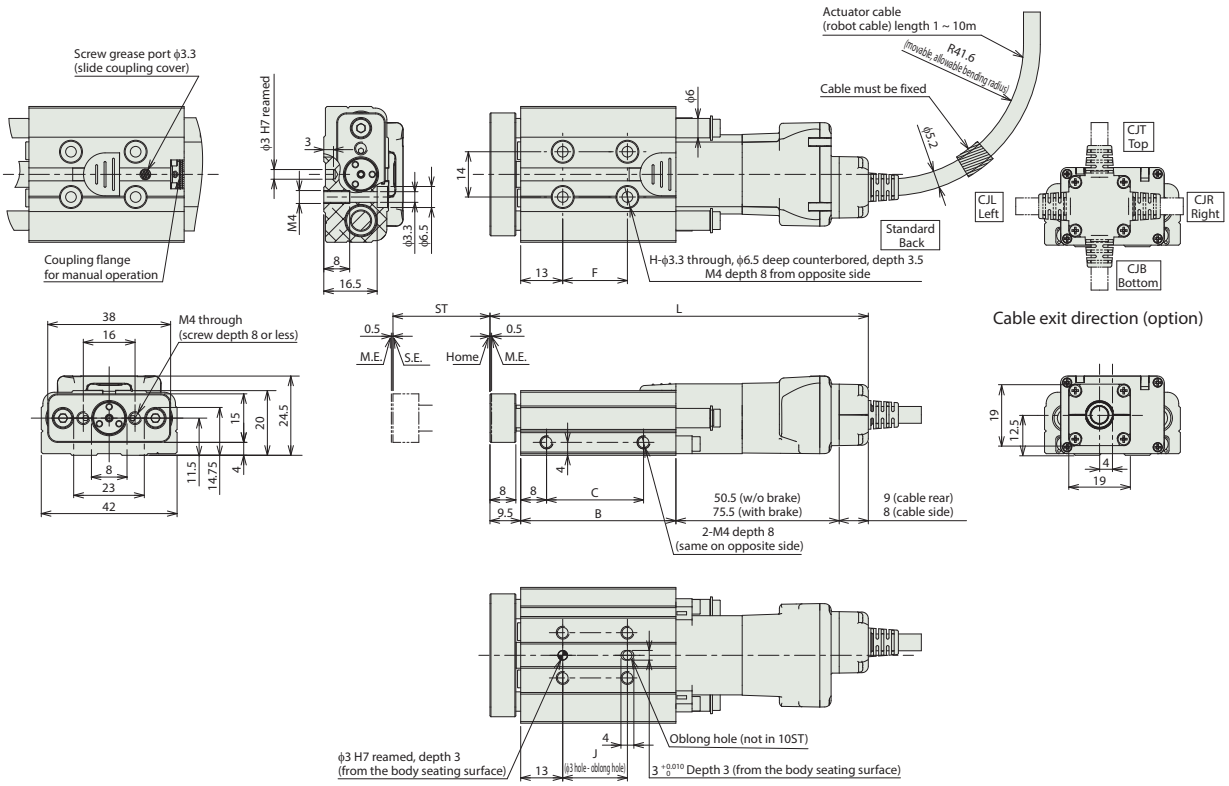


Dimensions

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

(Note) When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
(Note) Fix the cable so that its base does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (option) can be changed by changing the cable box direction.

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



Dimensions by Stroke

Stroke		10	20	30
L (Note 7)	Without brake	97	107	117
	With brake	122	132	142
B		28	38	48
C		10	20	30
F		0	10	20
H		2	4	4
J		0	10	20

(Note 7) When selecting cable exit direction (option), 1 is subtracted from the dimensions.

Mass by Stroke

Stroke		10	20	30
Mass (kg)	Without brake	0.15	0.17	0.19
	With brake	0.17	0.19	0.21

Applicable Controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 28 for details on built-in controllers.

EC-GDB3

Coupled Motor | Body Width 40 mm | 24v Stepper Motor | Lead Screw

Model Specification Items

EC	-	GDB3		-		-		-		-	
Series		Type	Lead		Stroke		Actuator cable length		Power I/O cable connector length		Options
			M 4mm L 2mm		10 10mm ~ ~ 50 50mm (every 10mm)		See actuator cable length table below		See power I/O cable connector length table below		See options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Stroke

Stroke (mm)	RCON-EC connection specification (Note 1)	NPN/PNP specifications
10	○	○
20	○	○
30	○	○
40	○	○
50	○	○

(Note 1) Be sure to select "ACR" as an option.

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

Name	Option code	Reference page
RCON-EC connection specification (Note 2) (Note 3)	**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 2)	**PN**	23
Split motor and controller power supply specification (Note 2)	**TMD2**	23
Wireless communication specification (Note 3)	**WL**	23
Wireless axis operation specification (Note 3)	**WL2**	23

(Note 2) 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. As well, the interface box and conversion cable are not included.

(Note 3) When selecting the RCON-EC connection specification (ACR), the wireless communication specification (WL) and wireless axis operation supported specification (WL2) cannot be selected. When using wireless communication with RCON-EC connection, separately prepare the interface box, conversion cable, and power / I/O cable connector which are available as options. Please refer to P. 27 for details.

Separately Sold Options

Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	32
RCON-EC connection specification power / I/O cable (standard connector cable)	CB-REC-PWBIO□□□-RB	33
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	33
RCON-EC connection specification interface box for split motor and controller power supply (wireless specification)	ECW-CVNWL-CB-ACR	32

(Note) The power / I/O cable connector is a robot cable.
Please indicate the cable length in □□□. (Ex.: 010 = 1m)

Selection Notes

(1) "Main Specifications" displays the payload's maximum value. Please refer to "Table of Payload by Speed/Acceleration" for more details.

(2) If performing push-motion operations, refer to the "Correlation Diagrams between Push Force and Current Limit." The push forces listed are only reference values. Please refer to P. 26 for applicable notes.

(3) Pay close attention to the mounting orientation. Please refer to P. 5 for details.

(4) When radial and moment loads are applied to the rod, refer to the instruction manual.

(5) Cannot be used for stopper applications.

Actuator Cable Length

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

(Note 4) When connecting via the interface box, 9m is the maximum available.
(Note) Make sure that the total length along with the power I/O cable connector is 10m or less.

Power I/O Cable Connector Length

Standard Connector Cable

Cable code	Cable length	User wiring specification (flying leads)
		CB-EC-PWBIO□□□-RB supplied
0	Without cable	○ (Note 5)
1 ~ 3	1 ~ 3m	○
4 ~ 5	4 ~ 5m	○
6 ~ 7	6 ~ 7m	○
8 ~ 9	8 ~ 9m	○

(Note 5) Only terminal block connector is included. When selecting RCON-EC connection specification (ACR) as an option, select "0." Terminal block connector is not included. Refer to P. 30 for details.
(Note) Robot cable.

4-way Connector Cable

Cable code	Cable length	User wiring specification (flying leads)
		CB-EC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○
S4 ~ S5	4 ~ 5m	○
S6 ~ S7	6 ~ 7m	○
S8 ~ S9	8 ~ 9m	○

(Note) Robot cable.

Main Specifications

Item			Description	
Lead		Ball screw lead (mm)	4	2
Horizontal	Payload	Max. payload (kg)	1	2
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200	100
		Min. speed (mm/s)	20	10
		Rated acceleration/deceleration (G)	0.5	0.3
		Max. acceleration/deceleration (G)	0.5	0.3
Vertical	Payload	Max. payload (kg)	0.4	0.8
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200	100
		Min. speed (mm/s)	20	10
		Rated acceleration/deceleration (G)	0.5	0.3
		Max. acceleration/deceleration (G)	0.5	0.3
Push		Max. push force (N)	10	17
		Max. push speed (mm/s)	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake	
		Brake holding force (kgf)	0.4	0.8
Stroke		Min. stroke (mm)	10	10
		Max. stroke (mm)	50	50
		Stroke pitch (mm)	10	10

Item	Description
Drive system	Rolling screw ϕ4mm, rolled C10
Positioning repeatability	(10ST) ±0.1mm, (20ST or higher) ±0.05mm
Lost motion	- (notation not available due to 2-point positioning function)
Rod non-rotation precision	-
Operation life	Horizontal 10 million operating cycles, vertical 5 million operating cycles
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor (ϕ20)
Encoder type	Incremental
Number of encoder pulses	32768 pulse/rev

Table of Payload by Speed/Acceleration

The unit for payload is kg.

Lead 4

Orientation	Horizontal	Vertical
Speed	Acceleration (G)	
(mm/s)	0.5	0.5
0	1	0.4
50	1	0.4
100	1	0.4
200	1	0.4

Lead 2

Orientation	Horizontal	Vertical
Speed	Acceleration (G)	
(mm/s)	0.3	0.3
0	2	0.8
30	2	0.8
70	2	0.8
100	2	0.8

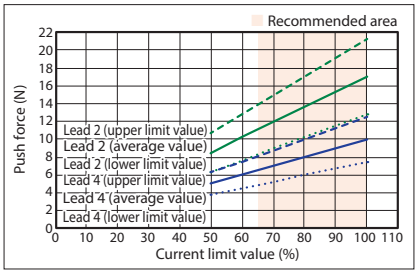
Stroke and Max. Speed

Lead (mm)	10 (mm)	20 (mm)	30 (mm)	40 (mm)	50 (mm)
4	200 <200>				
2	100 <100>				

(Unit: mm/s)

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

Correlation Diagrams between Push Force and Current Limit



Dimensions

CAD drawings can be downloaded from our website.
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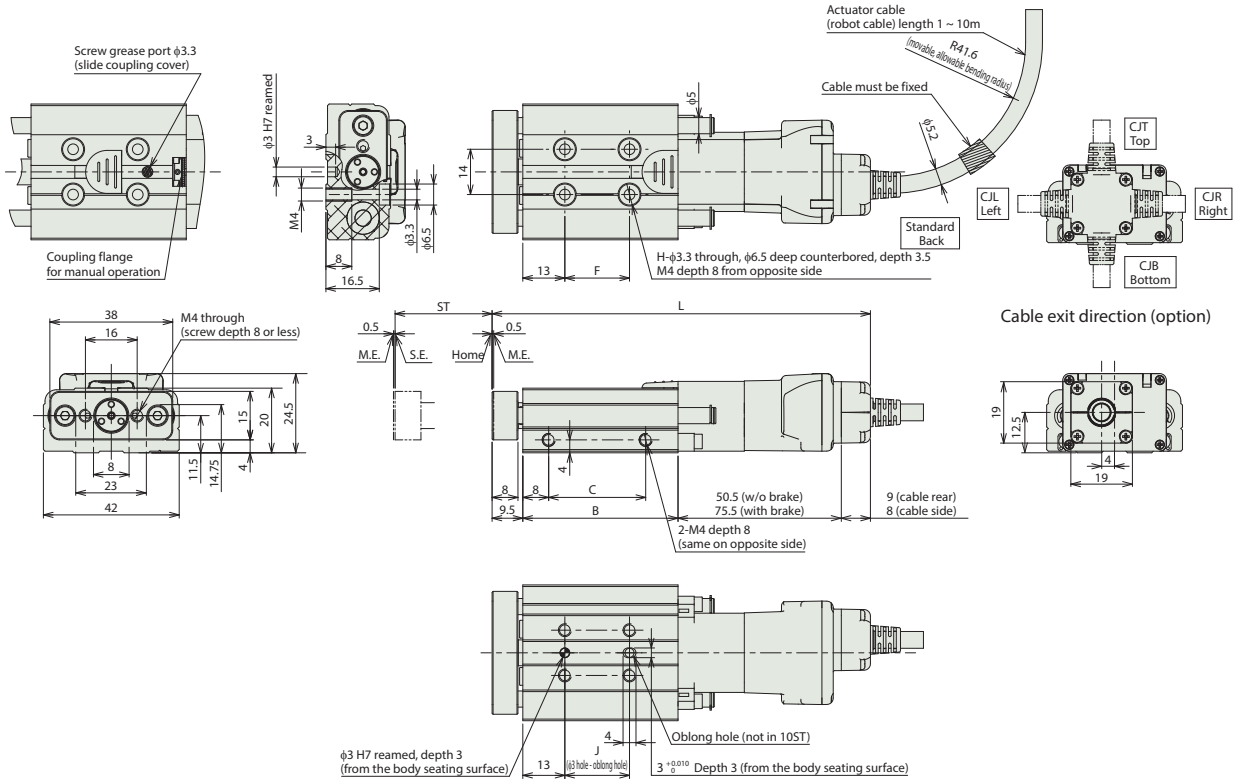
(Note) When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
(Note) Fix the cable so that its base does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (option) can be changed by changing the cable box direction.

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



Dimensions by Stroke

Stroke		10	20	30	40	50
L (Note 7)	Without brake	97	107	117	127	137
	With brake	122	132	142	152	162
B		28	38	48	58	68
C		10	20	30	40	50
F		0	10	20	30	40
H		2	4	4	4	4
J		0	10	20	30	40

(Note 7) When selecting cable exit direction (option), 1 is subtracted from the dimensions.

Mass by Stroke

Stroke		10	20	30	40	50
Mass (kg)	Without brake	0.14	0.17	0.19	0.21	0.23
	With brake	0.16	0.19	0.21	0.23	0.25

Applicable Controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 28 for details on built-in controllers.

EC-GDB3

EC-T3

Coupled Motor | Body Width 30 mm | 24V Stepper Motor | Lead Screw

Model Specification Items

EC	-	T3		-		-		-		-	
Series		Type	Lead		Stroke		Actuator cable length		Power I/O cable connector length		Options
			M 4mm L 2mm		10 10mm 〃 〃 50 50mm (every 10mm)		See actuator cable length table below		See power I/O cable connector length table below		See options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

Stroke

Stroke (mm)	RCON-EC connection specification (Note 1)	NPN/PNP specifications
10	○	○
20	○	○
30	○	○
40	○	○
50	○	○

(Note 1) Be sure to select "ACR" as an option.

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

Name	Option code	Reference page
RCON-EC connection specification (Note 2) (Note 3)	**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 2)	**PN**	23
Split motor and controller power supply specification (Note 2)	**TMD2**	23
Wireless communication specification (Note 3)	**WL**	23
Wireless axis operation specification (Note 3)	**WL2**	23

(Note 2) 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. As well, the interface box and conversion cable are not included.

(Note 3) When selecting the RCON-EC connection specification (ACR), the wireless communication specification (WL) and wireless axis operation supported specification (WL2) cannot be selected. When using wireless communication with RCON-EC connection, separately prepare the interface box, conversion cable, and power / I/O cable connector which are available as options. Please refer to P. 27 for details.

Separately Sold Options

Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	32
RCON-EC connection specification power / I/O cable (standard connector cable)	CB-REC-PWBIO□□□-RB	33
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	33
Air cylinder compatible mounting plate	EC-CSB-T3-(stroke)	24
RCON-EC connection specification interface box for split motor and controller power supply (wireless specification)	ECW-CVNWL-CB-ACR	32

(Note) The power / I/O cable connector is a robot cable.
Please indicate the cable length in □□□. (Ex.: 010 = 1m)

Selection Notes

(1) "Main Specifications" displays the payload's maximum value. Please refer to "Table of Payload by Speed/Acceleration" for more details.

(2) If performing push-motion operations, refer to the "Correlation Diagrams between Push Force and Current Limit." The push forces listed are only reference values. Please refer to P. 26 for applicable notes.

(3) Pay close attention to the mounting orientation. Please refer to P. 5 for details.

(4) For the table displacement amount, refer to the instruction manual.

Actuator Cable Length

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

(Note 4) When connecting via the interface box, 9m is the maximum available.
(Note) Make sure that the total length along with the power I/O cable connector is 10m or less.

Power I/O Cable Connector Length

Standard Connector Cable

Cable code	Cable length	User wiring specification (flying leads)
		CB-EC-PWBIO□□□-RB supplied
0	Without cable	○ (Note 5)
1 ~ 3	1 ~ 3m	○
4 ~ 5	4 ~ 5m	○
6 ~ 7	6 ~ 7m	○
8 ~ 9	8 ~ 9m	○

(Note 5) Only terminal block connector is included. When selecting RCON-EC connection specification (ACR) as an option, select "0." Terminal block connector is not included. Refer to P. 30 for details.
(Note) Robot cable.

4-way Connector Cable

Cable code	Cable length	User wiring specification (flying leads)
		CB-EC2-PWBIO□□□-RB supplied
S1 ~ S3	1 ~ 3m	○
S4 ~ S5	4 ~ 5m	○
S6 ~ S7	6 ~ 7m	○
S8 ~ S9	8 ~ 9m	○

(Note) Robot cable.

Main Specifications

Item			Description	
Lead		Ball screw lead (mm)	4	2
Horizontal	Payload	Max. payload (kg)	1	2
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200	100
		Min. speed (mm/s)	20	10
		Rated acceleration/deceleration (G)	0.5	0.3
		Max. acceleration/deceleration (G)	0.5	0.3
Vertical	Payload	Max. payload (kg)	0.4	0.8
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200	100
		Min. speed (mm/s)	20	10
		Rated acceleration/deceleration (G)	0.5	0.3
		Max. acceleration/deceleration (G)	0.5	0.3
Push		Max. push force (N)	10	17
		Max. push speed (mm/s)	20	20
Brake		Brake specification	Non-excitation actuating solenoid brake	
		Brake holding force (kgf)	0.4	0.8
Stroke		Min. stroke (mm)	10	10
		Max. stroke (mm)	50	50
		Stroke pitch (mm)	10	10

Item	Description
Drive system	Rolling screw ϕ4mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (notation not available due to 2-point positioning function)
Allowable static moment	Ma: 1.90 N·m (10ST) 5.08 N·m (20ST) 11.7 N·m (30ST or higher)
	Mb: 1.90 N·m (10ST) 5.08 N·m (20ST) 11.7 N·m (30ST or higher)
	Mc: 7.99 N·m (10ST) 14.0 N·m (20ST) 22.0 N·m (30ST or higher)
Allowable dynamic moment (Note 6)	Ma: 1.04 N·m (10ST) 2.35 N·m (20ST) 4.71 N·m (30ST or higher)
	Mb: 1.04 N·m (10ST) 2.35 N·m (20ST) 4.71 N·m (30ST or higher)
	Mc: 4.37 N·m (10ST) 6.46 N·m (20ST) 8.84 N·m (30ST or higher)
Operation life	Horizontal 10 million operating cycles, vertical 5 million operating cycles
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Stepper motor (ϕ20)
Encoder type	Incremental
Number of encoder pulses	32768 pulse/rev

(Note 6) Based on the standard rated operation life of 5,000km. Operation life varies according to operating and mounting conditions. Please refer to General Catalog 2021 P. 1-244 for details on operation life.

Table type moment direction

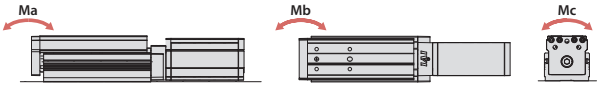


Table of Payload by Speed/Acceleration

The unit for payload is kg.

Lead 4

Orientation	Horizontal	Vertical
Speed	Acceleration (G)	
(mm/s)	0.5	0.5
0	1	0.4
100	1	0.4
150	1	0.4
200	1	0.4

Lead 2

Orientation	Horizontal	Vertical
Speed	Acceleration (G)	
(mm/s)	0.3	0.3
0	2	0.8
20	2	0.8
50	2	0.8
100	2	0.8

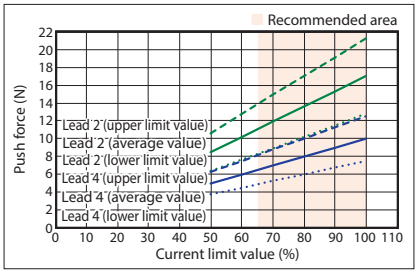
Stroke and Max. Speed

Lead (mm)	10 (mm)	20 (mm)	30 (mm)	40 (mm)	50 (mm)
4	200 <200>				
2	100 <100>				

(Unit: mm/s)

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

Correlation Diagrams between Push Force and Current Limit

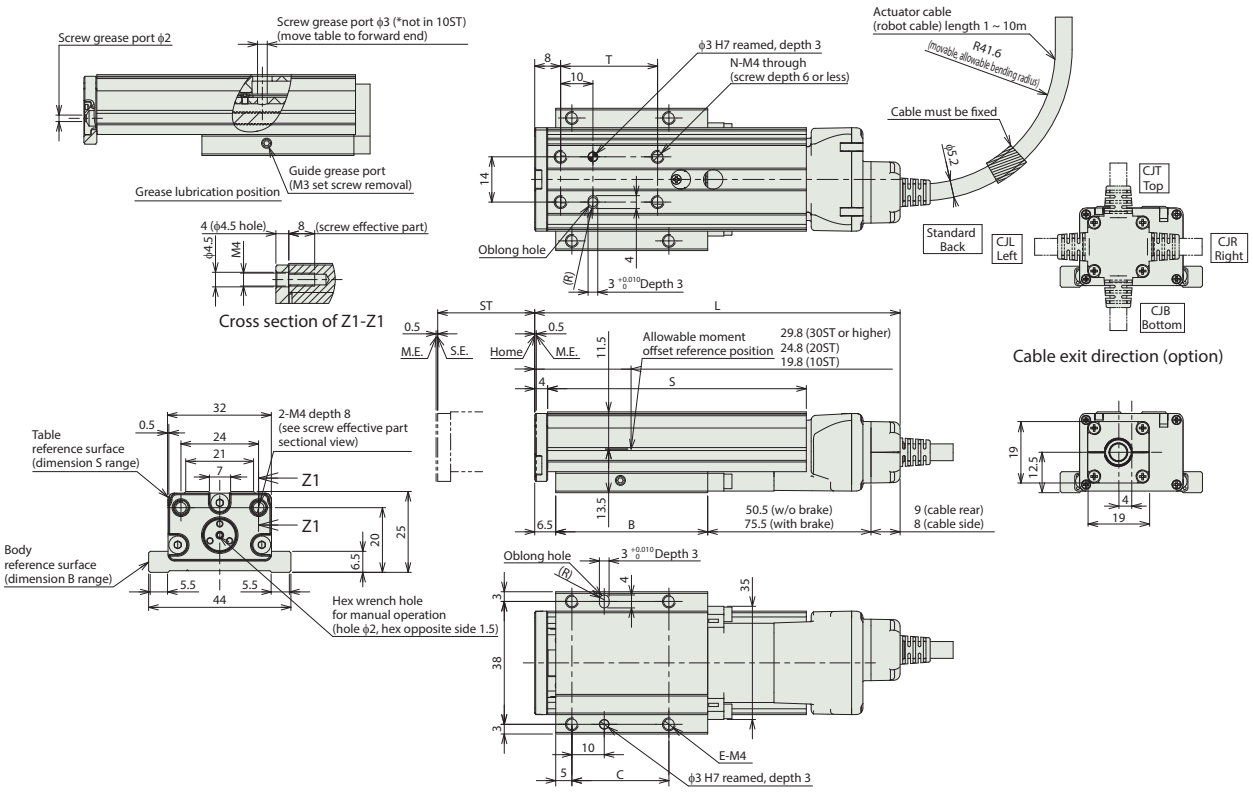


Dimensions

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

(Note) Upon home return, the table will move to the M.E. Be careful of interference with surrounding objects.
(Note) Fix the cable so that its base does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (option) can be changed by changing the cable box direction.

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



Dimensions by Stroke

Stroke		10	20	30	40	50
L (Note 8)	Without brake	93	103	113	123	133
	With brake	118	128	138	148	158
B		27	37	47	57	67
C		15	20	30	40	50
E		4	4	4	4	4
N		4	4	4	4	4
S		40	60	80	90	100
T		20	20	30	40	50

(Note 8) When selecting cable exit direction (option), 1 is subtracted from the dimensions.

Mass by Stroke

Stroke		10	20	30	40	50
Mass (kg)	Without brake	0.15	0.18	0.21	0.23	0.25
	With brake	0.17	0.20	0.23	0.25	0.27

Applicable Controllers

(Note) EC Series products are equipped with a built-in controller. Please refer to P. 28 for details on built-in controllers.

ELECYLINDER Series Options

RCON-EC connection specification

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

Description Select when connecting to a field network via an R-unit (connected to RCON-EC).
*This usage involves direct connection to RCON-EC. When using wireless communication, separately prepare an interface box, interface box conversion cable, and power / I/O cable connector.

Brake

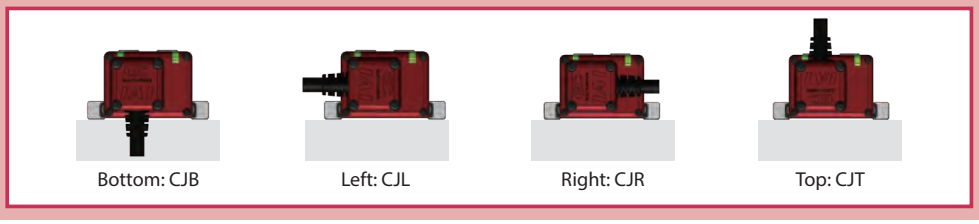
Model **B** Applicable models **All models**

Description This mechanism stops the slider, rod, or table from moving when the power or servo is turned off. When mounting the actuator vertically, this option is required.

Cable exit direction

Model **CJB/CJL/CJR/CJT** Applicable models **All models**

Description The mounting direction of the actuator cable mounted on the actuator body can be changed among top, bottom, left, and right.



Non-motor end specification

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

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

PN specification *Cannot be selected simultaneously with the ACR option

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

Description For I/O specification, NPN is the standard specification.
Specifying this option changes input/output to the PNP specification.

Split motor and controller power supply specification

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

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

Description This option provides a separate motor power supply and control power supply. Select to allow shutting down the actuator drive power only.
Please refer to P. 30 for more information on wiring.

Wireless communication specification *Cannot be selected simultaneously with the ACR option

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

Description This option enables support for wireless communication. Specifying this option enables wireless communication with the TB-03 teaching pendant.
The start point, end point, and AVD can be adjusted via wireless communication.
When using wireless communication with RCON-EC connection, separately prepare an interface box, conversion cable, and power / I/O cable connector.

Wireless axis operation support specification *Cannot be selected simultaneously with the ACR option

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.
Refer to P. 2-436 of the General Catalog 2021 for precautions on axis operations using a wireless connection.
(Note) Customers cannot change WL to WL2, or WL2 to WL. Please contact IAI for this.
When using wireless communication with RCON-EC connection, separately prepare an interface box, conversion cable, and power / I/O cable connector.

■ Individual Options

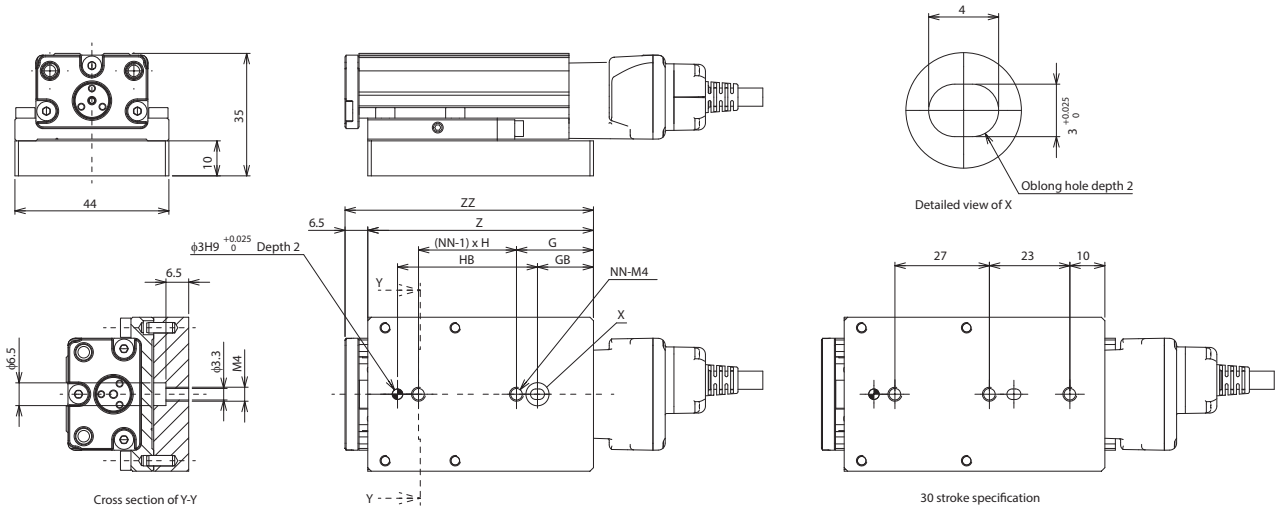
Air cylinder mounting plates

These plates provide compatibility for mounting with some models of air cylinders.
Plates can be mounted on the base side to enable mounting in accordance with the air cylinder body mounting hole positions.
Mounting to the table surface is not supported. Please contact our sales department for mounting compatibility details.
*Not shipped assembled. Assembly required.

■ **Applicable Model: EC-T3**

■ **Model: EC-CSB-T3-(stroke) (Material: aluminum)**

◆ **Accessories**
· Hex socket bolts: M3×15 (4 pcs)
· Parallel pins: ϕ3×8 B type h7 (2 pcs)

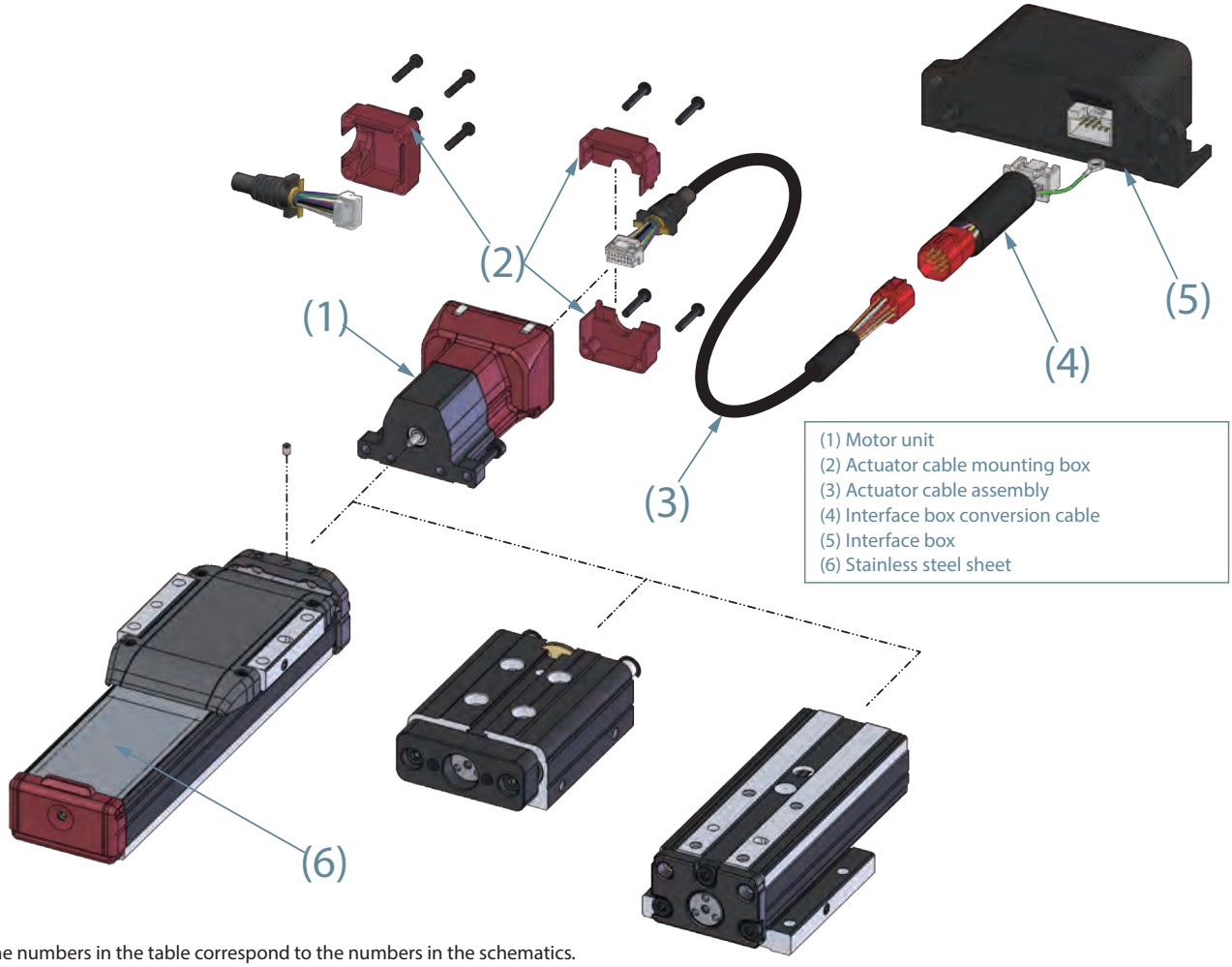


Stroke	10	20	30	40	50
Z	54.5	64.5	74.5	90.5	117.5
ZZ	61	71	81	97	124
G	15	22	*	14	16
GB	9	16	26	27	54
H	25	28	*	31	29
HB	37	40	40	55	55
NN	2	2	3	3	4
Mass [kg]	0.062	0.074	0.086	0.104	0.136

*For 30 stroke, refer to the 30 stroke specification.

EC maintenance part model list

SL3/GDS3/GDB3/T3



The numbers in the table correspond to the numbers in the schematics.

(1) Motor unit

(Accessories: Bolts, screws, hex wrench)

Type	Brake	Model
SL3 GDS3 GDB3 T3	No	EC-MUSLTGD3
	Yes	EC-MUSLTGD3-B

(2) Actuator cable mounting box

(Accessories: Screws)

Type	Cable exit direction	Model
SL3 GDS3 GDB3 T3	Back	EC-CASBR-SLTGD3
	Side	EC-CASBS-SLTGD3

(3) Actuator cable assembly

(□□□ is cable length)

Type	Model
SL3 GDS3 GDB3 T3	CB-EC-SLTGD3-MPA□□□-AS

(4) Interface box conversion cable

Type	Model
SL3 GDS3 GDB3 T3	CB-CVN-BJ002

(5)-1 Interface box

Type	Wireless	I/O	Model
SL3 GDS3 GDB3 T3	None	NPN	ECW-CVN-CB
		PNP	ECW-CVP-CB
	WL WL2	NPN	ECW-CVNWL-CB
		PNP	ECW-CVPWL-CB

(5)-2 Split motor and controller power supply interface box

Type	Wireless	I/O	Model
SL3 GDS3 GDB3 T3	None	NPN	ECW-CVN-CB-TMD2
		PNP	ECW-CVP-CB-TMD2
	WL WL2	NPN	ECW-CVNWL-CB-TMD2
		PNP	ECW-CVPWL-CB-TMD2

(5)-3 RCON-EC connection specification (option model: ACR) split motor and controller power supply interface box

Type	Wireless	I/O	Model
SL3 GDS3 GDB3 T3	WL WL2	NPN _REC	ECW-CVNWL-CB-ACR

(6) Stainless steel sheet

Type	Model
SL3	ST-EC-SL3-(stroke)

Push-motion operation

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

[Precautions]

· When pushing, the static and dynamic allowable moments of the guide must be taken into consideration.

[Push force adjustment]

· The push force during push-motion operation can be adjusted by changing the "push force (%)" on ELECYLINDER.

·Please check the push force for the applicable model in the "Correlation Diagrams between Push Force and Current Limit" on the production specification page, and select a model that matches your conditions.

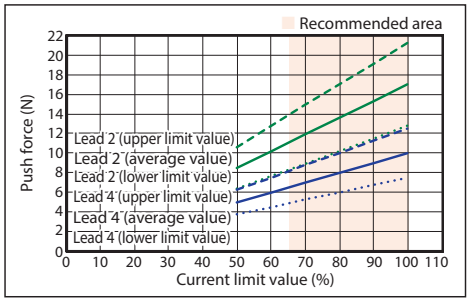
[Lead selection method]

Select a lead with the desired push force within the recommended current limit value range (yellow area of the graph).

Lead 4 would be appropriate for the EC-T3 type shown in the figure to the right if a push force of 8N is desired. Selecting lead 2 would limit the adjustment range.

(Example)

EC-T3



<Correlation Diagrams between Push Force and Current Limit>

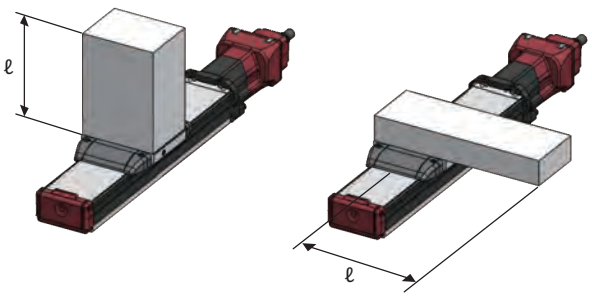
Caution

· The "Correlation Diagrams between Push Force and Current Limit" show lower guidelines for push force for each current limit value.

· Individual differences in the motor and variations in machine efficiency may cause the push force lower limit to be exceeded, even if the current limit value is the same.
This is especially true when the current limit value is 30% or lower, in which case the push force lower limit could be exceeded by 40% or more.

Overhang load length (ℓ)

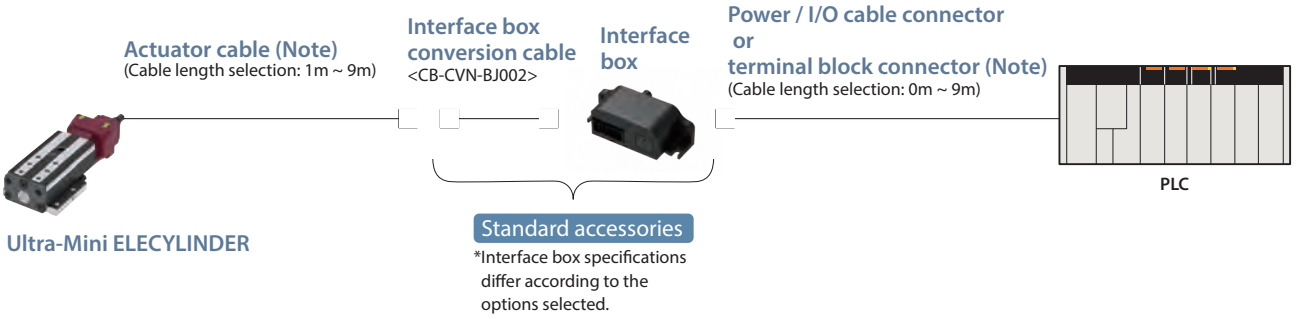
This is the approximate offset at which the actuator can operate smoothly even when the workpiece or bracket is offset from the slider. Vibration or other factors could cause failure if the approximate length is greatly exceeded. The product should therefore be used within the approximate length. Please refer to the reference page of each model for detailed figures.



Selection notes

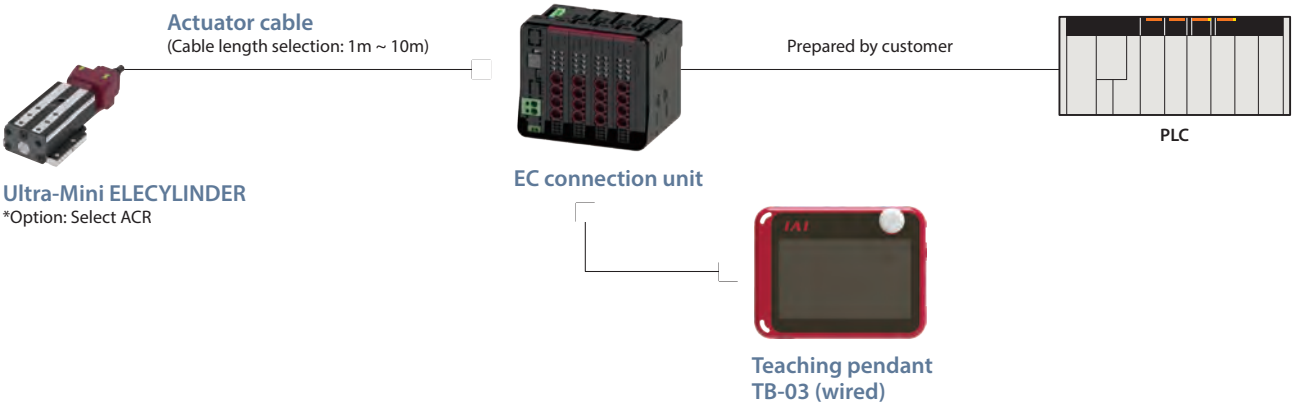
When connecting the Ultra-Mini ELECYLINDER to a PLC, three connection methods are available.
Select from these three connection methods.
Take note of the connection restrictions and items to be prepared separately.
*Contact our sales department to change the connection method after purchase.

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

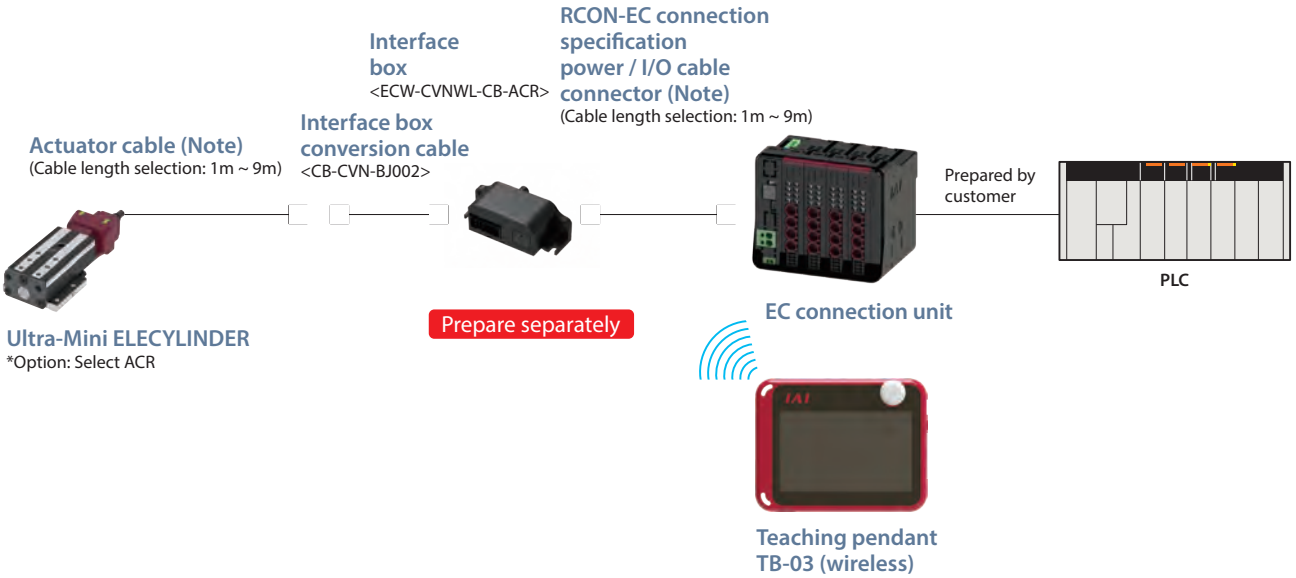


(Note) The total cable length of the actuator cable and power / I/O cable connector (cable prepared by the customer in the case of the terminal block connector) should be selected so as not to exceed 10m.

2. When connecting to the PLC via an EC connection unit (RCON-EC connection specification) [Teaching pendant connected via wiring]

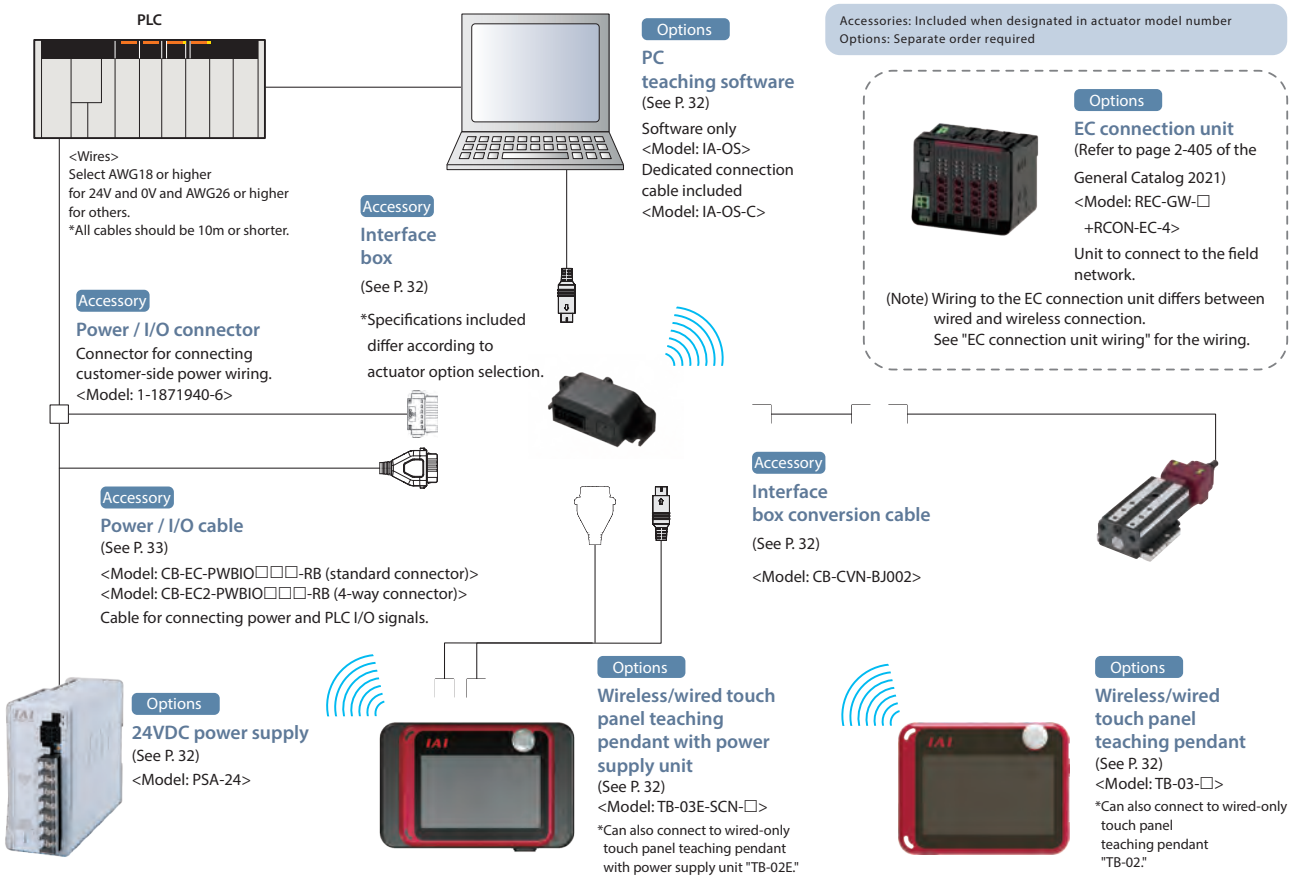


3. When connecting to the PLC via an EC connection unit (RCON-EC connection specification) [Teaching pendant wirelessly connected]



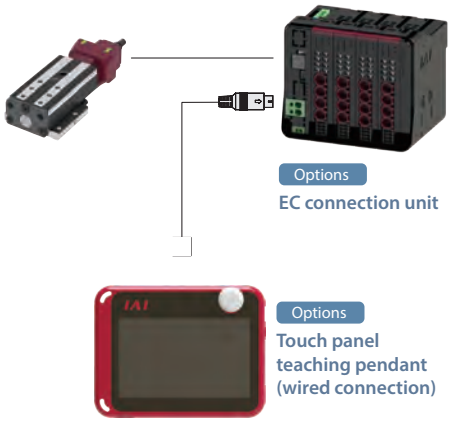
(Note) Select so that the total length of the actuator cable and RCON-EC connection specification power / I/O cable connector is 10m or less.

System Configuration

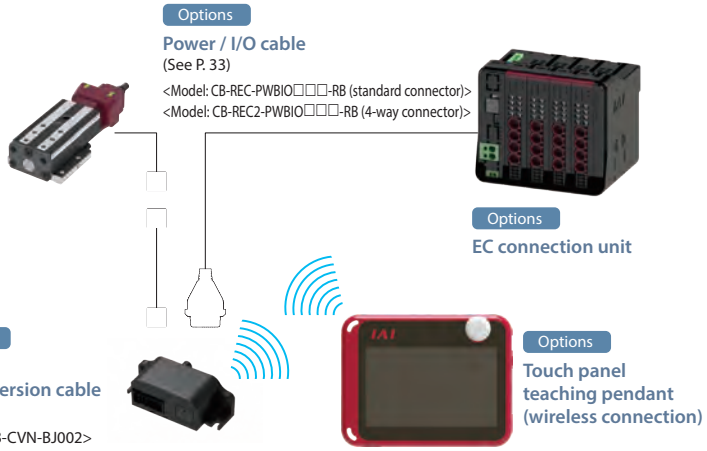


EC connection unit wiring

(For teaching pendant wired connection)



(For teaching pendant wireless connection)



List of Accessories

■ Power / I/O Cables, Connectors

[Standard connector]

0	None	Power / I/O connector (1-1871940-6)
	Yes	—
1 to 9	None	Power / I/O cable (CB-EC-PWBIO□□□-RB)

[Four-way connector]

Product category		Accessory
Power I/O cable connector length (selected with actuator model)	RCON-EC connection specification (ACR) selection	
S1 ~ S9	None	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 (Note 1)			Rated 0.7A, max. 1.1A
Brake release power supply			24VDC ±10%, 200mA (only for external brake release)
Generated heat			2W
Inrush current (Note 2)			3A
Momentary power failure resistance			Max 500μs
Motor size			ϕ20
Motor rated current			0.4A
Motor control system			Weak field-magnet vector control
Supported encoders			Incremental (32768 pulse/rev)
SIO			RS-485 1ch (Modbus protocol compliant)
Interface box specification	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 teaching software, touch panel teaching pendant
Data retention memory			Position and parameters are saved in non-volatile memory (no limit to number of rewrites)
LED display	Controller status display		Servo ON (green light ON) / Alarm (red light ON) / Initializing when power comes ON (orange light ON) / Minor failure alarm (green/red alternately blinking) / Operation from teaching: Stop from teaching (red light ON) / Servo OFF (light OFF)
	Wireless status display		Initializing wireless hardware, without wireless connection, or connecting from TP board (light OFF) Connecting through wireless (green blinking) / Wireless hardware error (red blinking) / Initializing when power comes ON (orange light ON)
	Forward end/backward end display (Note 3)		Lit orange: Forward end/backward end, push idling detection Blinking orange: Push complete
Predictive maintenance/preventative maintenance			When the number of movements or operation distance has exceeded the set value and when the LED (right side) blinks alternately green and red at overload warning *Only when configured in advance
Ambient operating temperature			0 ~ 40°C
Ambient operating humidity			5%RH ~ 85%RH or less (no condensation or freezing)
Operating ambience			No corrosive gas or excessive dust
Insulation resistance			500VDC 10MΩ
Electric shock protection mechanism			Class 1 basic insulation
Cooling method			Natural air cooling

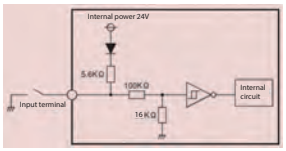
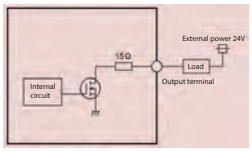
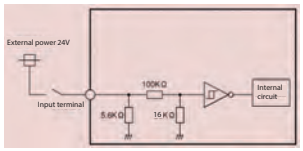
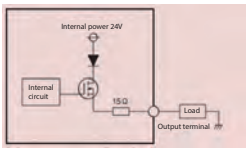
(Note 1) When connecting to RCON-EC, 0.3A is subtracted from the value.
(Note 2) Inrush current flows for approximately 5ms after the power is input. (At 40°C) Inrush current value differs depending on the impedance on the power line.
(Note 3) The LED display function can be changed via parameter setting.

Solenoid Valve Method

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

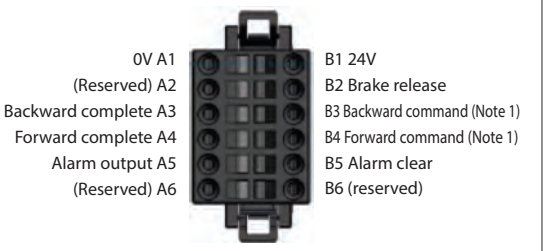
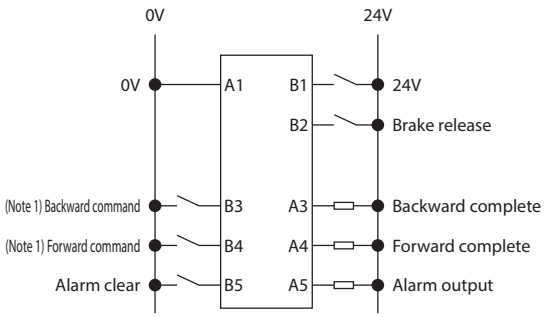
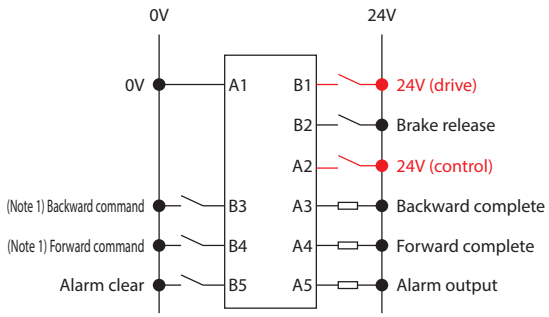
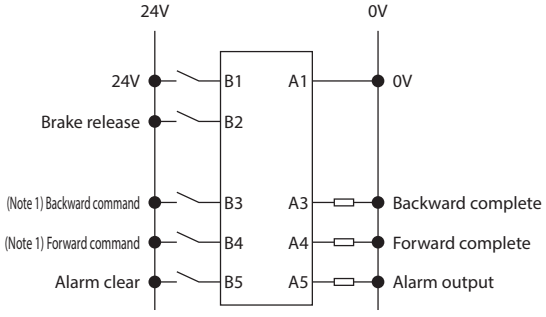
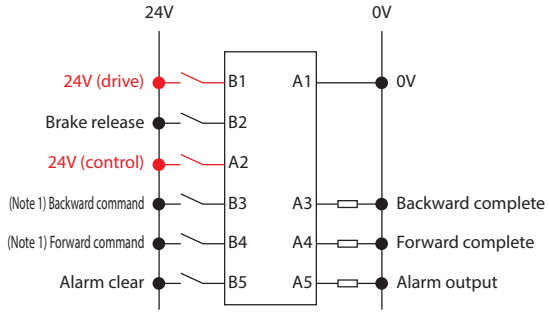
<Caution>
Operation cannot be performed using the single solenoid method when operating connected to RCON-EC.

Interface Box Specification (I/O specification)

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			Drive power and control power are separate for the TMD2 specification. 
I/O logic	NPN		
	PNP		

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

I/O Signal Table

B3 (Note 1)	Backward	ST0	Backward command
B5	Alarm clear	RES	Alarm clear
A4	Forward complete	LS1/PE1	Forward complete/push complete
B2	Brake release	BKRLS	Brake forced release (for brake equipped specification)
A1	0V	0V	0V input

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

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

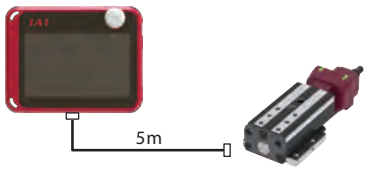
Options

Wireless/wired touch panel teaching pendant

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

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

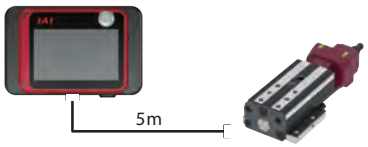
Configuration Wireless or wired connection



Wired/wireless touch panel teaching pendant with power supply unit

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

Configuration Wireless or wired connection



TB-03 Body Specifications

	5.9VDC (5.7 ~ 6.3V) [supplied from AC adapter]
	150mA (supplied from controller)
	5%RH ~ 85%RH (no condensation or freezing)
	10 ~ 57Hz / Amplitude: 0.075mm
	670g (body) + approx. 285g (dedicated cable)
	SD/SDHC memory card interface mounted (1GB ~ 32GB)
	Japanese/English/Chinese

Power Supply Unit Specifications

Rated input voltage		Single-phase 100 ~ 230VAC±10%
Input current (Under rated I/O conditions in ambient temperature of 25℃)		1.4A typ. (100VAC) 0.6A typ. (230VAC)
Frequency range		50/60Hz ±5%
Power capacity (Under rated I/O conditions in ambient temperature of 25℃)		141VA (100VAC) 145VA (230VAC)
Output voltage		24VDC ±10%
Load current	Standard Dust-proof/splash-proof High rigidity	With energy-saving setting disabled: Rated 3.5A, max. 4.2A With energy-saving setting enabled: Rated 2.2A
	Mini type	Max. 2.0A
Output capacity		With energy-saving setting disabled: Rated 84W, max. 98.4W With energy-saving setting enabled: Rated 52.8W
Ambient operating temperature		0 ~ 40°C (no condensation or freezing)
Ambient operating humidity		5%RH ~ 85%RH (no condensation or freezing)
Ambient storage temperature		-20 ~ 70°C
Atmosphere		No corrosive gas or excessive dust
Altitude		1000m or less above sea level
Vibration resistance		Frequency: 10 ~ 57Hz / Amplitude: 0.075mm Frequency: 57 ~ 150Hz / Acceleration: 9.8m/s^2 [XYZ directions] Sweep time: 10 minutes, Number of sweeps: 10
Package drop		Drop height: 800mm / 1 corner, 3 edges, 6 faces
Overvoltage category		II
Pollution degree		2
Electric shock protection class		II
Ingress protection		IP30
Mass		Approx. 740kg
Cooling method		Natural air cooling

PC teaching software (Windows only)

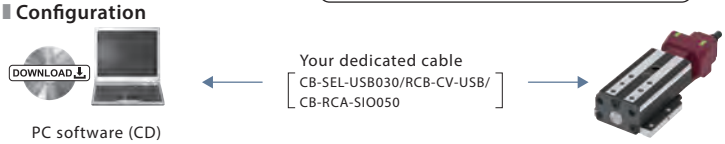
Features This start-up support software provides functions such as position teaching, trial operation, and monitoring. It provides a complete range of functions required to make adjustments, to help reduce start-up time.

Supported Windows versions: 7/10

Model **IA-OS** (software only, for customers who already own a dedicated connection cable)
* Please purchase through your distributor and a download link will be sent to your valid email address.

Please contact IAI for the current supported versions.

Configuration

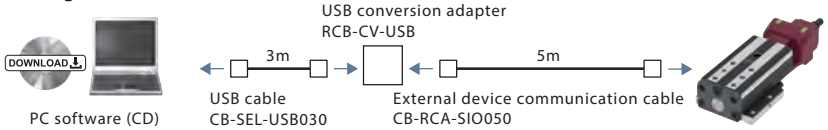


PC software (CD)
(Download only)

Model **IA-OS-C** (with an external device communication cable + USB conversion adapter + USB cable)
* Please purchase through your distributor and a download link will be sent to your valid email address.

Please contact IAI for the current supported versions.

Configuration



PC software (CD)
(Download only)

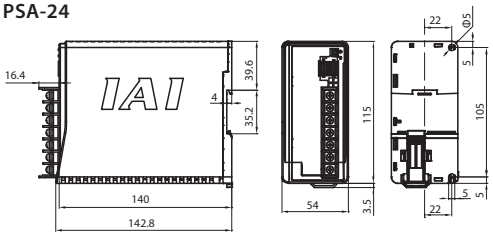
24V power

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

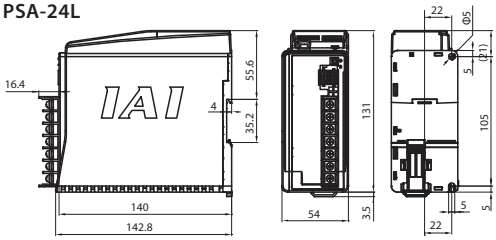
Model **PSA-24L** (with fan)

External Dimensions

PSA-24



PSA-24L



Specifications Table

Item	Specifications	
	100VAC input	200VAC input
Power input voltage range	100VAC ~ 230 VAC ±10%	
Input power supply current	3.9A or less	1.9A or less
Power capacity	Without fan: 250VA With fan: 390VA	Without fan: 280VA With fan: 380VA
Inrush current *1	Without fan: 17A (typ) With fan: 27.4A (typ)	Without fan: 34A (typ) With fan: 54.8A (typ)
Generated heat	23W (204W continuous rated) 37W (300W continuous rated)	33W (204W continuous rated) 54W (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	86% or more	90% or more
Parallel connection *3	Up to 5 units	

*1 The pulse width of flowing inrush current is less than 5ms.
*2 This power supply can vary the output voltage according to the load in order to enable parallel operation. The power supply unit is therefore for use with IAI controllers only.
*3 Parallel connection cannot be used under the following conditions.
- Parallel connection of PSA-24 (specification without fan) and PSA-24L (specification with fan)
- Parallel connection with a power supply unit other than this power supply
- Parallel connection with PS-24

Power capacity calculation "Calculator" software

Just input the model number of the ELECYLINDER to be connected to ensure sufficient units for 24V power.

IAI Calculator 検索

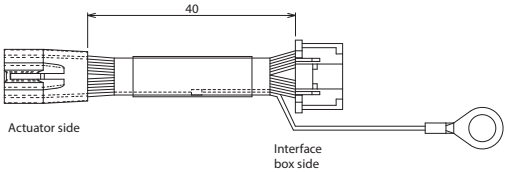
RCON-EC connection specification split motor and controller power supply interface box (wireless)

Model **ECW-CVNWL-CB-ACR**

Interface box conversion cable

Features This cable connects the actuator cable and interface box.

Model **CB-CVN-BJ002**



Maintenance/Optional Parts (cables)

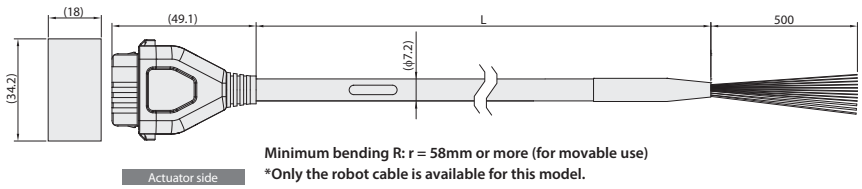
When individually ordered cables or replacements must be ordered, refer to the model number below.

■ **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 9m (for example, 030 = 3m)



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

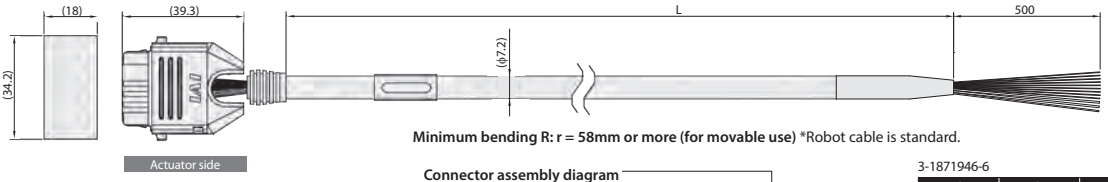
3-1871946-6

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

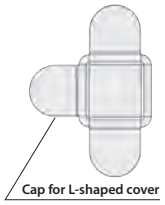
(Note 1) 24V (control) when split motor and controller power supply specification (TMD2) is selected.

Model CB-EC2-PWBIO□□□-RB

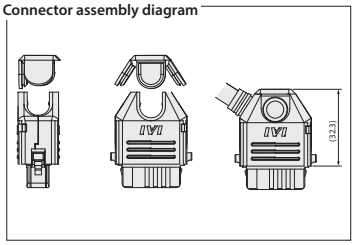
*Please indicate the cable length (L) in □□□, maximum 9m (for example, 030 = 3m)



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



Connector assembly diagram



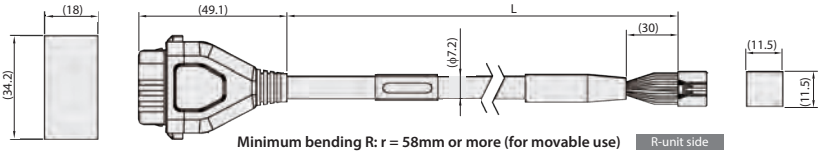
3-1871946-6

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 9m (for example, 030 = 3m)



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

3-1871946-6

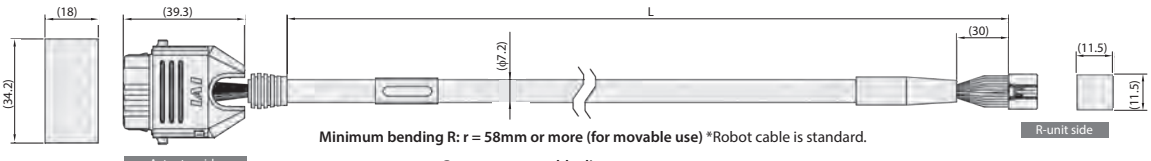
Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V (MP)	B1
Light blue (AWG22)	24V (CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Yellow (AWG26)	SD+	B6
Light gray (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2

DF62C-13S-2.2C(18)

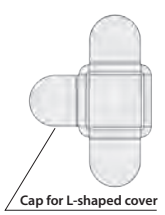
Pin No.	Signal name	Color
2	0V	Black (AWG18)
1	24V (MP)	Red (AWG18)
12	24V (CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Yellow (AWG26)
10	SD-	Light gray (AWG26)
3	IN0	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

Model CB-REC2-PWBIO□□□-RB

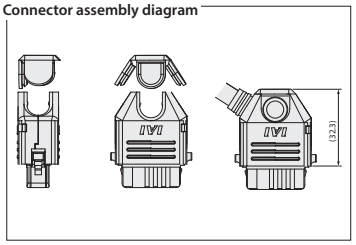
*Please indicate the cable length (L) in □□□, maximum 9m (for example, 030 = 3m)



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



Connector assembly diagram



1-1871946-6

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

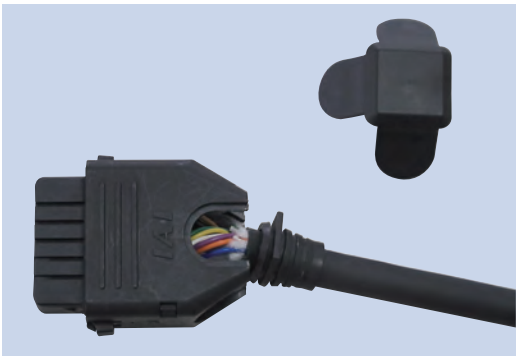
DF62C-13S-2C(18)

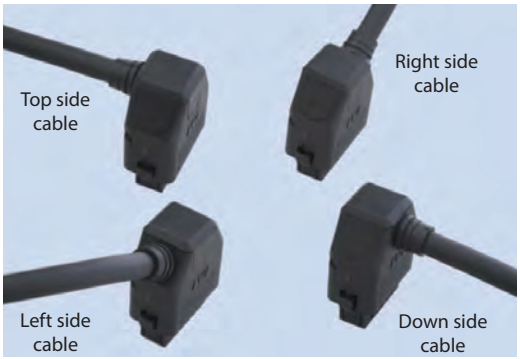
Pin No.	Signal name	Color
2	0V	Black (AWG22)
1	24V (MP)	Red (AWG22)
12	24V (CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Yellow (AWG26)
10	SD-	Light gray (AWG26)
3	IN0	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

■ Four-Way Connector Cable

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

Model number: CB-EC2-PWBIO□□□-RB
CB-REC2-PWBIO□□□-RB (RCON-EC connection specification)





Cable exit direction

- The wiring on the side opposite the connector is left unprepared.
- The cable length may be from 1m to 9m long.
  The length can be specified in 1m units.
- Example models are listed below.

  Cable length **1**m → CB-EC2-PWBIO**010**-RB
  Cable length **3**m → CB-EC2-PWBIO**030**-RB
  Cable length **9**m → CB-EC2-PWBIO**090**-RB

Follow the procedure below to assemble the connector in the desired direction.

(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.

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