Electric Actuators

Miniature Rod Type **Miniature Slide Table Type**

Step Motor (Servo/24 VDC)

CE cULus RoHS

Compact and lightweight

- Maximum pushing force: **50 N**
- Positioning repeatability: **±0.05 mm**
- Possible to set position, speed and force. (64 points)

Rod Type *Series LEPY*

Size: 6, 10

Weight **240 g**

∗ LEPY6□-25

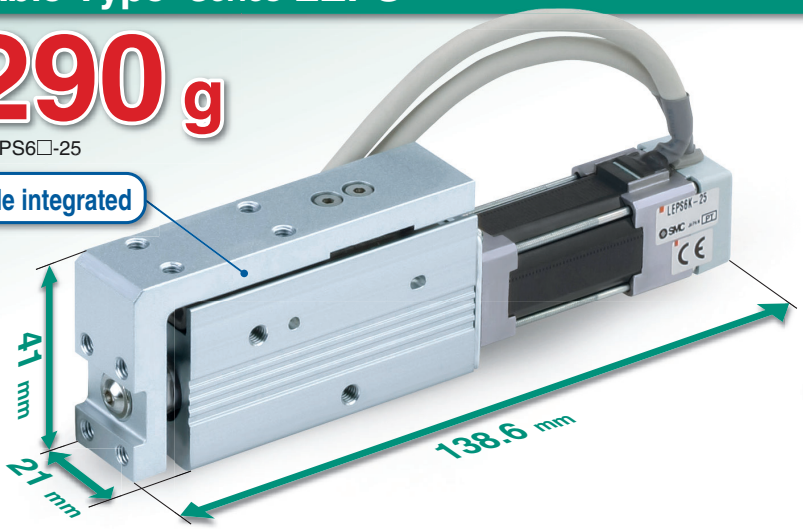
Slide Table Type *Series LEPS*

Size: 6, 10

Weight **290 g**

∗ LEPS6□-25

Linear guide integrated



Step Motor (Servo/24 VDC)

Controller/Driver

- **Step data input type** Series JXC73/83
- **Programless type** Series LECP1
- **Pulse input type** Series LECPA
- **Fieldbus compatible Network** Series JXC□1 Series JXC92/93

Series LEPY/LEPS

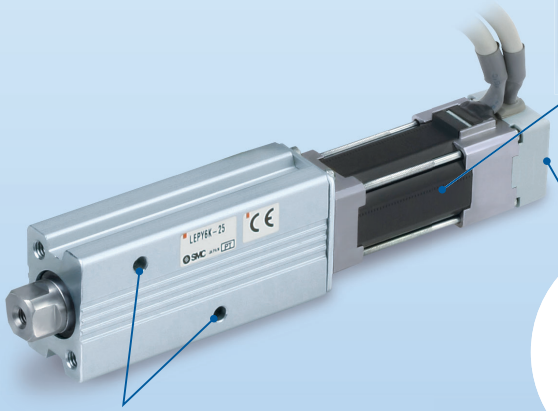
SMC

CAT.EUS100-92Bbb-UK

Compact and lightweight

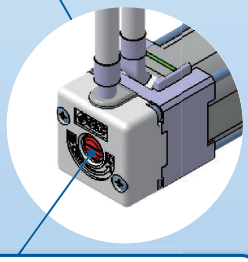
Rod Type Series LEPY

Weight 240 g
(LEPY6□-25)



Body mounting through-hole

Motor type can be selected to suit the application.
(Size 10 only)
- High pushing force type/basic type
- Compact and lightweight motor type

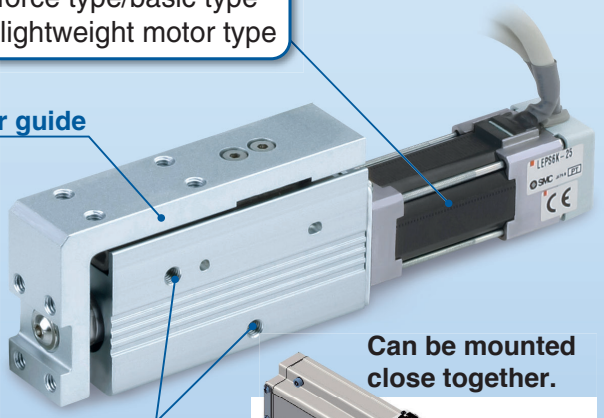


Manual override screw
For rod/table operation.
Adjustment operation possible when power OFF

Slide Table Type Series LEPS

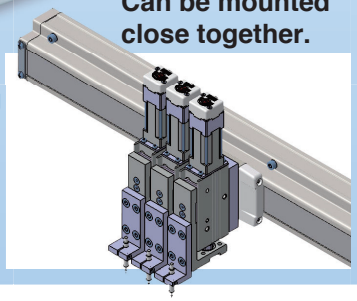
Weight 290 g
(LEPS6□-25)

Linear guide

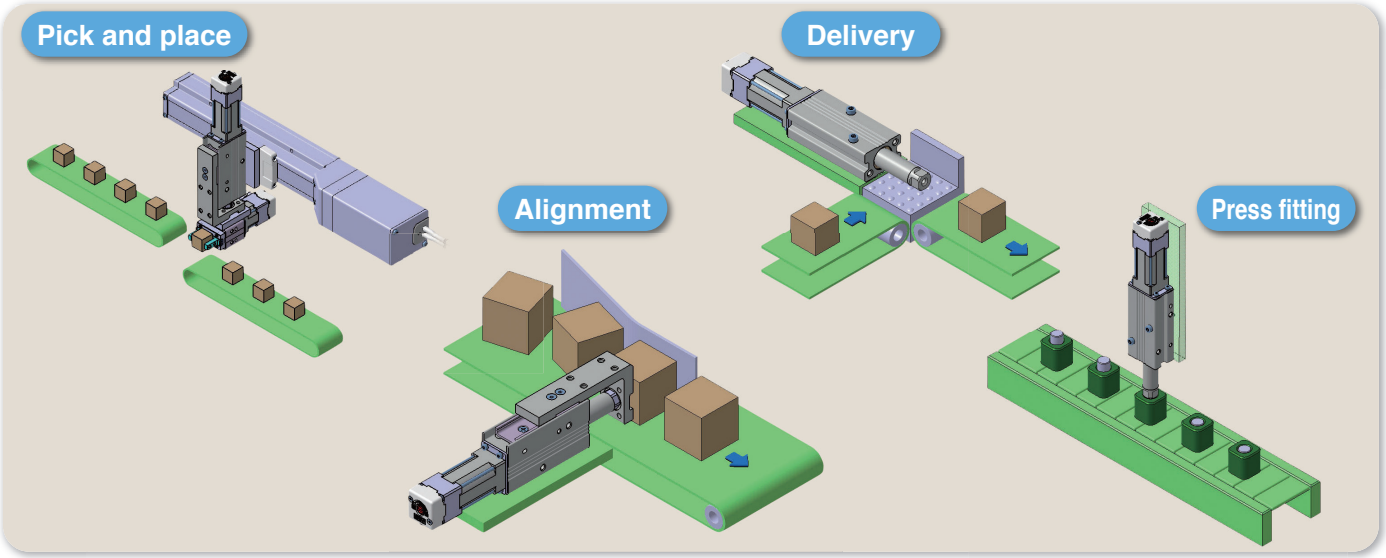


Body mounting through-hole

Can be mounted close together.



Application Examples



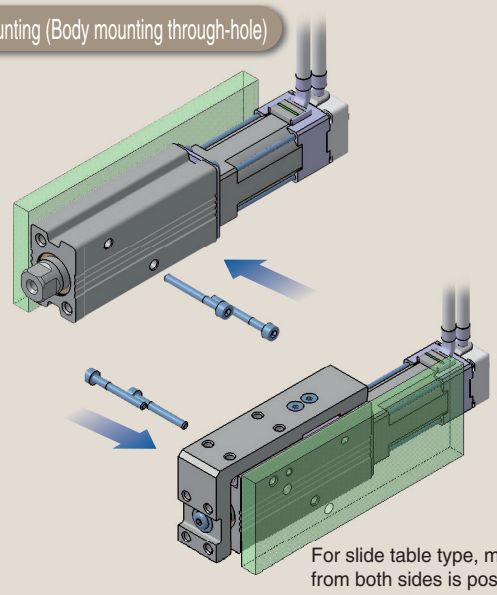
Variations

Type	Size	Screw lead	Pushing force [N]		Max. work load [kg] (Horizontal)		Max. work load [kg] (Vertical)		Max. speed [mm/s] (Horizontal)		Stroke [mm]
			Basic	Compact	Basic	Compact	Basic	Compact	Basic	Compact	
Rod type Series LEPY	6	4	14 to 20	—	1.0	—	0.5	—	150	—	25, 50, 75
		8	7 to 10	—	0.75	—	0.25	—	300	—	
	10	5	25 to 50	24 to 40	2.0	2.0	1.5	1.5	200	200	
		10	12.5 to 25	12 to 20	1.5	1.5	1.0	1.0	350	350	
Slide table type Series LEPS	6	4	14 to 20	—	1.0	—	0.5	—	150	—	25, 50
		8	7 to 10	—	0.75	—	0.25	—	300	—	
	10	5	25 to 50	24 to 40	2.0	2.0	1.5	1.5	200	200	
		10	12.5 to 25	12 to 20	1.5	1.5	1.0	1.0	350	350	

Mounting Variations

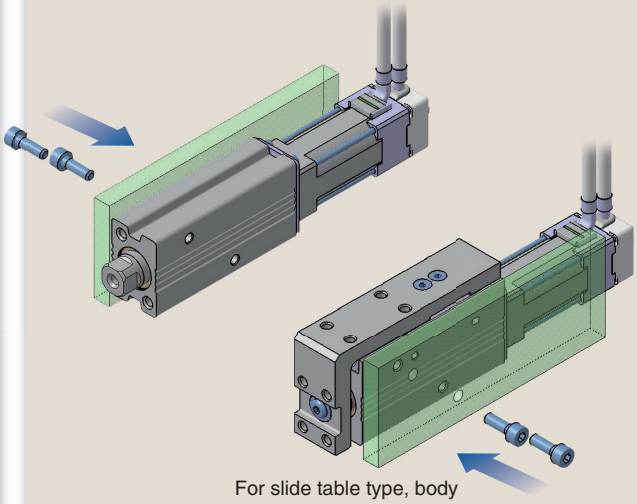
Mounting from various directions

Side mounting (Body mounting through-hole)



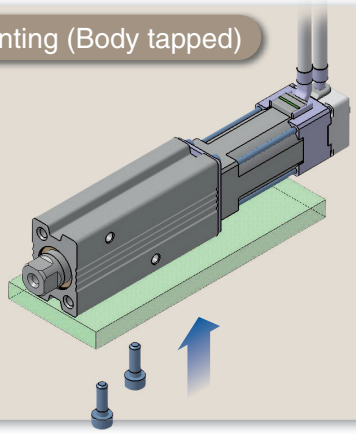
For slide table type, mounting from both sides is possible.

Side mounting (Body tapped)

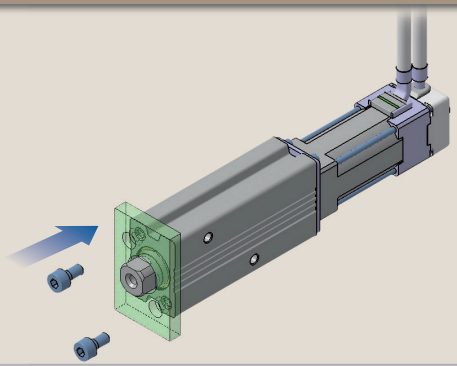


For slide table type, body tapped from both sides.

Bottom mounting (Body tapped)



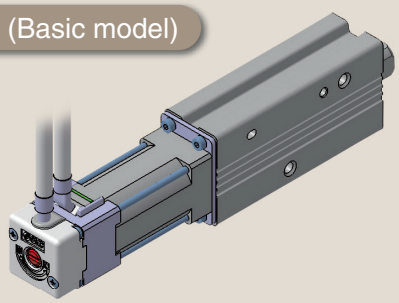
Axial mounting * Rod type only (Body tapped)



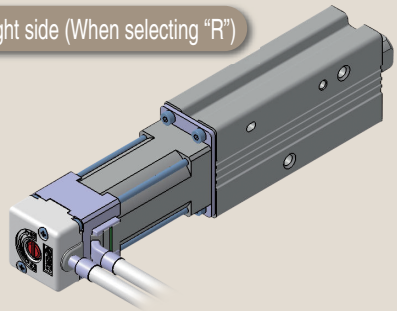
Motor Cable Entry Direction

Can be selected from 4 directions.

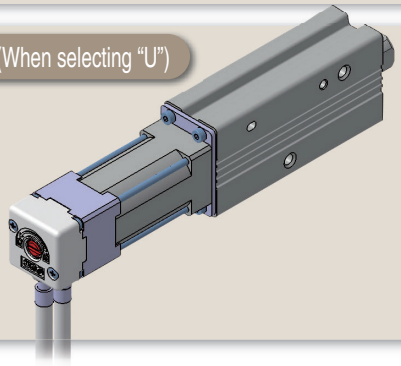
Top entry (Basic model)



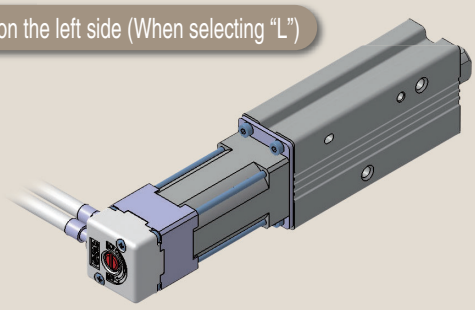
Entry on the right side (When selecting "R")



Bottom entry (When selecting "U")



Entry on the left side (When selecting "L")



Fieldbus-compatible Gateway (GW) Unit

Series LEC-G

◎Conversion unit for Fieldbus network and LEC serial communication

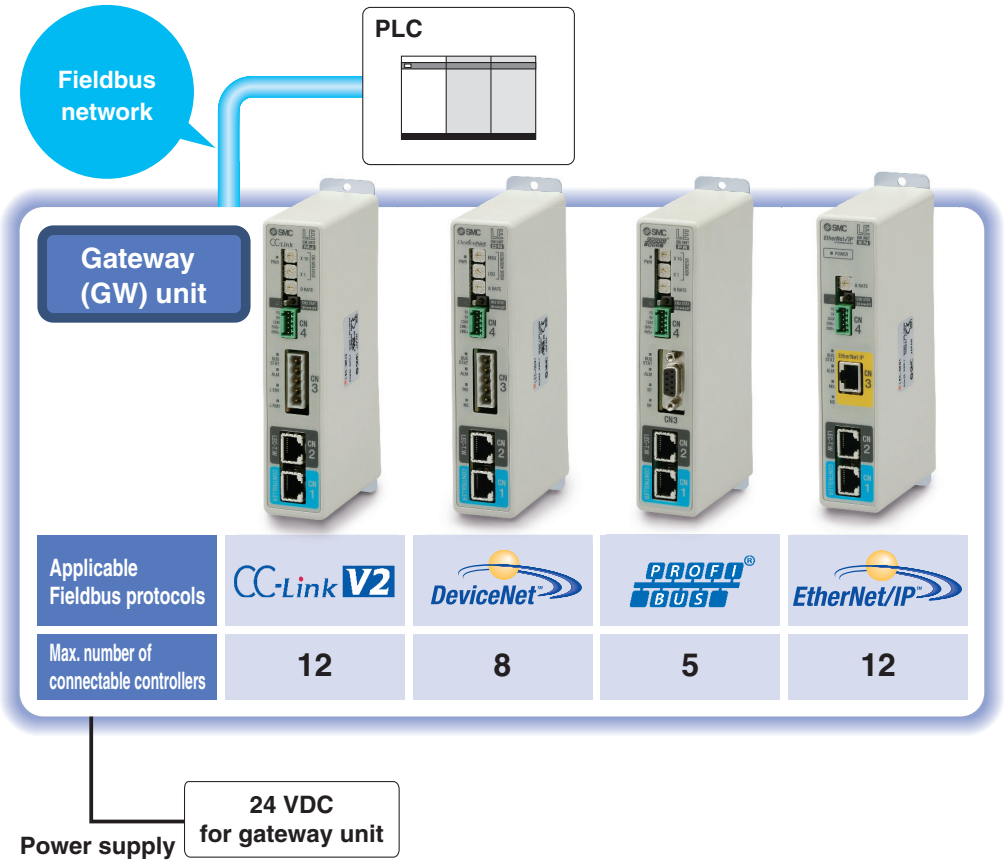
Applicable Fieldbus protocols: CC-Link V2, DeviceNet™, PROFIBUS®, EtherNet/IP™

◎Two methods of operation

Step data input: Operate using preset step data in the controller.

Numerical data input: The actuator operates using values such as position and speed from the PLC.

◎Values such as position, speed can be checked on the PLC.



Programless Type *Series LECP1*

Step motor
(Servo/24 VDC)
LECP1

No Programming

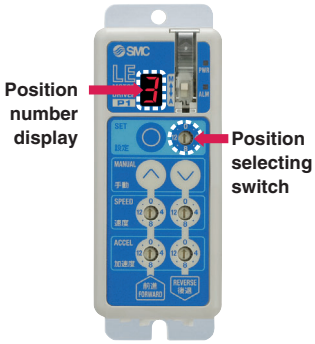
Capable of setting up an electric actuator operation without using a PC or teaching box

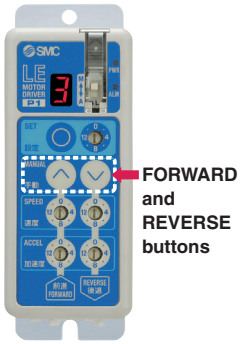
1 Setting position number → **2 Setting a stop position** → **3 Registration**

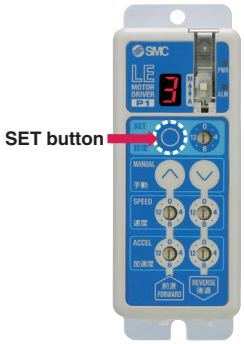
Setting a registered number for the stop position
Maximum 14 points

Moving the actuator to a stop position using FORWARD and REVERSE buttons

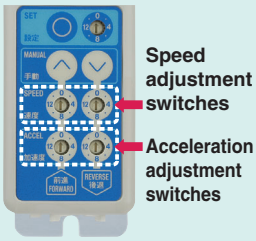
Registering the stop position using SET button





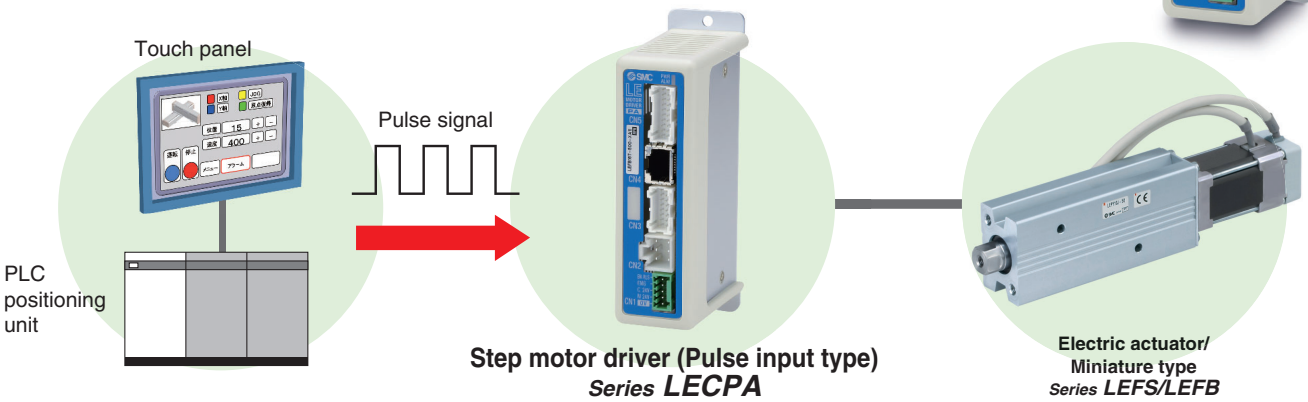


Speed/Acceleration 16-level adjustment



Pulse Input Type *Series LECPA*

- **A driver that uses pulse signals to allow positioning at any position. The actuator can be controlled from the customers' positioning unit.**



- **Return-to-origin command signal**
  Enables automatic return-to-origin action.

- **With force limit function (Pushing force/Gripping force operation available)**
  Pushing force/Positioning operation possible by switching signals.

Function

Item	Programless type LECP1	Pulse input type LECPA
Step data and parameter setting	• Select using controller operation buttons	• Input from controller setting software (PC) • Input from teaching box
Step data "position" setting	• Direct teaching • JOG teaching	• No "Position" setting required Position and speed set by pulse signal
Number of step data	14 points	—
Operation command (I/O signal)	Step No. [IN*] input only	Pulse signal
Completion signal	[OUT*] output	[INP] output

Setting Items

TB: Teaching box PC: Controller setting software

Item		Contents	Easy mode		Normal mode	Pulse input type LECPA	Programless type LECP1*
			TB	PC	TB·PC		
Step data setting (Excerpt)	Movement MOD	Selection of "absolute position" and "relative position"	△	●	●	No setting required	Fixed value (ABS)
	Speed	Transfer speed	●	●	●		Select from 16-level
	Position	[Position]: Target position [Pushing]: Pushing start position	●	●	●		Direct teaching JOG teaching
	Acceleration/Deceleration	Acceleration/deceleration during movement	●	●	●		Select from 16-level
	Pushing force	Rate of force during pushing operation	●	●	●	Set in units of 1 %	Select from 3-level (weak, medium, strong)
	Trigger LV	Target force during pushing operation	△	●	●	Set in units of 1 %	No setting required (same value as pushing force)
	Pushing speed	Speed during pushing operation	△	●	●	Set in units of 1 mm/s	No setting required
	Moving force	Force during positioning operation	△	●	●	Set to (Different values for each actuator) %	
	Area output	Conditions for area output signal to turn ON	△	●	●	Set in units of 0.01 mm	
	In position	[Position]: Width to the target position [Pushing]: How much it moves during pushing	△	●	●	Set to (Different values for each actuator) or more (Units: 0.01 mm)	
Parameter setting (Excerpt)	Stroke (+)	+ side limit of position	×	×	●	Set in units of 0.01 mm	
	Stroke (–)	– side limit of position	×	×	●	Set in units of 0.01 mm	
	ORIG direction	Direction of the return to origin can be set.	×	×	●	Compatible	Compatible
	ORIG speed	Speed during return to origin	×	×	●	Set in units of 1 mm/s	No setting required
	ORIG ACC	Acceleration during return to origin	×	×	●	Set in units of 1 mm/s	
Test	JOG		●	●	●	Continuous operation at the set speed can be tested while the switch is being pressed.	Hold down MANUAL button (⌃⌄) for uniform sending (speed is specified value)
	MOVE		×	●	●	Operation at the set distance and speed from the current position can be tested.	Press MANUAL button (⌃⌄) once for sizing operation (speed, sizing amount are specified values)
	Return to ORIG		●	●	●	Compatible	Compatible
	Test drive	Operation of the specified step data	●	●	● (Continuous operation)	Not compatible	Compatible
	Forced output	ON/OFF of the output terminal can be tested.	×	×	●	Compatible	Not compatible
Monitor	DRV mon	Current position, speed, force and the specified step data can be monitored.	●	●	●	Compatible	
	In/Out mon	Current ON/OFF status of the input and output terminal can be monitored.	×	×	●	Compatible	
ALM	Status	Alarm currently being generated can be confirmed.	●	●	●	Compatible	Compatible (display alarm group)
	ALM Log record	Alarm generated in the past can be confirmed.	×	×	●	Compatible	Not compatible
File	Save/Load	Step data and parameter can be saved, forwarded and deleted.	×	×	●	Compatible	
Other	Language	Can be changed to Japanese or English.	●	●	●	Compatible	

△: Can be set from TB Ver. 2.** (The version information is displayed on the initial screen)
* Programless type LECP1 cannot be used with the teaching box and controller setting kit.

System Construction/Pulse Signal

●Electric actuator

Page 41

●Current limit resistor

LEC-PA-R-□

＊The current limit resistor is used when the pulse signal output of the positioning unit is open collector output.

Provided by customer

PLC

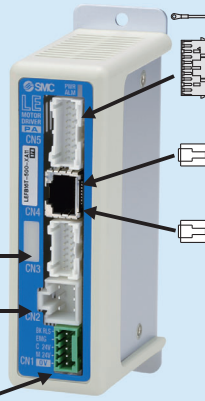
Power supply for I/O signal 24 VDC Note)

Note) When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

●Driver＊ Page 35

●I/O cable Page 41

Driver type	Part no.
LECPA	LEC-CL5-□



Pulse input type

LECPA Page 35

Provided by customer

Power supply for driver 24 VDC Note)

Note) When conformity to UL is required, the electric actuator and driver should be used with a UL 1 3 1 0 Class 2 power supply.

●Power supply plug (Accessory)

<Applicable cable size>

AWG20 (0.5 mm²)

●Actuator cable＊ Page 40

Driver type	Standard cable	Robotic cable
LECPA (Pulse input type)	LE-CP-□-S	LE-CP-□

The ＊ mark: Can be included in the "How to Order" for the actuator.

Options

●Teaching box Page 43

(With 3 m cable)

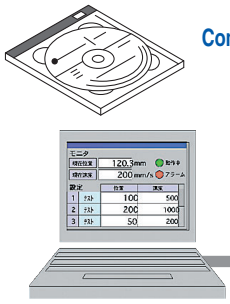
LEC-T1-3EG□

Or

●Controller setting software Page 42

Communication cable and USB cable are included.

LEC-W2



Communication cable

●USB cable

(A-mini B type)

PC

SMC Electric Actuators

Slider Type
Step Motor (Servo/24 VDC) | Servo Motor (24 VDC) | AC Servo Motor

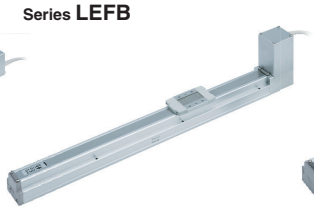
Ball screw drive
Series LEFS

Clean room compatible

Series LEFS

Size	Max. work load [Kg]	Stroke [mm]
16	10	Up to 400
25	20	Up to 600
32	45	Up to 800
40	60	Up to 1000

Belt drive
Series LEFB

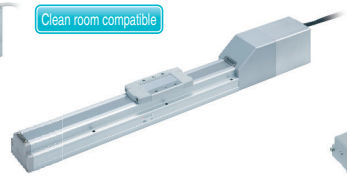


Series LEFB

Size	Max. work load [Kg]	Stroke [mm]
16	1	Up to 1000
25	5	Up to 2000
32	14	Up to 2000

Ball screw drive
Series LEFS

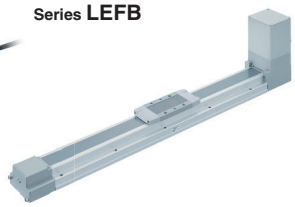
Clean room compatible



Series LEFS

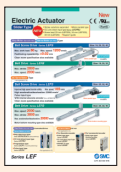
Size	Max. work load [Kg]	Stroke [mm]
25	20	Up to 600
32	45	Up to 800
40	60	Up to 1000

Belt drive
Series LEFB



Series LEFB

Size	Max. work load [Kg]	Stroke [mm]
25	5	Up to 2000
32	15	Up to 2500
40	25	Up to 3000

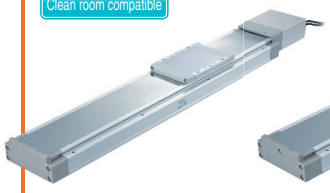


CAT.ES100-87

High Rigidity Slider Type
AC Servo Motor

Ball screw drive
Series LEJS

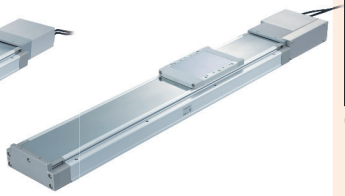
Clean room compatible



Series LEJS

Size	Max. work load [Kg]	Stroke [mm]
40	55	200 to 1200
63	85	300 to 1500

Belt drive
Series LEJB



Series LEJB

Size	Max. work load [Kg]	Stroke [mm]
40	20	200 to 2000
63	30	300 to 3000

CAT.ES100-104

Guide Rod Slider
Step Motor (Servo/24 VDC)

Belt drive
Series LEL

Series LEL25M
Sliding bearing

Size	Max. work load [Kg]	Stroke [mm]
25	3	Up to 1000

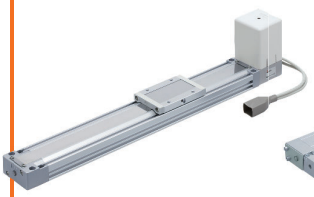
Series LEL25L
Ball bushing bearing

Size	Max. work load [Kg]	Stroke [mm]
25	5	Up to 1000

CAT.E102

Low Profile Slider Type
Step Motor (Servo/24 VDC)

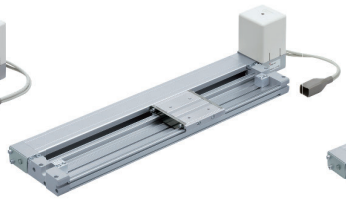
Basic type
Series LEMB



Series LEMB

Size	Max. work load [Kg]	Stroke [mm]
25	6	Up to 2000
32	11	Up to 2000

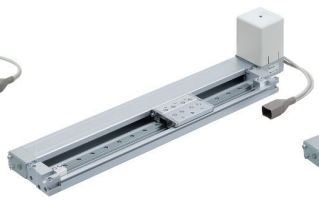
Cam follower guide type
Series LEMC



Series LEMC

Size	Max. work load [Kg]	Stroke [mm]
25	10	Up to 2000
32	20	Up to 2000

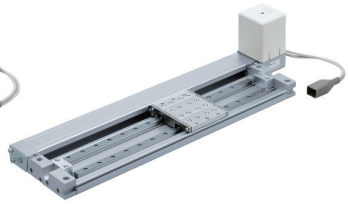
Linear guide single axis type
Series LEMH



Series LEMH

Size	Max. work load [Kg]	Stroke [mm]
25	10	Up to 1000
32	20	Up to 1500

Linear guide double axis type
Series LEMHT



Series LEMHT

Size	Max. work load [Kg]	Stroke [mm]
25	10	Up to 1000
32	20	Up to 1500

CAT.ES100-98

SMC Electric Actuators

Rod Type Step Motor (Servo/24 VDC) Servo Motor (24 VDC)

Basic type
Series LEY

Dust/Drip proof compatible

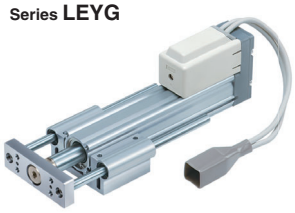
Series LEY

Size	Pushing force [N]	Stroke [mm]
16	141	Up to 300
25	452	Up to 400
32	707	Up to 500
40	1058	Up to 500

In-line motor type
Series LEY□D

Dust/Drip proof compatible

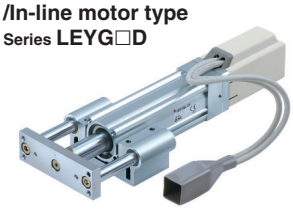
Guide rod type
Series LEYG



Series LEYG

Size	Pushing force [N]	Stroke [mm]
16	141	Up to 200
25	452	Up to 300
32	707	Up to 300
40	1058	Up to 300

Guide rod type /In-line motor type
Series LEYG□D

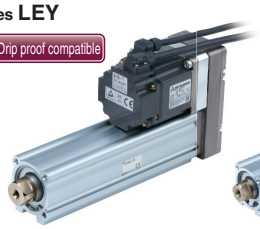


CAT.E102

AC Servo Motor

Basic type
Series LEY

Dust/Drip proof compatible



Series LEY

Size	Pushing force [N]	Stroke [mm]
25	485	Up to 400
32	588	Up to 500

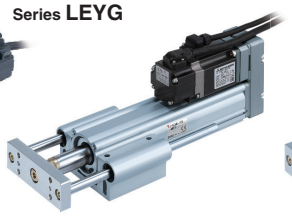
In-line motor type
Series LEY□D

Dust/Drip proof compatible

Series LEY

Size	Pushing force [N]	Stroke [mm]
25	485	Up to 400
32	736	Up to 500
63	1910	Up to 800

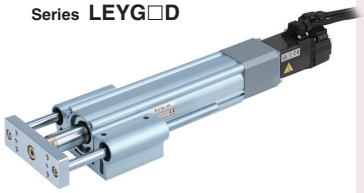
Guide rod type
Series LEYG



Series LEYG

Size	Pushing force [N]	Stroke [mm]
25	485	300
32	588	

Guide rod type /In-line motor type
Series LEYG□D



Series LEYG

Size	Pushing force [N]	Stroke [mm]
25	485	300
32	736	

Slide Table Step Motor (Servo/24 VDC) Servo Motor (24 VDC)

Series LES

Basic type/R type
Series LES□R

Symmetrical type/L type
Series LES□L

Size	Max. work load [Kg]	Stroke [mm]
8	1	30, 50, 75
16	3	30, 50 75, 100
25	5	30, 50, 75 100, 125, 150

In-line motor type/D type
Series LES□D

Series LESH

Basic type/R type
Series LESH□R

Symmetrical type/L type
Series LESH□L

Size	Max. work load [Kg]	Stroke [mm]
8	2	50, 75
16	6	50, 100
25	9	50, 100 150

In-line motor type/D type
Series LESH□D

CAT.E102

Miniature Step Motor (Servo/24 VDC)

Rod type
Series LEPY

Series LEPY

Size	Max. work load [Kg]	Stroke [mm]
6	1	25, 50, 75
10	2	

Slide table type
Series LEPS

Series LEPS

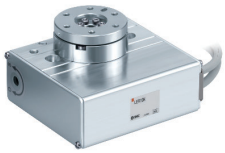
Size	Max. work load [Kg]	Stroke [mm]
6	1	25
10	2	50

CAT.E102

Rotary Table Step Motor (Servo/24 VDC)

Basic type
Series LER

High precision type
Series LERH



Series LER

Size	Rotating torque (N·m)		Max. speed (°/s)	
	Basic	High torque	Basic	High torque
10	0.22	0.32	420	280
30	0.8	1.2		
50	6.6	10		

CAT.E102

SMC Electric Actuators

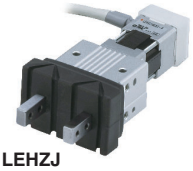
Gripper Step Motor (Servo/24 VDC)

2-finger type
Series **LEHZ**

Series **LEHZ**

Size	Max. gripping force [N]		Stroke/both sides [mm]
	Basic	Compact	
10	14	6	4
16		8	6
20	40	28	10
25			14
32	130	—	22
40	210	—	30

2-finger type
With dust cover
Series **LEHZJ**



Series **LEHZJ**

Size	Max. gripping force [N]		Stroke/both sides [mm]
	Basic	Compact	
10	14	6	4
16		8	6
20	40	28	10
25			14

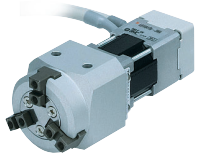
2-finger type
Long stroke
Series **LEHF**

Series **LEHF**

Size	Max. gripping force [N]	Stroke/both sides [mm]
10	7	16 (32)
20	28	24 (48)
32	120	32 (64)
40	180	40 (80)

Note) ( ): Long stroke

3-finger type
Series **LEHS**



Series **LEHS**

Size	Max. gripping force [N]		Stroke/ diameter [mm]
	Basic	Compact	
10	5.5	3.5	4
20	22	17	6
32	90	—	8
40	130	—	12

CAT.E102

Controllers/Driver

Step Motor (Servo/24 VDC)

Servo Motor (24 VDC)

Step Data Input Type
Series LECA6

- 64 points positioning
- Input using controller setting kit or teaching box

4-Axis Controller

Step Data Input Type
Series JXC73/83

Step Motor (Servo/24 VDC)

Programless Type
Series LECP1

- 14 points positioning
- Control panel setting (PC is not required.)

Programless Type (With Stroke Study)
Series LECP2

- End to end operation similar to an air cylinder
- 2 stroke end points + 12 intermediate points positioning

Specialized for Series LEM

Step Motor (Servo/24 VDC)

Pulse Input Type
Series LECPA

Fieldbus-compatible Network Controller/Gateway Unit

Series JXC□1

PROFIBUS
EtherCAT
DeviceNet
EtherNet/IP
IO-Link

Series JXC92

EtherNet/IP

Series JXC93

EtherNet/IP

Series LEC-G

PROFIBUS
CC-Link V2
DeviceNet
EtherNet/IP

AC Servo Motor

Pulse Input Type
Series LECSA
Series LECSB

- Absolute encoder (LECSB)
- Built-in positioning function (LECSA)

Series LECSA ***Series LECSB***

CC-Link Direct Input Type
Series LECSC

CC-Link

SSCNETⅢ Type
Series LECSS

SSCNETⅢ
SERVO SYSTEM CONTROLLER NETWORK

MECHATROLINKⅡ Type
Series LECYM

MECHATROLINK-Ⅱ

MECHATROLINKⅢ Type
Series LECYU

MECHATROLINK-Ⅲ

SSCNETⅢ/H Type
Series LECSS-T

SSCNETⅢ/H
SERVO SYSTEM CONTROLLER NETWORK

Series Variations

Electric Actuators *Series* LEPY/LEPS

LEPY

LEPS

Series	Size	Stroke (mm)	Screw lead	Pushing force [N]		Max. work load [kg] (Horizontal)		Speed (Horizontal)		Controller /Driver series	Reference page
				Basic	Compact	Basic	Compact	Basic	Compact		
Miniature rod type LEPY	**6**	25, 50 75	4	14 to 20	—	1.0	—	10 to 150	—	Series LECP1	Page 1
			8	7 to 10		0.75		20 to 300			
	10		5	25 to 50	24 to 40	2.0		10 to 200			
			10	12.5 to 25	12 to 20	1.5		20 to 350			
Miniature slide table type LEPS	**6**	25, 50	4	14 to 20	—	1.0	—	10 to 150	—	Series LECPA	Page 10
			8	7 to 10		0.75		20 to 300			
	10		5	25 to 50	24 to 40	2.0		10 to 200			
			10	12.5 to 25	12 to 20	1.5		20 to 350			

Controller/Driver *LEC*

LECPA

LECP1

Type	Series	Compatible motor	Power supply voltage	Parallel I/O		Number of positioning pattern points	Reference page
				Input	Output		
Programless type	**LECP1**	Step motor (Servo/24 VDC)	24 VDC ±10 %	6 inputs (Photo-coupler isolation)	6 outputs (Photo-coupler isolation)	14	Page 28
Pulse input type	**LECPA**	Step motor (Servo/24 VDC)	24 VDC ±10 %	5 inputs (Photo-coupler isolation)	9 outputs (Photo-coupler isolation)	—	Page 35

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Step Motor (Servo/24 VDC) Type

◎Electric Actuator/Miniature Rod Type Series LEPY

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Construction ..... Page 7
Dimensions ..... Page 8

◎Electric Actuator/Miniature Slide Table Type Series LEPS

Model Selection ..... Page 10
How to Order ..... Page 16
Specifications ..... Page 18
Construction ..... Page 18
Dimensions ..... Page 19
Specific Product Precautions ..... Page 21

◎Step Motor (Servo/24 VDC) Controller/Driver

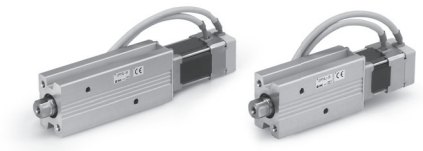
Gateway Unit/Series **LEC-G** ..... Page 25
Programless Controller/Series **LECP1** ..... Page 28
Step Motor Driver/Series **LECPA** ..... Page 35
Controller Setting Kit/**LEC-W2** ..... Page 42
Teaching Box/**LEC-T1** ..... Page 43
Direct Input Type Controller/Series **JXC□1** ..... Page 46
Multi-Axis Step Motor Controller/Series **JXC73/83/92/93** ..... Page 56

Electric Actuator/Miniature Rod Type

Step Motor (Servo/24 VDC)

Series LEPY

Model Selection



Selection Procedure

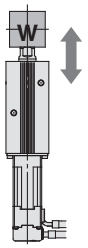
Positioning Control Selection Procedure

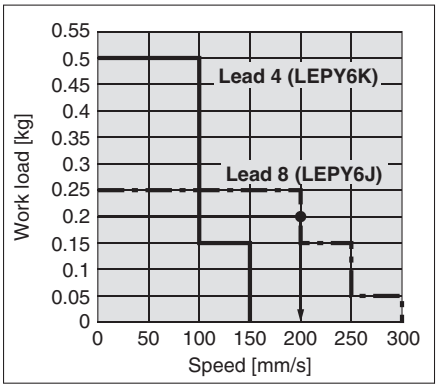
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

Selection Example

Operating conditions

- Workpiece mass: 0.2 [kg]
- Speed: 200 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s^2]
- Stroke: 40 [mm]
- Workpiece mounting condition: Vertical upward downward transfer





<Speed–Work load graph> (LEPY6/Step motor)

Step 1 **Check the work load–speed. <Speed–Work load graph>**

Select the target model based on the workpiece mass and speed with reference to the <Speed–Work load graph>.

Selection example: The **LEPY6J** is temporarily selected based on the graph shown on the right side.

∗ It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to page 7 for the horizontal work load in the specifications, and page 21 for the precautions.

Step 2 **Check the cycle time.**

Calculate the cycle time using the following calculation method.

- Cycle time T can be found from the following equation.

  $T = T1 + T2 + T3 + T4$ [s]

- T1: Acceleration time and T3: Deceleration time can be obtained by the following equation.

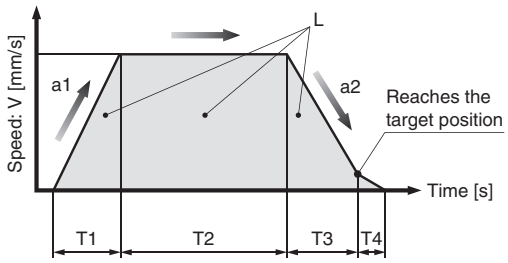
  $T1 = V/a1$ [s] $T3 = V/a2$ [s]

- T2: Constant speed time can be found from the following equation.

  $$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as motor types, load and in positioning of the step data. Therefore, please calculate the settling time with reference to the following value.

  $T4 = 0.2$ [s]



L : Stroke [mm] ··· (Operating condition)
V : Speed [mm/s] ··· (Operating condition)
a1: Acceleration [mm/s^2] ··· (Operating condition)
a2: Deceleration [mm/s^2] ··· (Operating condition)

T1: Acceleration time [s] ··· Time until reaching the set speed
T2: Constant speed time [s] ··· Time while the actuator is operating at a constant speed
T3: Deceleration time [s] ··· Time from the beginning of the constant speed operation to stop
T4: Settling time [s] ··· Time until in position is completed

Calculation example:
T1 to T4 can be calculated as follows.

$T1 = V/a1 = 200/3000 = 0.067$ [s], $T3 = V/a2 = 200/3000 = 0.067$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{40 - 0.5 \cdot 200 \cdot (0.067 + 0.067)}{200} = 0.133 \text{ [s]}$$

$T4 = 0.2$ [s]

Therefore, the cycle time can be obtained as follows.
$T = T1 + T2 + T3 + T4 = 0.067 + 0.133 + 0.067 + 0.2 =$ **0.467 [s]**

Based on the above calculation result, the LEPY6J-50 is selected.

SMC

Selection Procedure

Pushing Control Selection Procedure

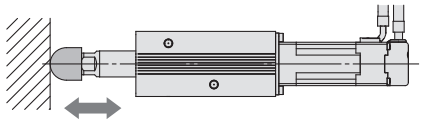
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the lateral load on the rod end.

∗ The duty ratio is a ratio at the time that can keep being pushed.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.05 [kg]
- Pushing force: 30 [N]
- Duty ratio: 70 [%]
- Speed: 150 [mm/s]
- Stroke: 40 [mm]



Step 1 **Check the duty ratio.**

<Conversion table of pushing force–duty ratio>

Select the [Pushing force] from the duty ratio with reference to the <Conversion table of pushing force–duty ratio>.

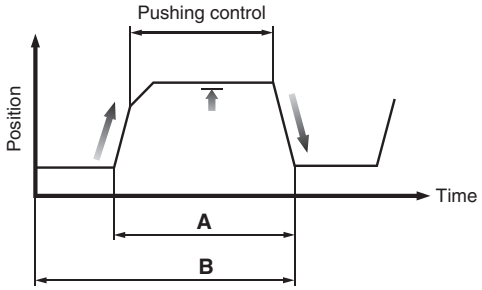
Selection example:
Based on the table below,
- Duty ratio: 70 [%]

Therefore, the set value of pushing force will be 80 [%].

<Conversion table of pushing force–duty ratio>
(LEPY10L)

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70 or less	100	—
80	70	10
100	50	5

∗ [Set value of pushing force] is one of the step data input to the controller.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.



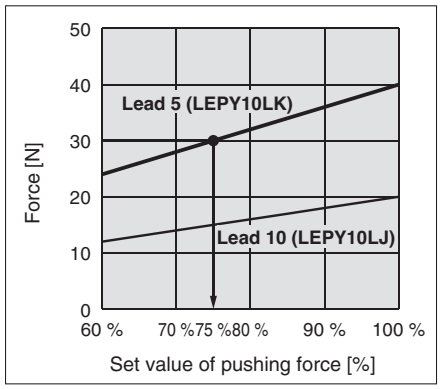
Duty ratio = A/B x 100 [%]

Step 2 **Check the pushing force. <Set value of pushing force–Force graph>**

Select the target model based on the set value of pushing force and force with reference to the <Set value of pushing force–Force graph>.

Selection example:
Based on the graph shown on the right side,
- Set value of pushing force: 75 [%]
- Pushing force: 30 [N]

Therefore, the **LEPY10LK** is temporarily selected.



<Set value of pushing force–Force graph>
(LEPY10L)

Step 3 **Check the lateral load on the rod end.**
<Allowable lateral load on the rod end>

Confirm the allowable lateral load on the rod end of the actuator: LEPY10L, which has been selected temporarily with reference to the <Allowable lateral load on the rod end>.

Selection example:
Based on the table below,
- Jig weight: 0.05 [kg] ≈ 0.5 [N]

Therefore, the lateral load on the rod end is in the allowable range.

<Allowable lateral load on the rod end>

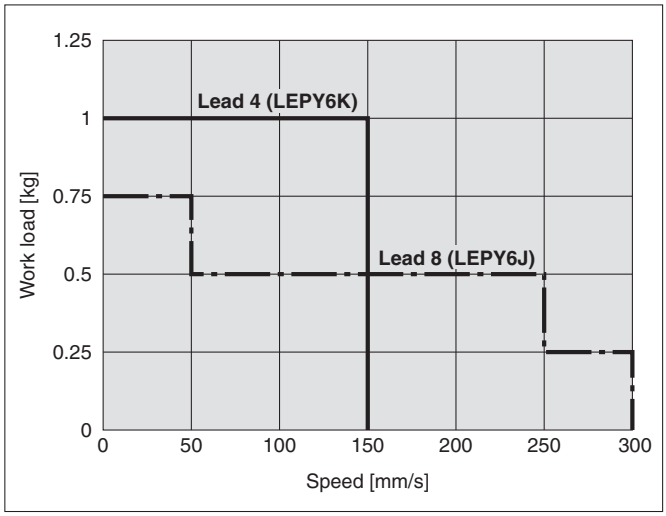
Model	Allowable lateral load on the rod end [N]
LEPY6 (Basic)	0.50
LEPY10 (Basic)	1.0
LEPY10L (Compact)	1.0

Based on the above calculation result, the LEPY10LK-50 is selected.

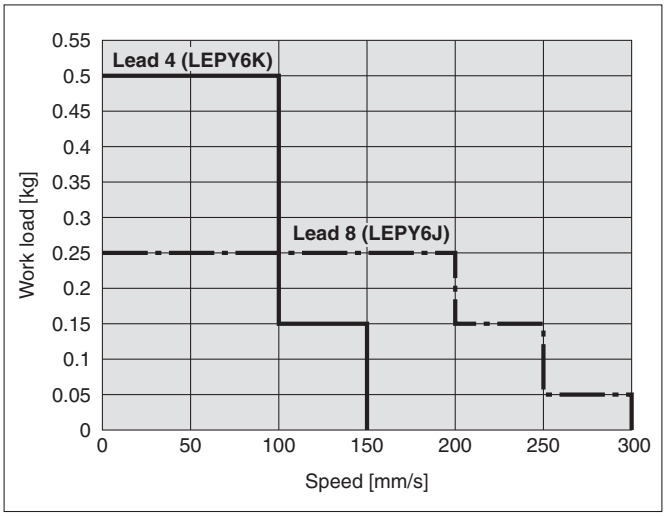
Speed–Work Load Graph (Guide)

LEPY6 (Basic)

Horizontal

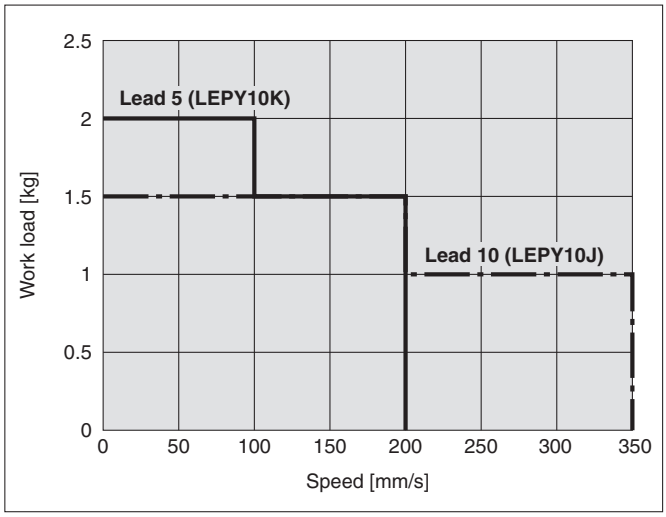


Vertical

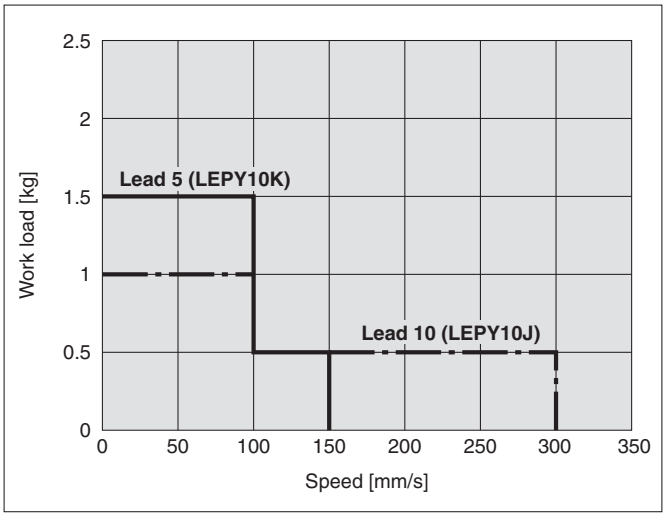


LEPY10(L) (Basic/Compact)

Horizontal

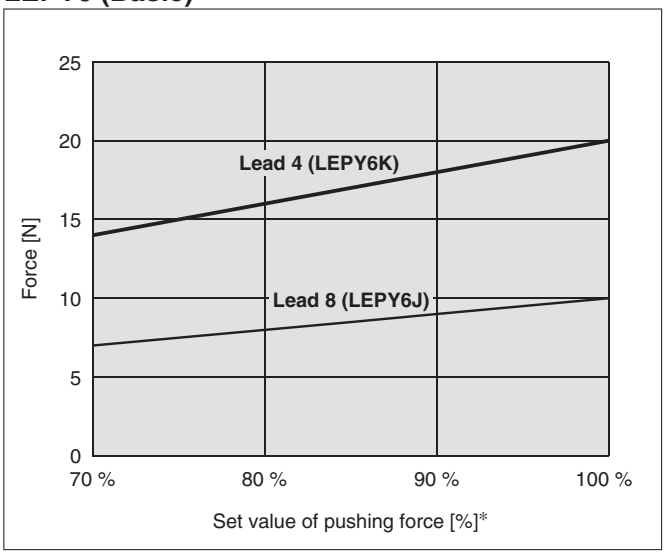


Vertical



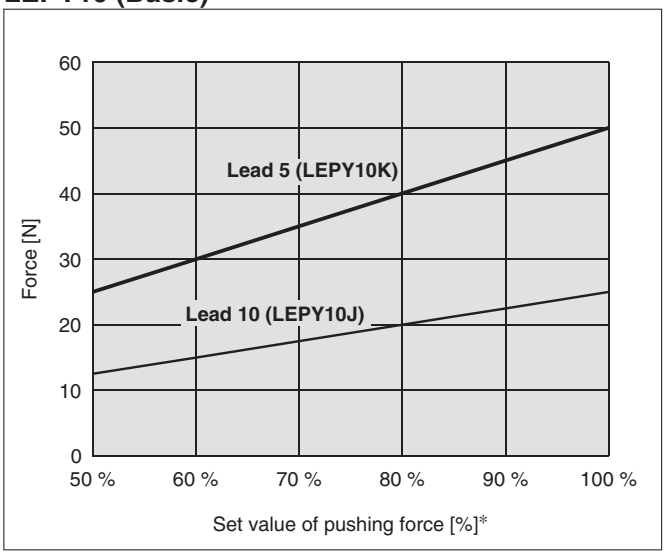
Set Value of Pushing Force–Force Graph (Guide)

LEPY6 (Basic)



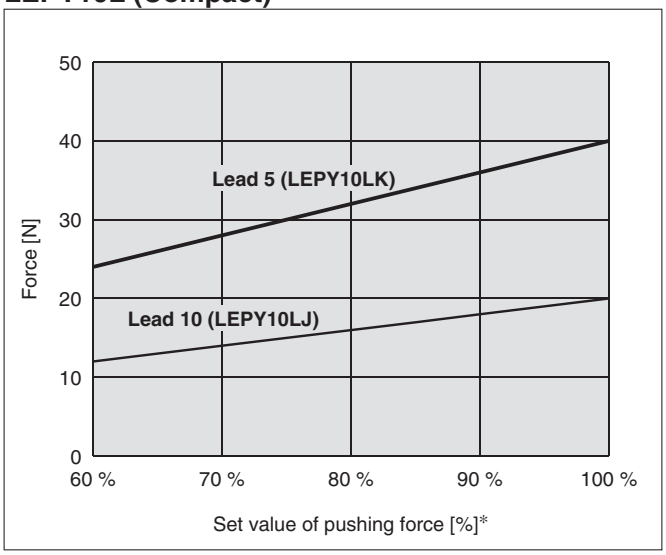
Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70	100	—
80	70	10
100	50	5

LEPY10 (Basic)



Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
60 or less	100	—
70	30	3
100	15	1

LEPY10L (Compact)

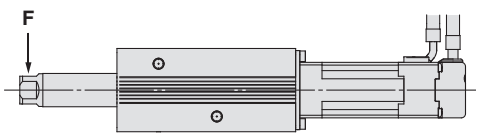


Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70 or less	100	—
80	70	10
100	50	5

∗ Set values for the controller.

Allowable Lateral Load on the Rod End

Model	Allowable lateral load on the rod end [N]
LEPY6 (Basic)	0.50
LEPY10 (Basic)	1.0
LEPY10L (Compact)	1.0



Electric Actuator
Miniature Rod Type Step Motor (Servo/24 VDC)
Series LEPY
LEPY6, 10

RoHS

EtherNet/IP™ DeviceNet™ PROFINET IO-Link EtherCAT® Compatible ▶Page 46

Multi-Axis Step Motor Controller Compatible ▶Page 56

How to Order

LEPY 10 ❶ | ❷ K ❸ – 50 ❹ | ❺ – R ❻ | 1 ❼ AN ❽ | 1 ❾ | ❿

❶ Size

6
10

❷ Motor size

Symbol	Motor size	Applicable size
—	Basic type	6, 10
L	Compact type	10

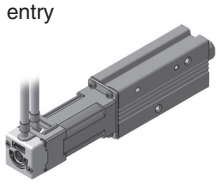
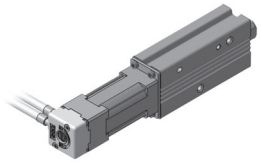
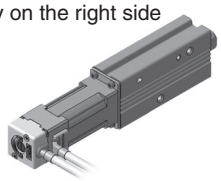
❸ Lead screw type [mm]

Symbol	Screw lead	
	LEPY6	LEPY10
K	4	5
J	8	10

❹ Stroke [mm]

Symbol	Stroke
25	25
50	50
75	75

❺ Motor cable mounting direction

—	Top entry 	L	Entry on the left side 
U	Bottom entry 	R	Entry on the right side 

❻ Actuator cable type*

—	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

* The standard cable should be used on fixed parts. For using on moving parts, select the robotic cable.

⚠ Caution

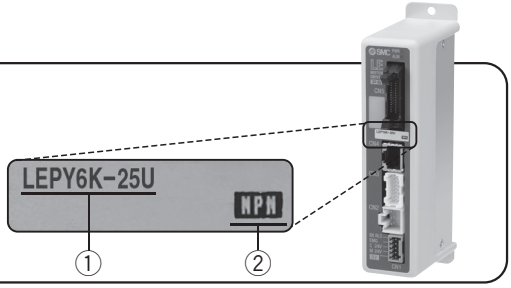
[CE-compliant products]
EMC compliance was tested by combining the electric actuator LEP series and the controller LEC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.
[UL-compliant products]
When conformity to UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

The actuator and controller/driver are sold as a package.

Confirm that the combination of the controller/driver and the actuator is correct.

<Check the following before use.>

① Check the actuator label for model number. This matches the controller/driver.
② Check Parallel I/O configuration matches (NPN or PNP).



* Refer to the operation manual for using the products. Please download it via our website, http://www.smc.eu

❼ Actuator cable length [m]

—	Without cable	8	8*
1	1.5	A	10*
3	3	B	15*
5	5	C	20*

* Produced upon receipt of order (Robotic cable only) Refer to the specifications Note 6) on page 7.

❽ Controller/Driver type*

—	Without controller/driver	
1N	**LECP1** (Programless type)	NPN
1P		PNP
AN	**LECPA** (Pulse input type)	NPN
AP		PNP

* For details about controllers/driver and compatible motors, refer to the compatible controllers/driver below.

❾ I/O cable length [m]*1

—	Without cable
1	1.5
3	3*2
5	5*2

*1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer page 34 (For LECP1) or page 41 (For LECPA) if I/O cable is required.
*2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

❿ Controller/Driver mounting

—	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately.

Compatible Controllers/Driver

Type	Programless type	Pulse input type
		
Series	**LECP1**	**LECPA**
Features	Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	
Maximum number of step data	14 points	—
Power supply voltage	24 VDC	
Reference page	Page 28	Page 35

Weight

Model		LEPY6		
Stroke [mm]		25	50	75
Product weight [kg]	Basic	0.24	0.29	0.34

Model		LEPY10		
Stroke [mm]		25	50	75
Product weight [kg]	Basic	0.47	0.55	0.65
	Compact	0.41	0.49	0.59

Specifications

Model				LEPY6		LEPY10	
Actuator specifications	Screw lead [mm]			4	8	5	10
	Pushing force [N]*1 *6		Basic	14 to 20	7 to 10	25 to 50	12.5 to 25
			Compact	—	—	24 to 40	12 to 20
	Work load [kg]*2 *3 *6	Horizontal	Basic	2.0	1.0	6.0	3.0
			Compact	—	—	4.0	2.0
		Vertical	Basic	0.5	0.25	1.5	1.0
			Compact	—	—	1.5	1.0
	Speed [mm/s]*3 *6	Horizontal	Basic	10 to 150	20 to 300*4	10 to 200	20 to 350*4
			Compact	—	—	10 to 200	20 to 350*4
		Vertical	Basic	10 to 150	20 to 300*4	10 to 150	20 to 300*4
			Compact	—	—	10 to 150	20 to 300*4
	Pushing speed [mm/s]*5			10	20	10	20
	Acceleration/Deceleration [mm/s²]			3000			
	Backlash [mm]			0.2 or less			
	Positioning repeatability [mm]			±0.05			
	Lost motion [mm]*7			0.2 or less			
	Impact/Vibration resistance [m/s²]*8			50/20			
	Actuation type			Slide screw			
	Guide type			Sliding bushing			
	Max. operating frequency [c.p.m]			60			
	Operating temperature range [°C]			5 to 40			
	Operating humidity range [%RH]			90 or less (No condensation)			
Electric specifications	Motor size			□20		□28	
	Motor type			Step motor (Servo/24 VDC)			
	Encoder			Incremental			
	Power supply voltage [V]			24 VDC ±10%			
	Power [W]*9		Basic	Max. power 22		Max. power 55	
			Compact	—		Max. power 45	

*1 Pushing force accuracy is LEPY6: ±30% (F.S.), LEPY10: ±25% (F.S.).
Refer to pages 23 and 24 for the detailed setting range and precautions.
The pushing force and the duty ratio change according to the set value. Check the "Pushing Force Set Value–Force Graph (Guide)" on page 4 and [14] on page 23.

*2 The maximum value of the work load for the positioning operation. An external guide is necessary to support the load. The actual work load and transfer speed change according to the condition of the external guide.

*3 Speed changes according to the work load. Check the "Speed–Work Load Graph (Guide)" on page 3.

*4 When the stroke is 25 mm, the maximum speed will be 250 mm/s.

*5 Set to the pushing speed when pushing operation.

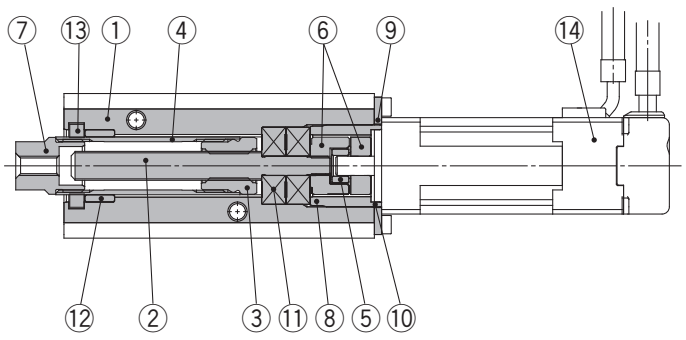
*6 The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)

*7 A reference value for correcting an error in reciprocal operation

*8 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

*9 Indicates the max. power during operation (including the controller)
This value can be used for the selection of the power supply.

Construction

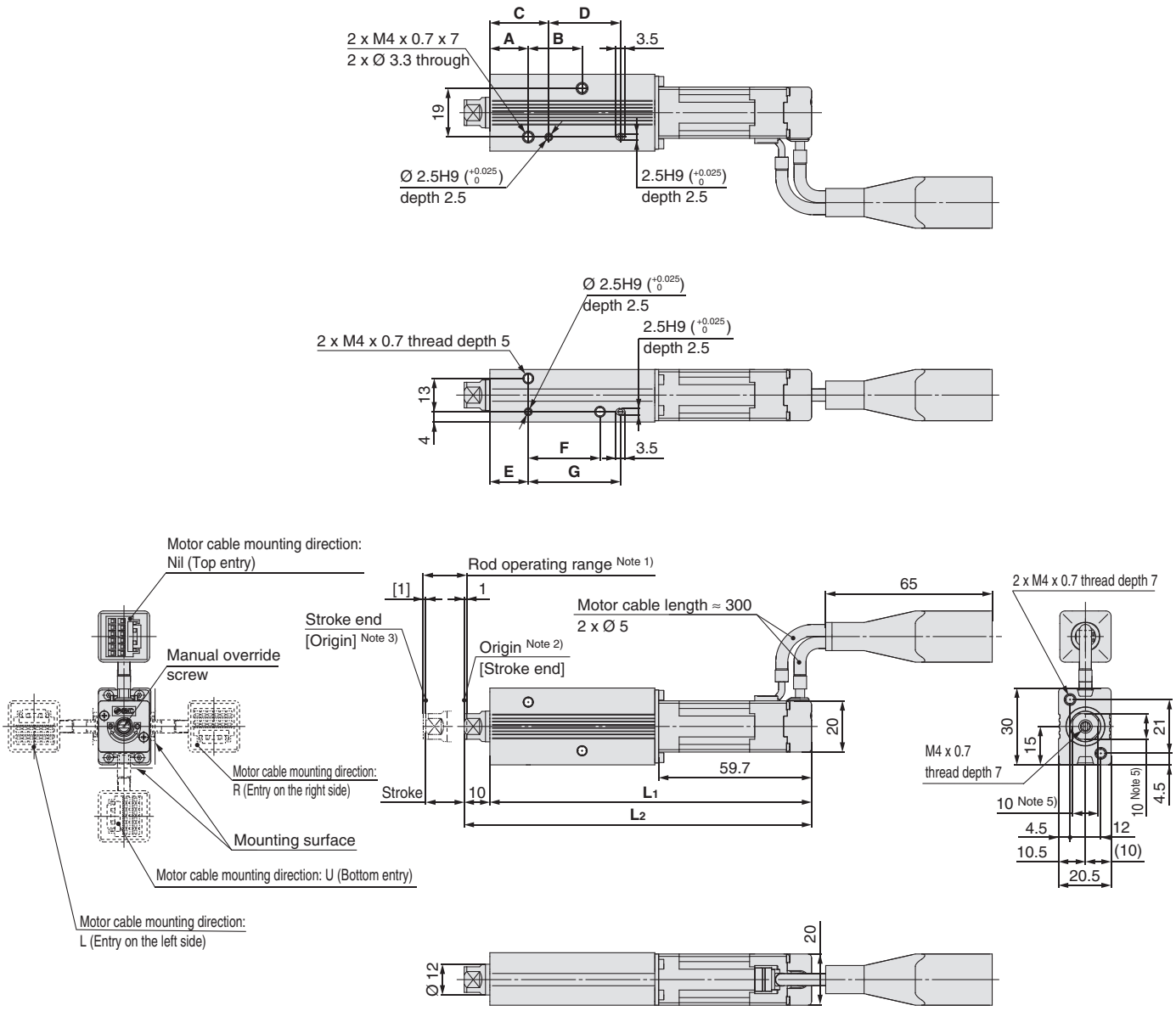


Component Parts

No.	Description	Material	Note
1	Body	Aluminium alloy	Anodised
2	Screw shaft	Stainless steel	Heat treatment + Specially treated
3	Screw nut	Stainless steel	Heat treatment + Specially treated
4	Rod	Stainless steel	
5	Spider	NBR	
6	Hub	Aluminium alloy	
7	Socket	Free cutting carbon steel	Nickel plated
8	Bearing stopper	Size 6: Aluminium alloy Size 10: Carbon steel	
9	Motor plate	Aluminium alloy	Anodised
10	Guide ring	Aluminium alloy	Size 10 only
11	Bearing	—	
12	Bushing	Oil impregnated sintered copper alloy	
13	Soft wiper	—	
14	Step motor (Servo/24 VDC)	—	

Dimensions

LEPY6



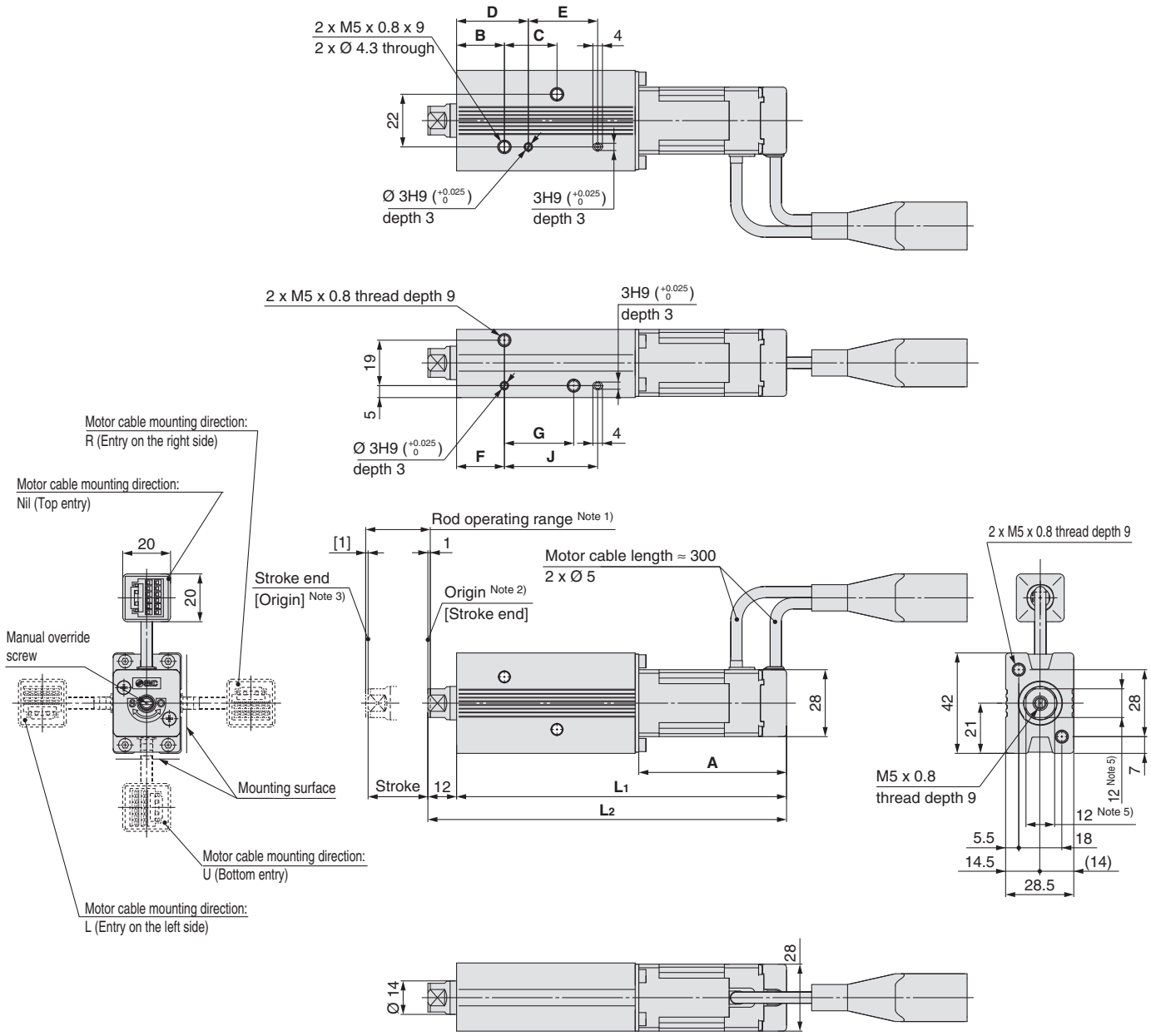
Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) Do not apply rotational torque to the rod end.
Note 5) The direction of rod end width across flats (□10) differs depending on the products.

Dimensions [mm]

Model	L1	L2	A	B	C	D	E	F	G
LEPY6□-25□	125.6	135.6	15	21	23	28	15	28	36
LEPY6□-50□	156.6	166.6	22	45	30	52	22	52	60
LEPY6□-75□	188.6	198.6	29	70	37	77	29	77	85

Dimensions

LEPY10



Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.
Note 4) Do not apply rotational torque to the rod end.
Note 5) The direction of rod end width across flats (□12) differs depending on the products.

Dimensions

[mm]

Model	L_1	L_2	A	B	C	D	E	F	G	J
LEPY10□-25□	138	150	61.8	20	22	30	29	20	29	39
LEPY10□-50□	163	175		24	43	34	50	24	50	60
LEPY10□-75□	198	210		30	72	40	79	30	79	89
LEPY10L□-25□	124	136	47.8	20	22	30	29	20	29	39
LEPY10L□-50□	149	161		24	43	34	50	24	50	60
LEPY10L□-75□	184	196		30	72	40	79	30	79	89

Model Selection

Selection Procedure

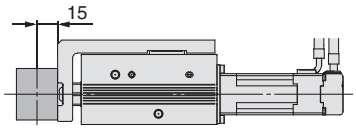
Positioning Control Selection Procedure

Step 1 Check the work load–speed. (Horizontal transfer) → **Step 2** Check the cycle time. → **Step 3** Check the guide allowable moment.

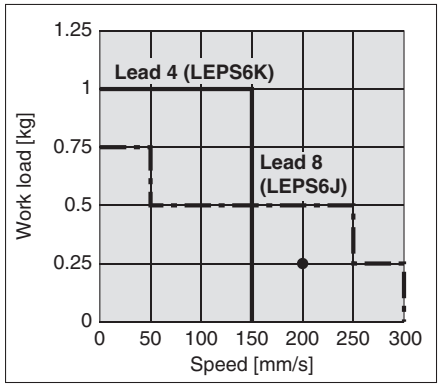
Selection Example

Operating conditions

- Workpiece mass: 0.25 [kg]
- Speed: 200 [mm/s]
- Acceleration/Deceleration: 3,000 [mm/s^2]
- Stroke: 20 [mm]
- Workpiece mounting condition: Horizontal transfer



LEPS6 (Basic)



<Speed–Work load graph> (LEPS6/Step motor)

Step 1 **Check the work load–speed. <Speed–Work load graph>**

Select the target model based on the workpiece mass and speed with reference to the <Speed–Work load graph>.

Selection example: The **LEPS6J** is temporarily selected based on the graph shown on the right side.

Step 2 **Check the cycle time.**

Calculate the cycle time using the following calculation method.

- Cycle time T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be obtained by the following equation.

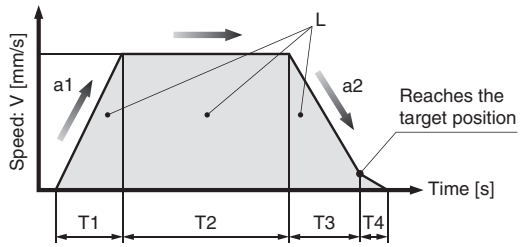
$$T1 = V/a1 \text{ [s]} \qquad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as motor types, load and in positioning of the step data. Therefore, please calculate the settling time with reference to the following value.

$$T4 = 0.2 \text{ [s]}$$



L : Stroke [mm] ··· (Operating condition)
V : Speed [mm/s] ··· (Operating condition)
a1: Acceleration [mm/s^2] ··· (Operating condition)
a2: Deceleration [mm/s^2] ··· (Operating condition)

T1: Acceleration time [s] ··· Time until reaching the set speed
T2: Constant speed time [s] ··· Time while the actuator is operating at a constant speed
T3: Deceleration time [s] ··· Time from the beginning of the constant speed operation to stop
T4: Settling time [s] ··· Time until in position is completed

Calculation example:
T1 to T4 can be calculated as follows.

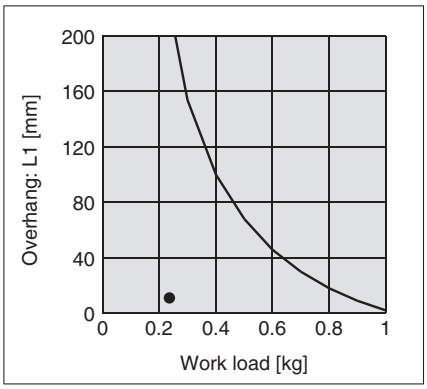
$T1 = V/a1 = 200/3000 = 0.067$ [s], $T3 = V/a2 = 200/3000 = 0.067$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{20 - 0.5 \cdot 200 \cdot (0.067 + 0.067)}{200} = 0.033 \text{ [s]}$$

$T4 = 0.2$ [s]

Therefore, the cycle time can be obtained as follows.
$T = T1 + T2 + T3 + T4 = 0.067 + 0.033 + 0.067 + 0.2 =$ **0.367 [s]**

Step 3 **Check the guide allowable moment.**



Guide allowable moment

Based on the above calculation result, the LEPS6J-25 is selected.

Selection Procedure

Pushing Control Selection Procedure

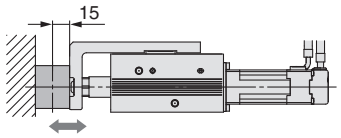
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the guide allowable moment.

∗ The duty ratio is a ratio at the time that can keep being pushed.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.4 [kg]
- Pushing force: 30 [N]
- Duty ratio: 70 [%]
- Speed: 150 [mm/s]
- Stroke: 40 [mm]



Step 1 **Check the duty ratio.**
<Conversion table of pushing force–duty ratio>

Select the [Pushing force] from the duty ratio with reference to the <Conversion table of pushing force–duty ratio>.

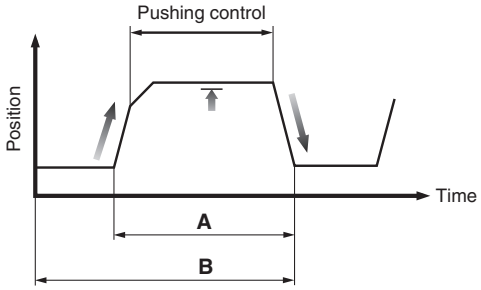
Selection example:
Based on the table below,
- Duty ratio: 70 [%]

Therefore, the set value of pushing force will be 80 [%].

<Conversion table of pushing force–duty ratio> (LEPS10L)

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70 or less	100	—
80	70	10
100	50	5

∗ [Set value of pushing force] is one of the step data input to the controller.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.



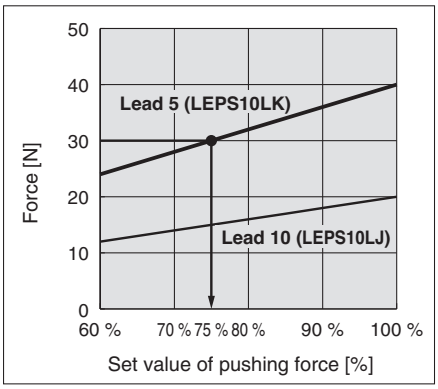
Duty ratio = A/B x 100 [%]

Step 2 **Check the pushing force. <Set value of pushing force–Force graph>**

Select the target model based on the set value of pushing force and force with reference to the <Set value of pushing force–Force graph>.

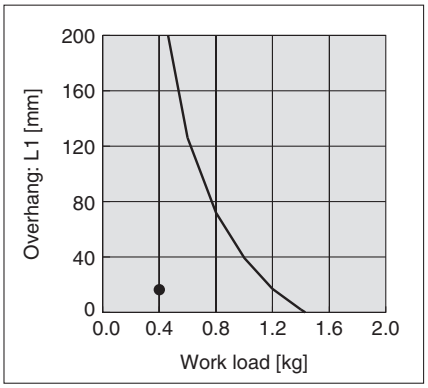
Selection example:
Based on the graph shown on the right side,
- Set value of pushing force: 75 [%]
- Pushing force: 30 [N]

Therefore, the **LEPS10LK** is temporarily selected.



<Set value of pushing force–Force graph> (LEPS10L)

Step 3 **Check the guide allowable moment.**

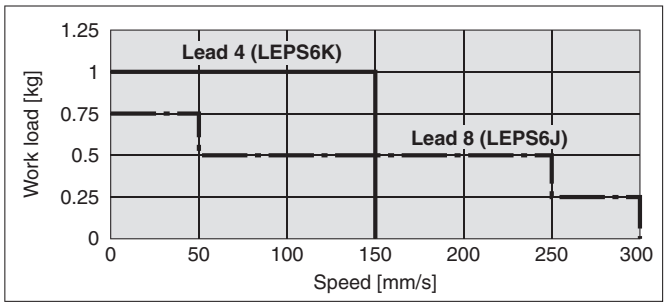


Based on the above calculation result, the LEPS10LK-50 is selected.

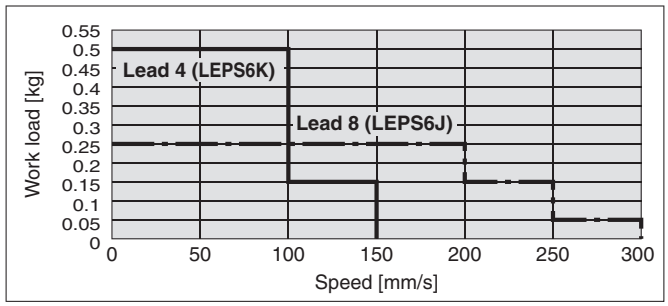
Speed–Work Load Graph (Guide)

LEPS6 (Basic)

Horizontal

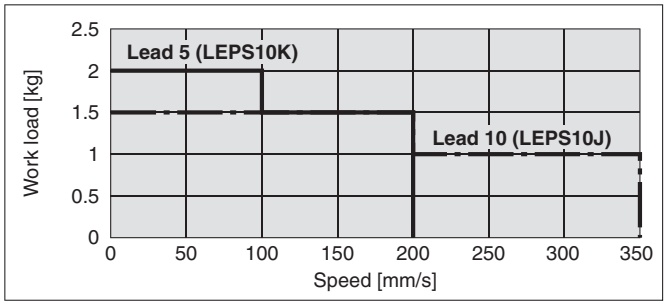


Vertical

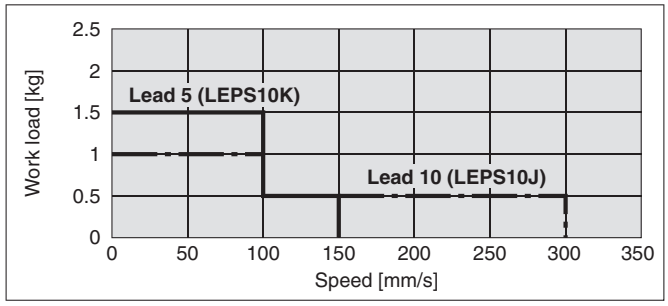


LEPS10(L) (Basic/Compact)

Horizontal

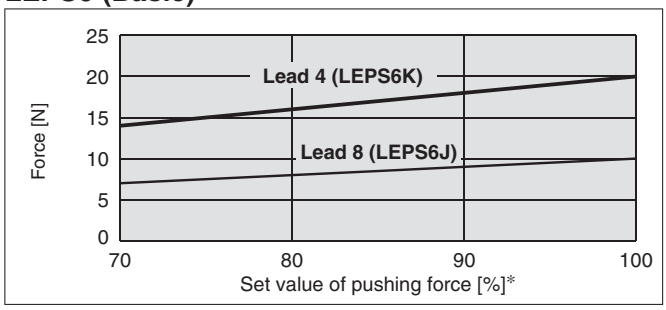


Vertical



Set Value of Pushing Force–Force Graph (Guide)

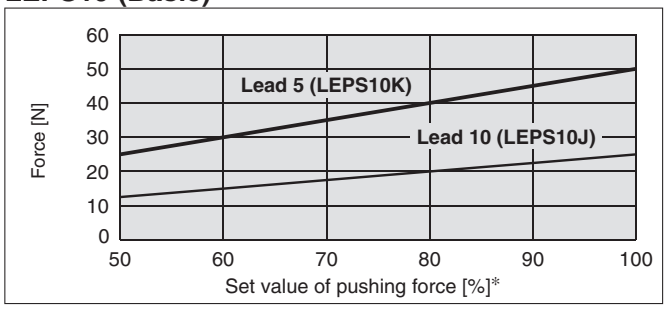
LEPS6 (Basic)



Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70	100	—
80	70	10
100	50	5

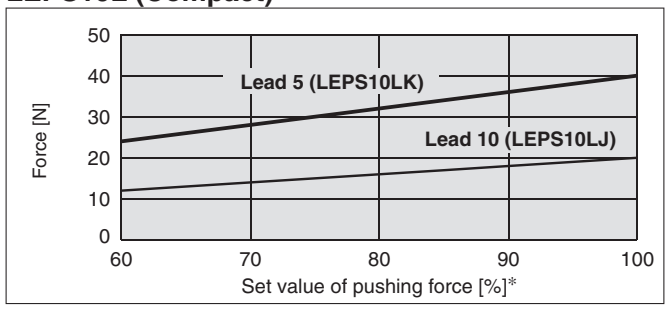
∗ Set values for the controller.

LEPS10 (Basic)



Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
60 or less	100	—
70	30	3
100	15	1

LEPS10L (Compact)

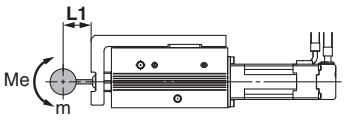
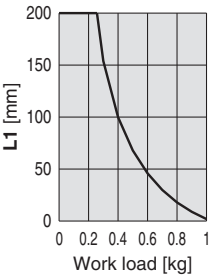
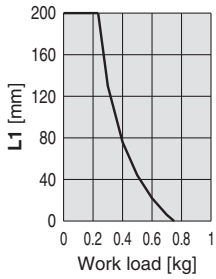
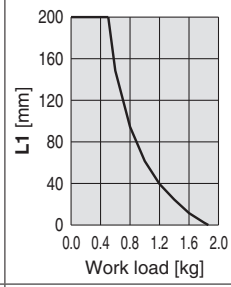
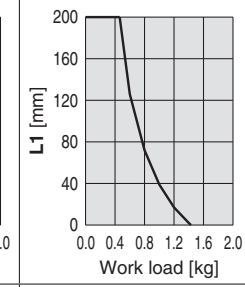
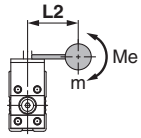
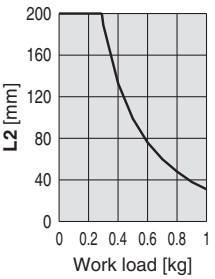
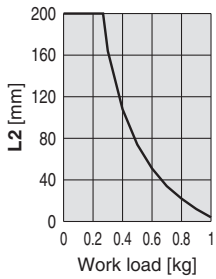
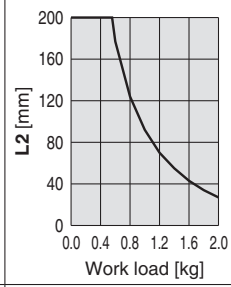
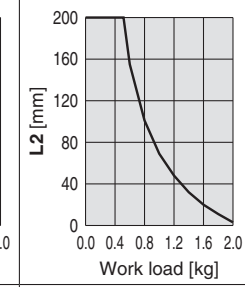
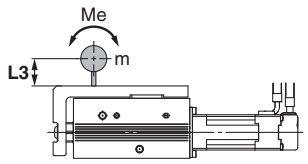
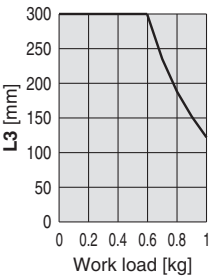
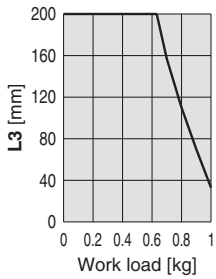
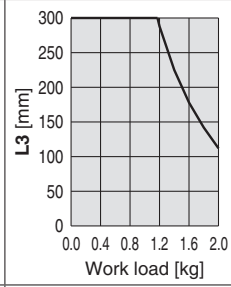
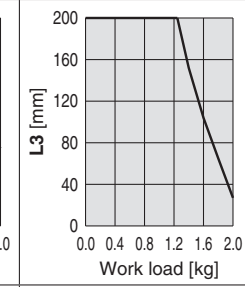
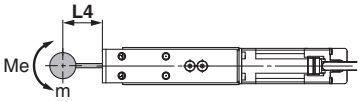
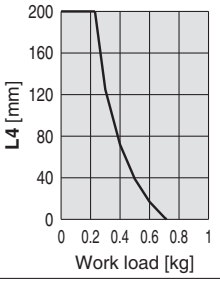
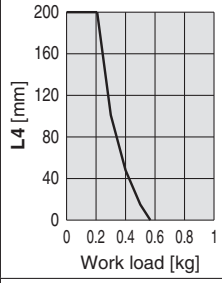
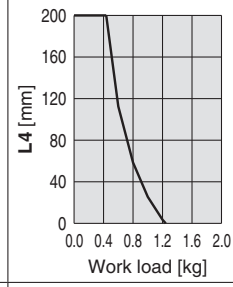
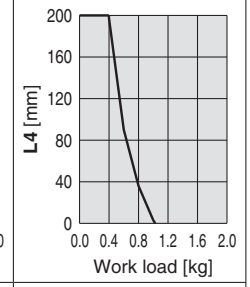
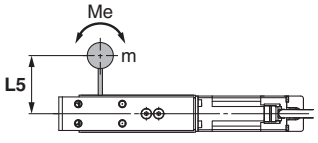
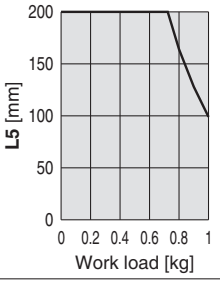
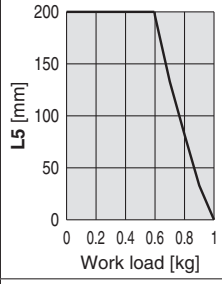
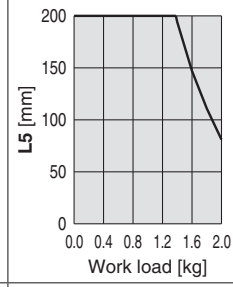
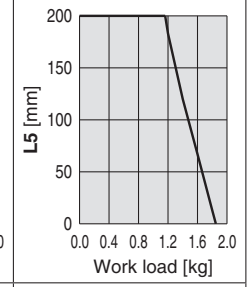
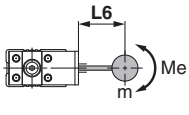
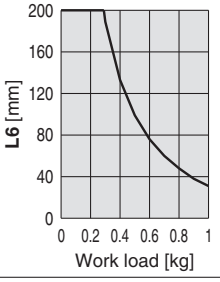
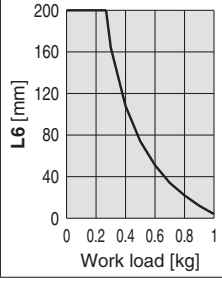
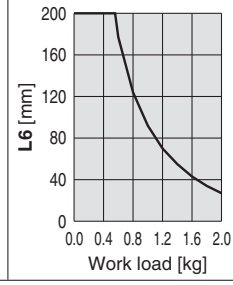
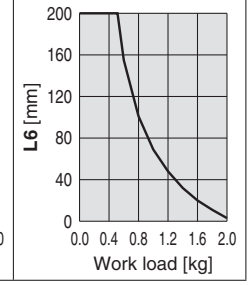


Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70 or less	100	—
80	70	10
100	50	5

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang (guide unit) when the centre of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the Electric Actuator Selection Software for confirmation, http://www.smc.eu

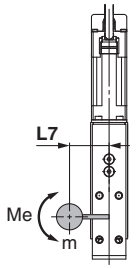
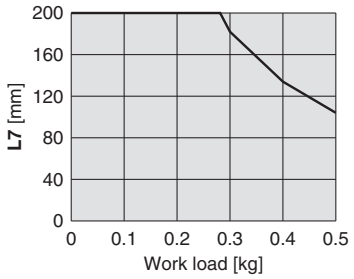
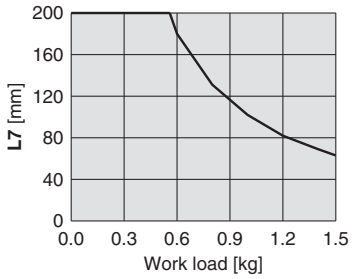
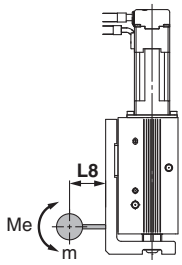
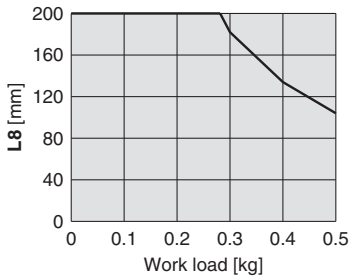
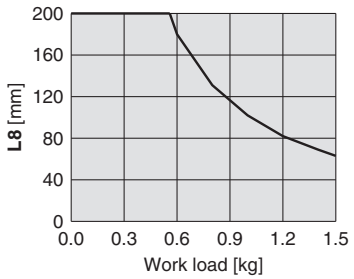
Acceleration/Deceleration —— 3000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Allowable moment [N·m] **L** : Overhang to the work load centre of gravity [mm]		Model			
			LEPS6		LEPS10	
			LEPS6□-25	LEPS6□-50	LEPS10□-25	LEPS10□-50
Horizontal/Bottom		X				
		Y				
		Z				
Wall		X				
		Y				
		Z				

Dynamic Allowable Moment

* This graph shows the amount of allowable overhang (guide unit) when the centre of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the Electric Actuator Selection Software for confirmation, http://www.smc.eu

Acceleration/Deceleration —— 3000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Allowable moment [N·m] **L** : Overhang to the work load centre of gravity [mm]		Model			
			LEPS6		LEPS10	
			LEPS6□-25	LEPS6□-50	LEPS10□-25	LEPS10□-50
Vertical		Y				
		Z				

Static Allowable Moment

Model	Allowable moment (N·m)		
	Pitch moment	Yaw moment	Roll moment
	Mp	**My**	**Mr**
LEPS6	1.07	1.07	2.51
LEPS10	2.55	2.55	5.47

Traveling Parallelism

Traveling parallelism	Stroke (mm)	
	25	50
	0.05 mm or less	0.1 mm or less

Table Deflection (Reference Value)

∗ These values are initial guideline values.

Table displacement due to pitch moment load (marked with the arrow)

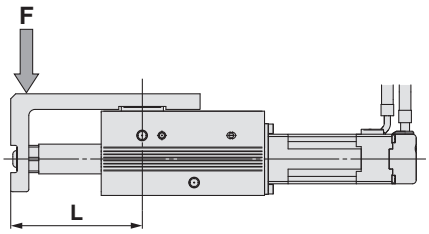


Table displacement due to yaw moment load (marked with the arrow)

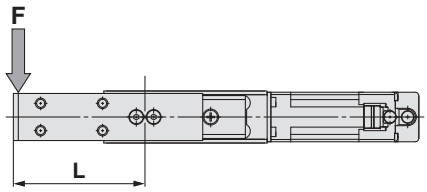
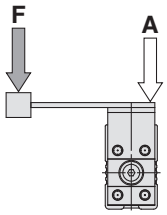


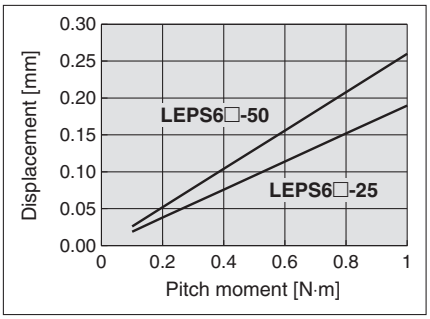
Table displacement due to roll moment load (marked with A)



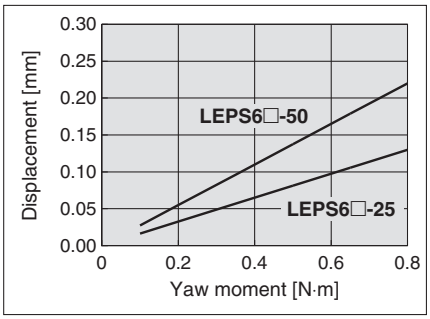
Distance L [mm]

Model	LEPS6		LEPS10	
Stroke [mm]	25	50	25	50
Distance L [mm]	53.0	77.0	59.5	82.0

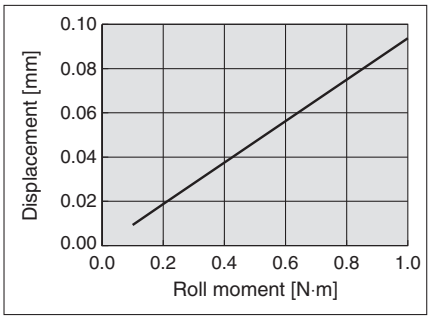
LEPS6



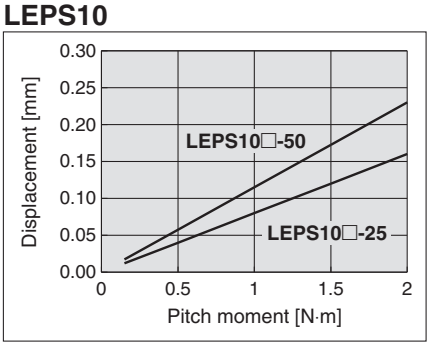
LEPS6



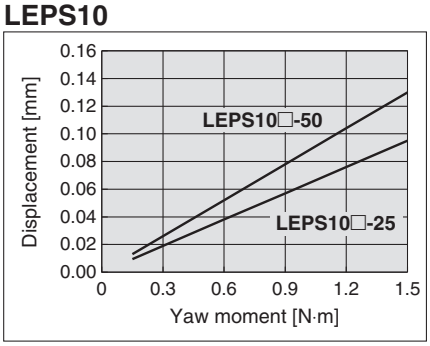
LEPS6



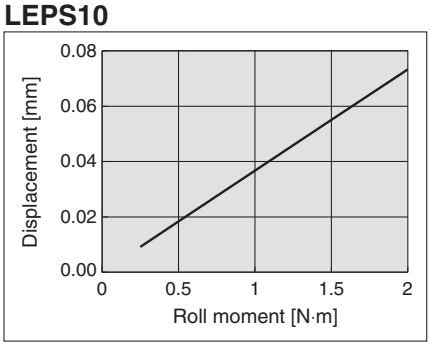
LEPS10



LEPS10



LEPS10



Electric Actuator
Miniature Slide Table Type
Series LEPS
LEPS6, 10

Step Motor (Servo/24 VDC)

RoHS

EtherNet/IP™ DeviceNet™ IO-Link PROFINET EtherCAT®

Compatible ▶ Page 46

Multi-Axis Step Motor Controller Compatible ▶ Page 56

How to Order

LEPS [10] [ ] [K] – [50] [ ] – [R] [1] [AN] [1] [ ]

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

❶ Size

6
10

❷ Motor size

Symbol	Motor size	Applicable size
—	Basic type	6, 10
L	Compact type	10

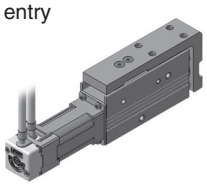
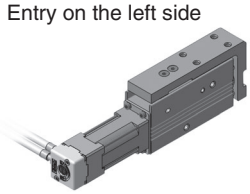
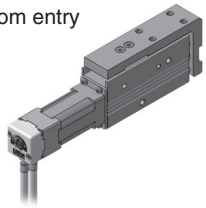
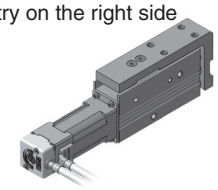
❸ Lead screw type [mm]

Symbol	Screw lead	
	LEPS6	**LEPS10**
K	4	5
J	8	10

❹ Stroke [mm]

Symbol	Stroke
25	25
50	50

❺ Motor cable mounting direction

Nil	Top entry 	**L**	Entry on the left side 
U	Bottom entry 	**R**	Entry on the right side 

❻ Actuator cable type*

—	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

* The standard cable should be used on fixed parts. For using on moving parts, select the robotic cable.

⚠ Caution

[CE-compliant products]

EMC compliance was tested by combining the electric actuator LEP series and the controller LEC series.

The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

[UL-compliant products]

When conformity to UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

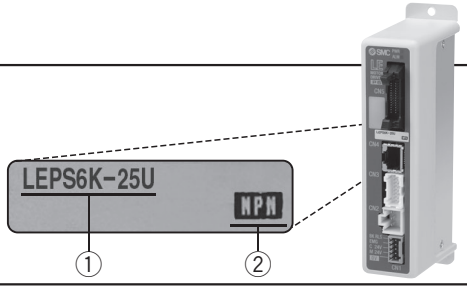
The actuator and controller/driver are sold as a package.

Confirm that the combination of the controller/driver and the actuator is correct.

<Check the following before use.>

① Check the actuator label for model number. This matches the controller/driver.

② Check Parallel I/O configuration matches (NPN or PNP).



* Refer to the operation manual for using the products. Please download it via our website, http://www.smc.eu

❼ Actuator cable length [m]

—	Without cable	**8**	8*
1	1.5	**A**	10*
3	3	**B**	15*
5	5	**C**	20*

* Produced upon receipt of order (Robotic cable only) Refer to the specifications Note 6) on page 17.

❽ Controller type

—	Without controller/driver	
1N	**LECP1** (Programless type)	NPN
1P		PNP
AN	**LECPA** (Pulse input type)	NPN
AP		PNP

* For details about controllers/driver and compatible motors, refer to the compatible controllers/driver below.

❾ I/O cable length [m]

—	Without cable
1	1.5
3	3*2
5	5*2

*1 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 34 (For LECP1) or page 41 (For LECPA) if I/O cable is required.
*2 When "Pulse input type" is selected for controller/driver types, pulse input usable only with differential. Only 1.5 m cables usable with open collector.

❿ Controller mounting

—	Screw mounting
D	DIN rail mounting*

* DIN rail is not included. Order it separately.

Compatible Controllers/Driver

Type	**Programless type** 	**Pulse input type** 
Series	**LECP1**	**LECPA**
Features	Capable of setting up operation (step data) without using a PC or teaching box	Operation by pulse signals
Compatible motor	Step motor (Servo/24 VDC)	
Maximum number of step data	14 points	—
Power supply voltage	24 VDC	
Reference page	Page 28	Page 35

Specifications

Model				LEPS6		LEPS10	
Actuator specifications	Screw lead [mm]			4	8	5	10
	Pushing force [N]*1 *6		Basic	14 to 20	7 to 10	25 to 50	12.5 to 25
			Compact	—	—	24 to 40	12 to 20
	Work load [kg]*2 *3 *6	Horizontal	Basic	1.0	0.75	2.0	1.5
			Compact	—	—	2.0	1.5
		Vertical	Basic	0.5	0.25	1.5	1.0
			Compact	—	—	1.5	1.0
	Speed [mm/s]*3 *6	Horizontal	Basic	10 to 150	20 to 300*4	10 to 200	20 to 350*4
			Compact	—	—	10 to 200	20 to 350*4
		Vertical	Basic	10 to 150	20 to 300*4	10 to 150	20 to 300*4
			Compact	—	—	10 to 150	20 to 300*4
	Pushing speed [mm/s]*5			10	20	10	20
	Acceleration/Deceleration [mm/s²]			3000			
	Backlash [mm]			0.2 or less			
	Positioning repeatability [mm]			±0.05			
	Lost motion [mm]*7			0.2 or less			
	Impact/Vibration resistance [m/s²]*8			50/20			
	Actuation type			Slide screw			
	Guide type			Linear guide			
	Max. operating frequency [c.p.m]			60			
	Operating temperature range [°C]			5 to 40			
	Operating humidity range [%RH]			90 or less (No condensation)			
Electric specifications	Motor size			□20		□28	
	Motor type			Step motor (Servo/24 VDC)			
	Encoder (Angular displacement sensor)			Incremental			
	Power supply voltage [V]			24 VDC ±10%			
	Power [W]*9		Basic	Max. power 22		Max. power 55	
			Compact	—		Max. power 45	

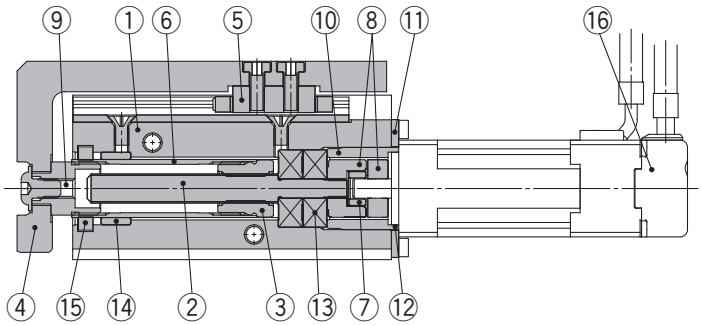
*1 Pushing force accuracy is LEPS6: ±30% (F.S.), LEPS10: ±25%(F.S.).
Refer to pages 23 and 24 for the detailed setting range and precautions. The pushing force and the duty ratio change according to the set value. Check the "Pushing Force Set Value–Force Graph (Guide)" on page 12 and [14] on page 23.
*2 The maximum value of the work load for the positioning operation. Check the "Dynamic Allowable Moment" graph for the allowable moment of the guide on pages 13 and 14.
*3 Speed changes according to the work load. Check the "Speed–Work Load Graph (Guide)" on page 12.
*4 When the stroke is 25 mm, the maximum speed will be 250 mm/s.
*5 Set to the pushing speed when pushing operation.
*6 The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
*7 A reference value for correcting an error in reciprocal operation
*8 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
*9 Indicates the max. power during operation (including the controller)
This value can be used for the selection of the power supply.

Weight

Model		LEPS6	
Stroke [mm]		25	50
Product weight [kg]	Basic	0.29	0.35

Model		LEPS10	
Stroke [mm]		25	50
Product weight [kg]	Basic	0.56	0.65
	Compact	0.50	0.59

Construction

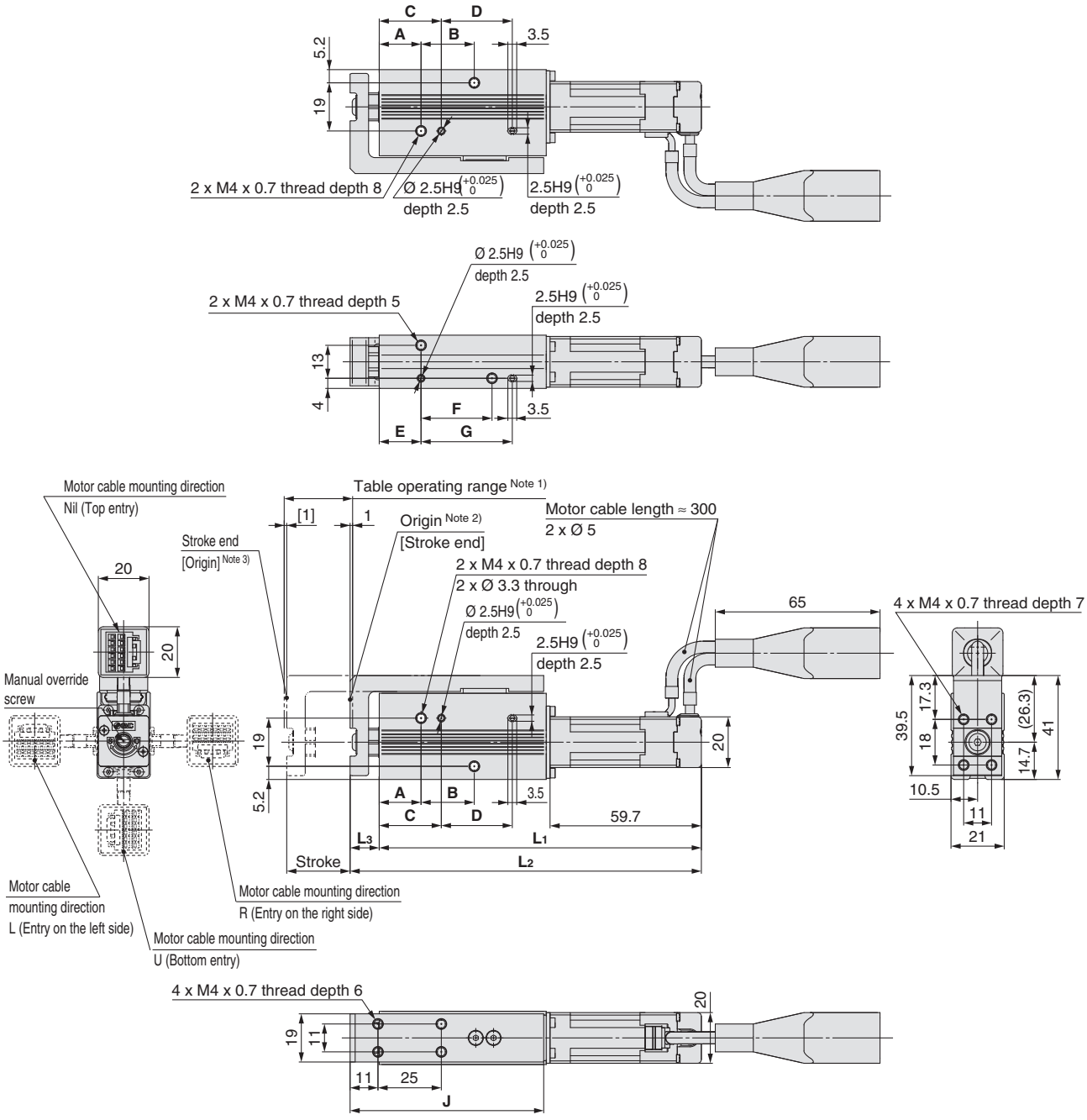


Component Parts

No.	Description	Material	Note
1	Body	Aluminium alloy	Anodised
2	Screw shaft	Stainless steel	Heat treatment + Specially treated
3	Screw nut	Stainless steel	Heat treatment + Specially treated
4	Table	Aluminium alloy	Anodised
5	Linear guide	—	
6	Rod	Stainless steel	
7	Spider	NBR	
8	Hub	Aluminium alloy	
9	Socket	Free cutting carbon steel	Nickel plated
10	Bearing stopper	Size 6: Aluminium alloy Size 10: Carbon steel	
11	Motor plate	Aluminium alloy	Anodised
12	Guide ring	Aluminium alloy	Size 10 only
13	Bearing	—	
14	Bushing	Oil impregnated sintered copper alloy	
15	Soft wiper	—	
16	Step motor (Servo/24 VDC)	—	

Dimensions

LEPS6



Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.

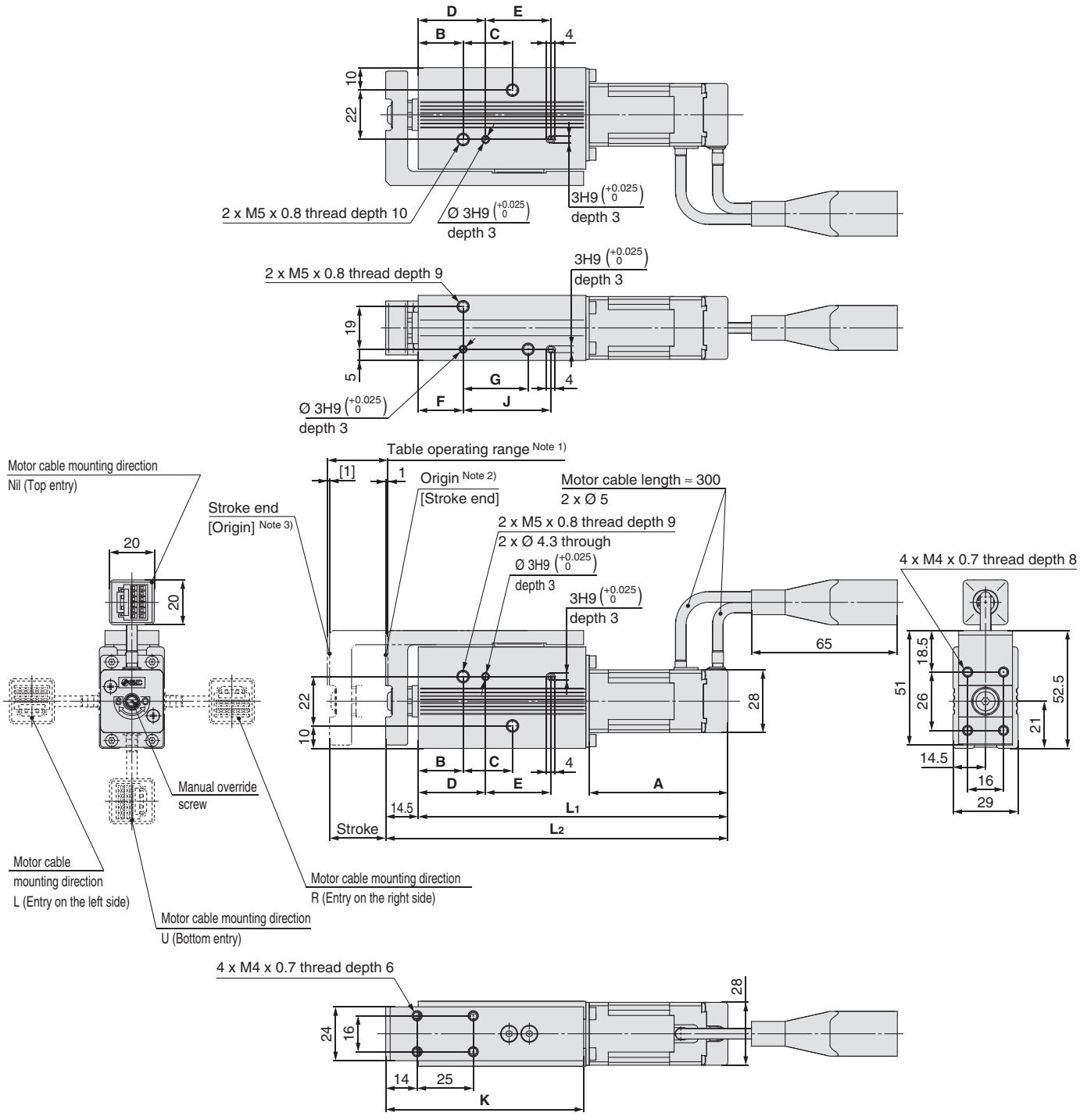
Dimensions

[mm]

Model	L_1	L_2	L_3	A	B	C	D	E	F	G	J
LEPS6□-25□	127.1	138.6	11.5	16.5	21	24.5	28	16.5	28	36	76.4
LEPS6□-50□	156.6	169.6	13	22	45	30	52	22	52	60	107.4

Dimensions

LEPS10



Note 1) Range within which the table can move when it returns to origin.
Make sure a workpiece mounted on the table does not interfere with the workpieces and facilities around the table.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin has changed.

Dimensions

[mm]

Model	L1	L2	A	B	C	D	E	F	G	J	K
LEPS10□-25□	138	152.5	61.8	20	22	30	29	20	29	39	88.2
LEPS10□-50□	163	177.5		24	43	34	50	24	50	60	113.2
LEPS10L□-25□	124	138.5	47.8	20	22	30	29	20	29	39	88.2
LEPS10L□-50□	149	163.5		24	43	34	50	24	50	60	113.2

Series LEPY/LEPS
Specific Product Precautions 1

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smc.eu

Design/Selection

⚠Warning

1. Do not apply a load in excess of the operating limit.

Select a suitable actuator by load and allowable lateral load on the rod end. If the product is used outside of the operating limit, the eccentric load applied to the rod will be excessive and have adverse effects such as creating play on the sliding parts of the rod, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

Do not apply impact and vibration outside of the specifications; it may lead to a malfunction.

3. If gravity acts on the workpiece due to vertical mounting, it may drop due to its own weight depending on the conditions when the product is not energized (SVON signal is OFF) or stopped (EMG is not energized).

4. Power failure may result in a decrease in the pushing force; ensure that safety measures are in place to prevent injury to the operator or damage to the equipment.

When the product is used for clamping, the clamping force could be decreased due to power failure, potentially creating a hazardous situation in which the workpiece is released.

5. This product cannot be used as a stopper.

Excessive load acts on the actuator, which adversely affects the operation and the life of the product.

Mounting

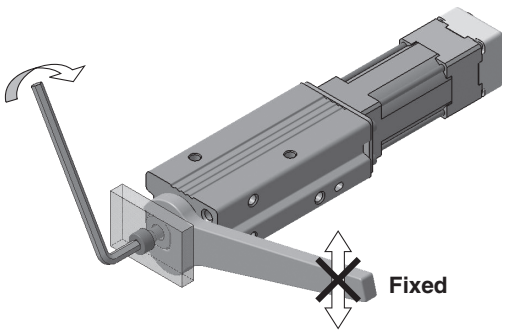
⚠Warning

1. Do not drop or hit the actuator to avoid scratching and denting the mounting surfaces.

Even slight deformation can cause the deterioration of accuracy and operation failure.

2. When mounting workpieces or attachments to the rod end, hold the flats of the rod end with a wrench so that the rod does not rotate (Rod type only).

When attaching a bolt or workpiece to the end of the rod, hold the flats of the rod end with a wrench (the rod should be fully retracted). Do not apply tightening torque to the rod non-rotating mechanism. The rod is manufactured to precise tolerances, so even a slight deformation may cause a malfunction and damage (Rod type only).

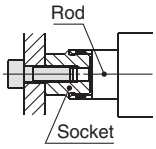


Mounting

⚠Warning

3. When mounting a bolt, workpiece or attachment to the rod end, the bolt should be tightened with a torque within the specified range (Rod type only).

Tightening to a torque higher than the specified value may cause a malfunction due to deformation of the component, whilst under-tightening can cause displacement of the mounting position or in extreme conditions detaching of the workpiece. If the bolt is screwed in more than the maximum depth, the lead screw will be damaged, leading to operation failure (Rod type only).



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]	Rod end width across flats [mm]
LEPY6	M4 x 0.7	1.4	7	10
LEPY10	M5 x 0.8	3.0	9	12

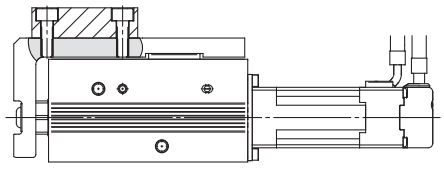
4. The angular position of the rod end flats cannot be changed because the rod has a non-rotating mechanism inside (Rod type only).

The angular position of the rod end flats is not specified; it depends on the actuator type (Rod type only).
The rod rotates slightly due to the clearance of the non-rotating mechanism: Install the bolt or workpiece with consideration to the rotation (Rod type only).

5. When attaching the workpiece to the table, hold the table and tighten the bolts with a torque within the specified range (Slide table type only).

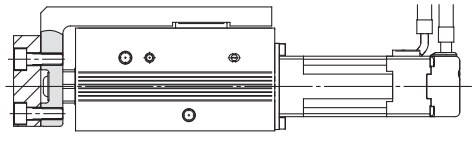
The table is supported by a linear guide, do not apply impact or moment when mounting the work load.
If the bolts are screwed to more than the maximum screw-in depth, it may lead to a malfunction due to damage of the linear guide or body.

Top mounting



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEPS6	M4 x 0.7	1.4	6
LEPS10	M4 x 0.7	1.4	6

Front mounting



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEPS6	M4 x 0.7	1.4	7
LEPS10	M4 x 0.7	1.4	8

Specific Product Precautions 2

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smc.eu

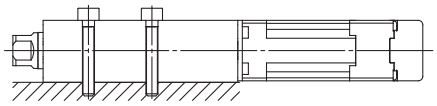
Mounting

⚠Warning

6. Tighten the mounting screws within the specified torque range.

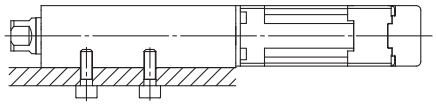
Tightening with higher torque than the specified range may cause malfunction while the tightening with lower torque can cause the displacement of gripping position or dropping a workpiece.

Side mounting (Body mounting through-hole)



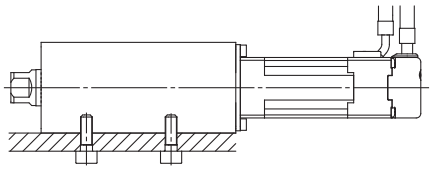
Model	Bolt	Max. tightening torque [N·m]
LEPY6 / LEPS6	M3 x 0.5	0.9
LEPY10 / LEPS10	M4 x 0.7	1.4

Side mounting (Body tapped)



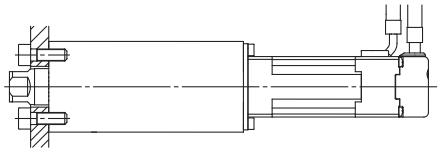
Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEPY6 / LEPS6	M4 x 0.7	1.4	7
LEPY10 / LEPS10	M5 x 0.8	3.0	9

Bottom mounting (Body tapped)



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEPY6 / LEPS6	M4 x 0.7	1.4	5
LEPY10 / LEPS10	M5 x 0.8	3.0	9

Rod side mounting (Rod type only)



Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEPY6	M4 x 0.7	1.4	7
LEPY10	M5 x 0.8	3.0	9

7. When it is necessary to operate the product by the manual override screw, check the position of the manual override and leave necessary space for access.

Do not apply excessive torque to the manual override screw. This may lead to damage and malfunction.

8. When an external guide is used, connect it in such a way that no impact or load is applied to it.

This may cause a malfunction due to an increase in sliding resistance, or use a freely moving connector (such as a floating joint).

Handling

⚠Caution

1. When the pushing operation is used, be sure to set to [Pushing operation].

Also, do not hit the workpiece in positioning operation or in the range of positioning operation.

It may damage and malfunction. If the operation is interrupted or stopped during the cycle: When the pushing operation command is output immediately after restarting the operation, the direction of movement depends on the position of restart.

2. Use the product within the specified pushing speed range for the pushing operation.

It may lead to damage and malfunction.

Model	Lead	Pushing speed [mm/sec]
LEPY6	4	10
LEPS6	8	20
LEPY10	5	10
LEPS10	10	20

3. For the pushing operation, ensure that the force is applied in the direction of the rod axis.

4. The moving force should be the initial value.

If the moving force is set below the initial value, it may cause an alarm.

Model	Motor size	Moving force [%]
LEPY6	Basic	150
LEPY10	Basic	150
	Compact	

5. The actual speed of this actuator is affected by the load.

Check the model selection section of the catalog.

6. Do not scratch or dent the sliding parts of the rod, by striking or attaching objects.

The rod is manufactured to precise tolerances, even a slight deformation may cause malfunction.

7. Avoid using the electric actuator in such a way that rotational torque would be applied to the rod.

It may cause deformation of the non-rotating sliding part, leading to clearance in the internal guide or an increase in the sliding resistance. Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque [N·m] or less	LEPY6□	LEPY10□
	0.04	0.08

Specific Product Precautions 3

Be sure to read before handling. Refer to back cover for Safety Instructions and the Operation Manual for Electric Actuator Precautions.
Please download it via our website, http://www.smc.eu

Handling

⚠Caution

8. Do not operate by fixing the rod and moving the actuator body.

Excessive load will be applied to the rod, leading to damage to the actuator and reduced the life of the product.

9. Return to origin

1) Do not apply a load, impact or resistance in addition to the transferred load during return to origin.
Additional force will cause the displacement of the origin position since it is based on detected motor torque.
2) When the return to origin is set with <Basic parameter> [Origin offset], it is necessary to change the current position of the product. Recheck the value of step data.
3) It is recommended to set the directions of return to origin and pushing in the same direction in order to enhance the measurement accuracy during pushing operation.

10. There is no backlash effect in pushing operation.

The return to origin is done by the pushing operation.
The position can be displaced by the effect of the backlash during the positioning operation.
Take the backlash into consideration when setting the position.

<Backlash>

Model	Backlash [mm]
LEPY6	0.2 or less
LEPS6	0.2 or less
LEPY10	0.2 or less
LEPS10	0.2 or less

11. Do not hit the stroke end except during return to origin.

This may damage the inner parts.

12. INP output signal

1) Positioning operation
When the product comes within the set range by step data [In position], the INP output signal will turn on.
Initial value: Set to [0.50] or higher.
2) Pushing operation
When the effective pushing force exceeds the step data [Trigger LV], the INP output signal will turn on.
When [Pushing force] setting and [Trigger LV] are set less than [Pushing force], use the product within the specified range of [Pushing force] and [Trigger LV].
a) To ensure that the actuator pushes the workpiece with the set [Pushing force], it is recommended that the [Trigger LV] be set to the same value as the [Pushing force].
b) If the [Trigger LV] is set lower than the [operation pushing force (current pushing force) for the pushing operation], the pushing force will exceed the trigger LV from the pushing start position and the INP output signal will turn on before pushing the workpiece. Increase the pushing force, or change the work load so that the current pushing force becomes smaller than the trigger LV.

<Pushing force and trigger LV range>

Model	Motor size	Set value of pushing force [%]
LEPY6 LEPS6	Basic	70 to 100
LEPY10	Basic	50 to 100
LEPS10	Compact	60 to 100

13. In pushing operation, set the product to a position of at least 0.5 mm away from a workpiece. (This position is referred to as a pushing start position.)

The following alarms may be generated and operation may become unstable.

a. "Posn failed" alarm is generated.
The product cannot reach a pushing start position due to variation in the width of workpieces.

b. "Pushing ALM" alarm is generated.
The product is pushed back from a pushing start position after starting to push.

c. "Deviation over flow" alarm is generated.
Displacement exceeding the specified value is generated at the pushing start position.

14. For the pushing operation, use the product within the duty ratio range below.

The duty ratio is a ratio at the time that can keep being pushed.

Model	Motor size	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
LEPY6 LEPS6	Basic	70	100	—
		80	70	10
		100	50	5

Model	Motor size	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
LEPY10 LEPS10	Basic	60 or less	100	—
		70	30	3
		100	15	1

Model	Motor size	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
LEPY10 LEPS10	Compact	70 or less	100	—
		80	70	10
		100	50	5

15. When mounting the product, keep a 40 mm or longer diameter for bends in the cable.

Maintenance

⚠Warning

1. Ensure that the power supply is stopped and the workpiece is removed before starting maintenance work or replacement of the product.

Controller/Driver

Gateway Unit ····· Page 25

Series LEC-G

Programless Type ····· Page 28

Step Motor (Servo/24 VDC)

Series LECP1

Pulse Input Type ····· Page 35

Step Motor (Servo/24 VDC)

Series LECPA

Gateway Unit
Series LEC-G

How to Order

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator LE series and the controller LEC series. The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

[UL-compliant products]
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Gateway unit **LEC-G MJ2 □**

Applicable Fieldbus protocols

MJ2	CC-Link Ver. 2.0
DN1	DeviceNet™
PR1	PROFIBUS DP
EN1	EtherNet/IP™

Mounting

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

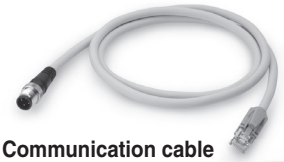
Cable **LEC-CG 1-L**

Cable type

1	Communication cable
2	Cable between branches

Cable length

K	0.3 m
L	0.5 m
1	1 m



Communication cable

Cable between branches

Branch connector **LEC-CGD**

Branch connector

Terminating resistor **LEC-CGR**

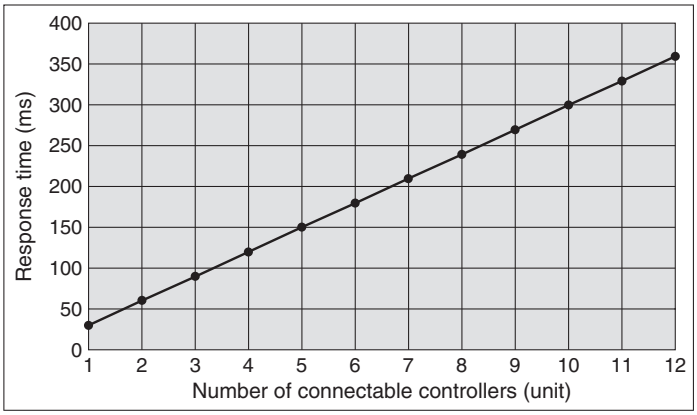
Specifications

Model			LEC-GMJ2□	LEC-GDN1□	LEC-GPR1□	LEC-GEN1□
Communication specifications	Applicable system	Fieldbus	CC-Link	DeviceNet™	PROFIBUS DP	EtherNet/IP™
		Version Note 1)	Ver. 2.0	Release 2.0	V1	Release 1.0
	Communication speed [bps]		156 k/625 k/2.5 M /5 M/10 M	125 k/250 k/500 k	9.6 k/19.2 k/45.45 k/ 93.75 k/187.5 k/500 k/ 1.5 M/3 M/6 M/12 M	10 M/100 M
	Configuration file Note 2)		—	EDS file	GSD file	EDS file
	I/O occupation area		4 stations occupied (8 times setting) Input 896 points 108 words Output 896 points 108 words	Input 200 bytes Output 200 bytes	Input 57 words Output 57 words	Input 256 bytes Output 256 bytes
	Power supply for communication	Power supply voltage [V] Note 6)	—	11 to 25 VDC	—	—
		Internal current consumption [mA]	—	100	—	—
	Communication connector specifications		Connector (Accessory)	Connector (Accessory)	D-sub	RJ45
	Terminating resistor		Not included	Not included	Not included	Not included
Power supply voltage [V] Note 6)			24 VDC ±10 %			
Current consumption [mA]	Not connected to teaching box		200			
	Connected to teaching box		300			
EMG output terminal			30 VDC 1 A			
Controller specifications	Applicable controllers		Series LECA6			
	Communication speed [bps] Note 3)		115.2 k/230.4 k			
	Max. number of connectable controllers Note 4)		12	8 Note 5)	5	12
Accessories			Power supply connector, communication connector		Power supply connector	
Operating temperature range [°C]			0 to 40 (No freezing)			
Operating humidity range [%RH]			90 or less (No condensation)			
Storage temperature range [°C]			−10 to 60 (No freezing)			
Storage humidity range [%RH]			90 or less (No condensation)			
Weight [g]			200 (Screw mounting), 220 (DIN rail mounting)			

Note 1) Please note that the version is subject to change.
Note 2) Each file can be downloaded from the SMC website, http://www.smc.eu
Note 3) When using a teaching box (LEC-T1-□), set the communication speed to 115.2 kbps.
Note 4) A communication response time for 1 controller is approximately 30 ms.
Refer to "Communication Response Time Guideline" for response times when several controllers are connected.
Note 5) For step data input, up to 12 controllers connectable.
Note 6) When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Communication Response Time Guideline

Response time between gateway unit and controllers depends on the number of controllers connected to the gateway unit. For response time, refer to the graph below.

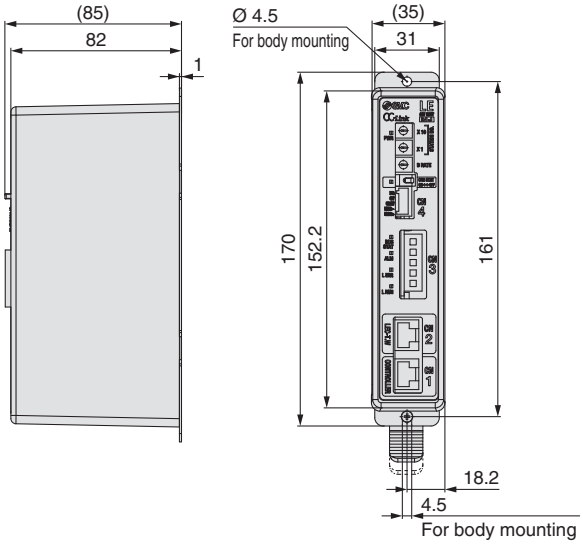


* This graph shows delay times between gateway unit and controllers. Fieldbus network delay time is not included.

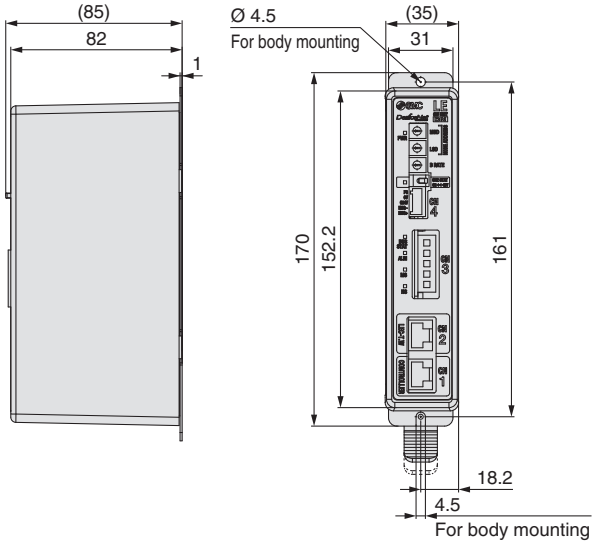
Dimensions

Screw mounting (LEC-G□□□)

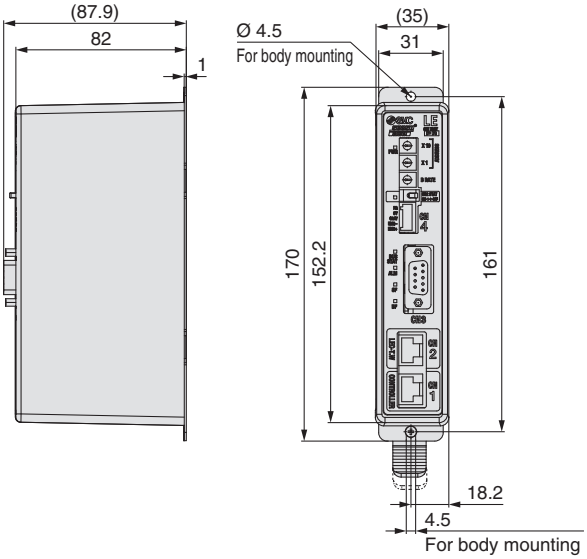
Applicable Fieldbus protocol: CC-Link Ver. 2.0



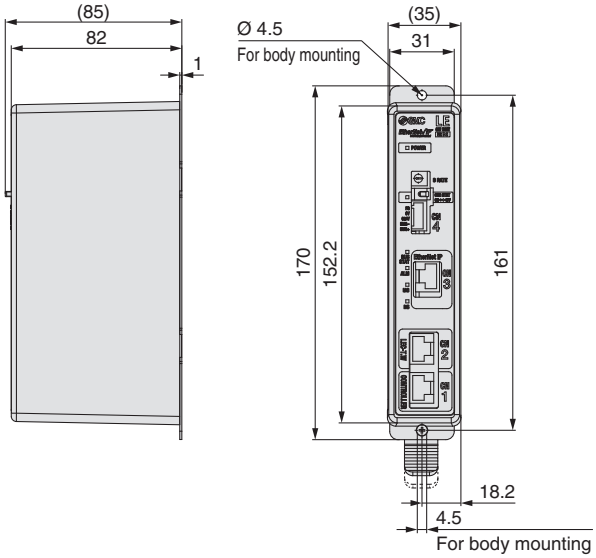
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP



Applicable Fieldbus protocol: EtherNet/IP™

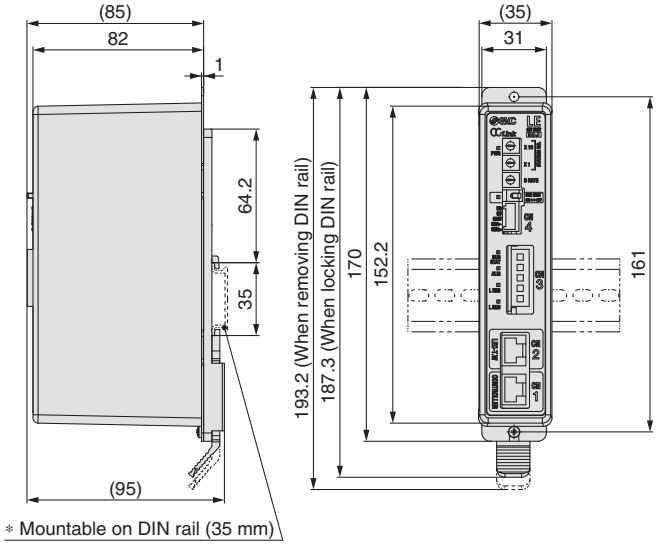


■ **Trademark** DeviceNet™ is a trademark of ODVA. EtherNet/IP™ is a trademark of ODVA.

Dimensions

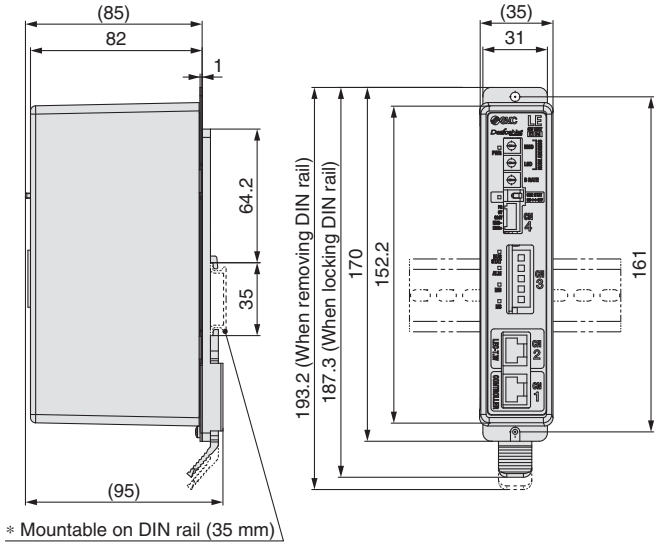
DIN rail mounting (LEC-G□□□D)

Applicable Fieldbus protocol: CC-Link Ver. 2.0



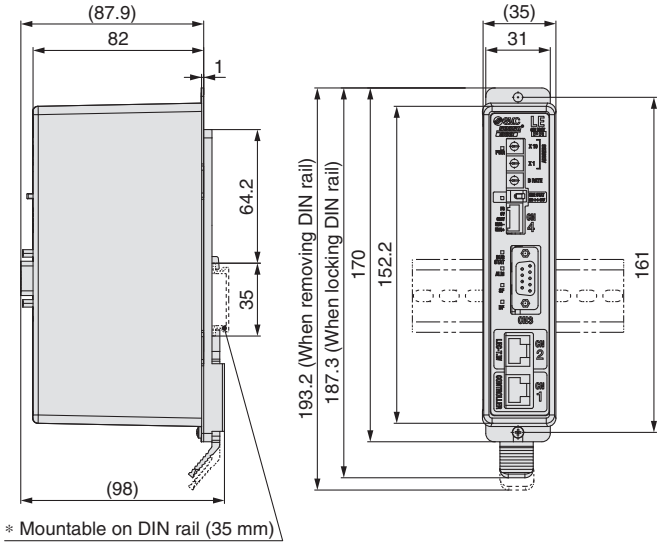
∗ Mountable on DIN rail (35 mm)

Applicable Fieldbus protocol: DeviceNet™



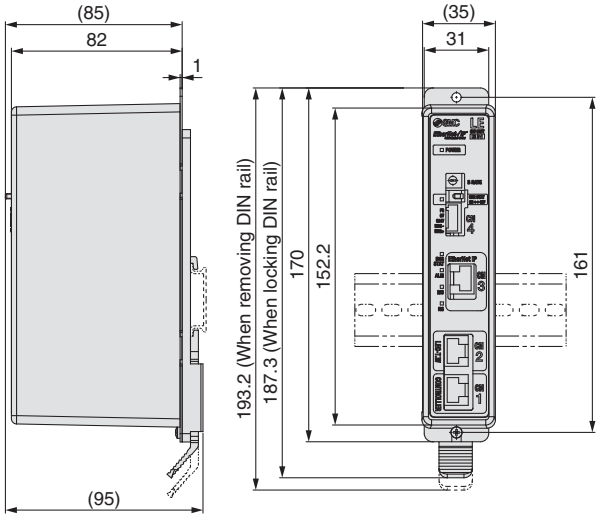
∗ Mountable on DIN rail (35 mm)

Applicable Fieldbus protocol: PROFIBUS DP



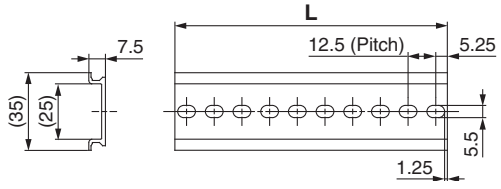
∗ Mountable on DIN rail (35 mm)

Applicable Fieldbus protocol: EtherNet/IP™



DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions above for the mounting dimensions.



L Dimension [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

Programless Controller
Series LECP1

How to Order

LE C P 1 P 1 [ ] – LEPY10K-50

Controller

Compatible motor

P	Step motor (Servo/24 VDC)

Number of step data (Points)

1	14 (Programless)

Parallel I/O type

N	NPN
P	PNP

I/O cable length [m]

—	Without cable
1	1.5
3	3
5	5

Option

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

Actuator part number

(Except cable specification and actuator options)
Example: Enter "**LEPY10K-50**" for the LEPY10K-50U-R11N1.

∗ **When controller equipped type (-□1N□/-□1P□) is selected when ordering the LE series, you do not need to order this controller.**

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator LEF series and the controller LEC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.
[UL-compliant products]
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

The controller is sold as single unit after the compatible actuator is set.
Confirm that the combination of the controller and the actuator is correct.

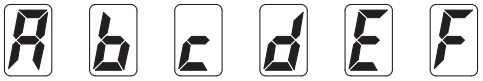
∗ Refer to the Operation Manual for using the products. Please download it via our website, http://www.smc.eu

Specifications

Basic Specifications

Item	LECP1
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power supply voltage: 24 VDC ±10 %, Max. current consumption: 3A (Peak 5A) Note 2) [Including the motor drive power, control power supply, stop, lock release]
Parallel input	6 inputs (Photo-coupler isolation)
Parallel output	6 outputs (Photo-coupler isolation)
Stop points	14 points (Position number 1 to 14(E))
Compatible encoder	Incremental A/B phase (800 pulse/rotation)
Memory	EEPROM
LED indicator	LED (Green/Red) one of each
7-segment LED display Note 3)	1 digit, 7-segment display (Red) Figures are expressed in hexadecimal ("10" to "15" in decimal number are expressed as "A" to "F")
Lock control	Forced-lock release terminal Note 4)
Cable length [m]	I/O cable: 5 or less, Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 40 (No freezing)
Operating humidity range [%RH]	90 or less (No condensation)
Storage temperature range [°C]	–10 to 60 (No freezing)
Storage humidity range [%RH]	90 or less (No condensation)
Insulation resistance [MΩ]	Between the housing and SG terminal: 50 (500 VDC)
Weight [g]	130 (Screw mounting), 150 (DIN rail mounting)

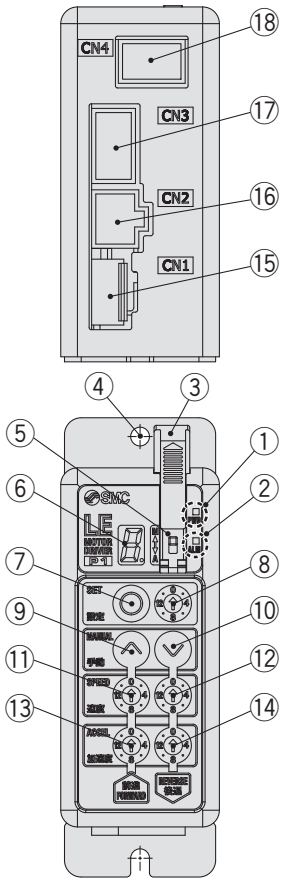
Note 1) Do not use the power supply of "inrush current prevention type" for the controller input power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model. Refer to the each actuator's operation manual etc. for details.
Note 3) "10" to "15" in decimal number are displayed as follows in the 7-segment LED.



Decimal display	10	11	12	13	14	15
Hexadecimal display	A	b	c	d	E	F

Note 4) Applicable to non-magnetizing lock.

Controller Details



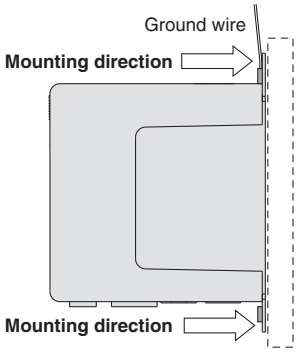
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF: Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing switch)
④	—	FG	Frame ground (Tighten the bolt with the nut when mounting the controller. Connect the ground wire.)
⑤	—	Mode switch	Switch the mode between manual and auto.
⑥	—	7-segment LED	Stop position, the value set by ⑧ and alarm information are displayed.
⑦	**SET**	Set button	Decide the settings or drive operation in Manual mode.
⑧	—	Position selecting switch	Assign the position to drive (1 to 14), and the origin position (15).
⑨	**MANUAL**	Manual forward button	Perform forward jog and inching.
⑩		Manual reverse button	Perform reverse jog and inching.
⑪	**SPEED**	Forward speed switch	16 forward speeds are available.
⑫		Reverse speed switch	16 reverse speeds are available.
⑬	**ACCEL**	Forward acceleration switch	16 forward acceleration steps are available.
⑭		Reverse acceleration switch	16 reverse acceleration steps are available.
⑮	**CN1**	Power supply connector	Connect the power supply cable.
⑯	**CN2**	Motor connector	Connect the motor connector.
⑰	**CN3**	Encoder connector	Connect the encoder connector.
⑱	**CN4**	I/O connector	Connect I/O cable.

How to Mount

Controller mounting shown below.

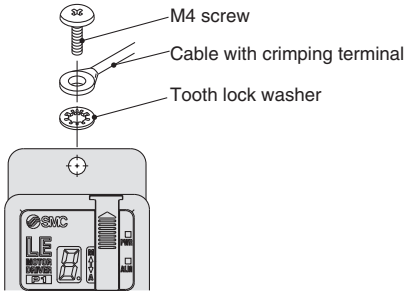
1. Mounting screw (LECP1□□-□)

(Installation with two M4 screws)



2. Grounding

Tighten the bolt with the nut when mounting the ground wire as shown below.



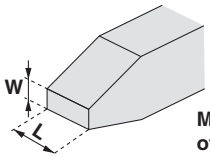
Controller

Note) When size 25 or more of the LE series are used, the space between the controllers should be 10 mm or more.

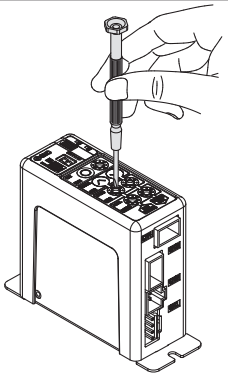
⚠Caution

- M4 screws, cable with crimping terminal and tooth lock washer are not included. Be sure to carry out grounding earth in order to ensure the noise tolerance.
- Use a watchmaker's screwdriver of the size shown below when changing position switch ⑧ and the set value of the speed/acceleration switch ⑪ to ⑭.

Size
End width **L**: 2.0 to 2.4 [mm]
End thickness **W**: 0.5 to 0.6 [mm]

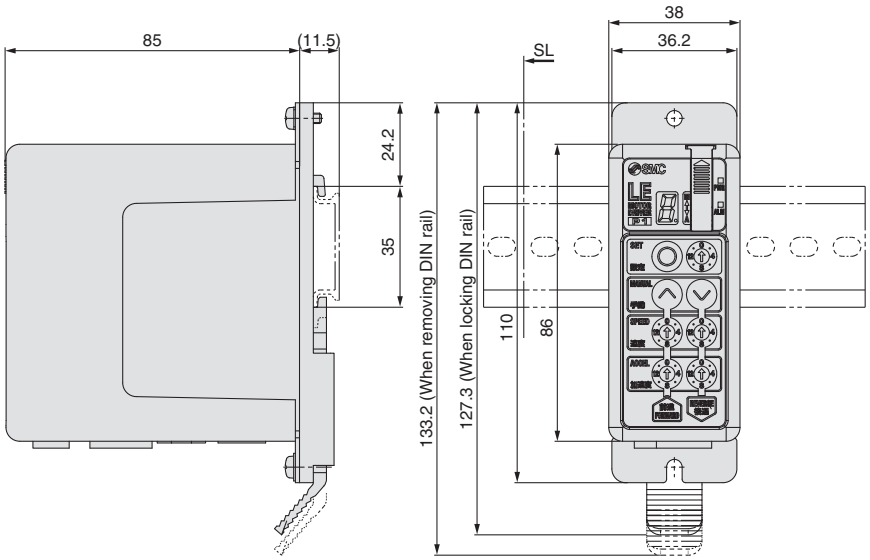


Magnified view of the end of the screwdriver



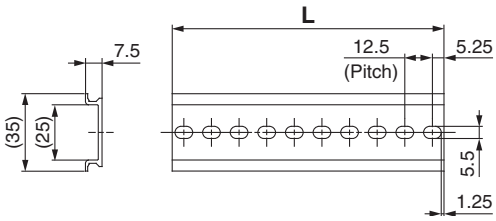
Dimensions

DIN rail mounting (LEC□1□□D-□)



DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions above for the mounting dimensions.



L Dimension [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5	273

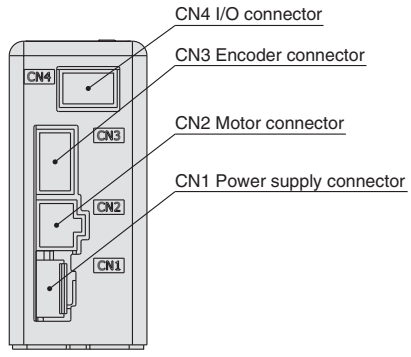
No.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

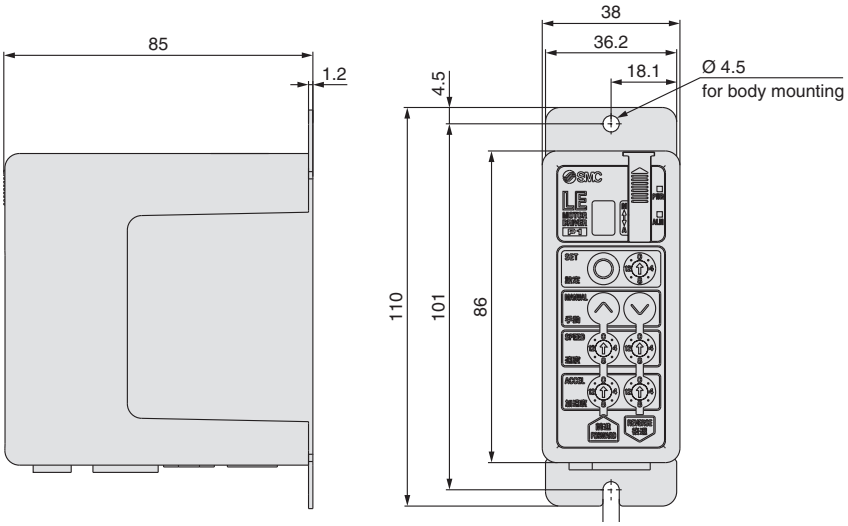
DIN rail mounting adapter

LEC-1-D0 (with 2 mounting screws)

This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type controller afterwards.

Screw mounting (LEC□1□□-□)





Wiring Example 1

Power Supply Connector: CN1

* When you connect a CN1 power supply connector, use the power supply cable (LEC-CK1-1).
* Power supply cable (LEC-CK1-1) is an accessory.

CN1 Power Supply Connector Terminal for LECP1

Terminal name	Cable colour	Function	Details
0V	Blue	Common supply (–)	M 24V terminal/C 24V terminal/BK RLS terminal are common (–).
M 24V	White	Motor power supply (+)	Motor power supply (+) supplied to the controller
C 24V	Brown	Control power supply (+)	Control power supply (+) supplied to the controller
BK RLS	Black	Lock release (+)	Input (+) for releasing the lock

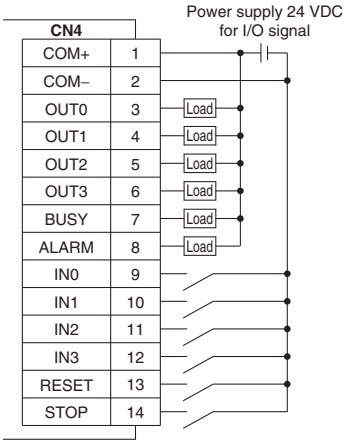
Power supply cable for LECP1 (LEC-CK1-1)

Wiring Example 2

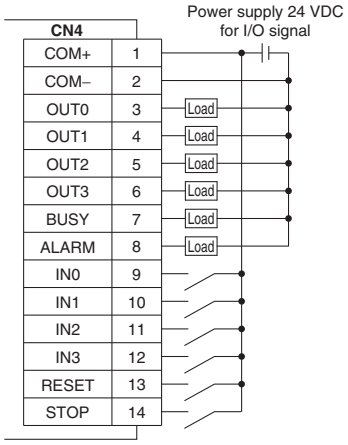
Parallel I/O Connector: CN4

* When you connect a PLC etc., to the CN4 parallel I/O connector, use the I/O cable (LEC-CK4-□).
* The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

■NPN



■PNP



Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM–	Connects the power supply 0 V for input/output signal
IN0 to IN3	• Instruction to drive (input as a combination of IN0 to IN3) • Instruction to return to origin (IN0 to IN3 all ON simultaneously) Example - (instruction to drive for position no. 5) IN3: OFF, IN2: ON, IN1: OFF, IN0: ON
RESET	Alarm reset and operation interruption During operation: deceleration stop from position at which signal is input (servo ON maintained) While alarm is active: alarm reset
STOP	Instruction to stop (after maximum deceleration stop, servo OFF)

Output Signal

Name	Details
OUT0 to OUT3	Turns on when the positioning or pushing is completed. (Output is instructed in the combination of OUT0 to 3.) Example - (operation complete for position no. 3) OUT3: OFF, OUT2: OFF, OUT1: ON, OUT0: ON
BUSY	Outputs when the actuator is moving
*ALARM Note)	Not output when alarm is active or servo OFF

Note) Signal of negative-logic circuit (N.C.)

Input Signal [IN0 - IN3] Position Number Chart ○: OFF ●: ON

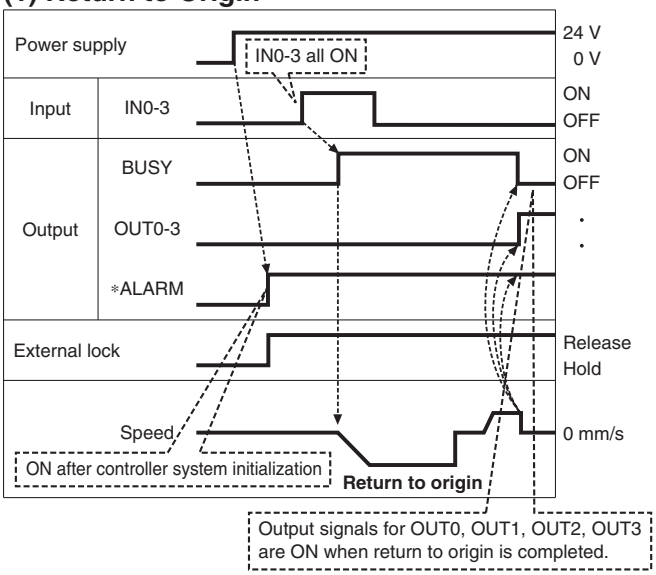
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Return to origin	●	●	●	●

Output Signal [OUT0 - OUT3] Position Number Chart ○: OFF ●: ON

Position number	OUT3	OUT2	OUT1	OUT0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Return to origin	●	●	●	●

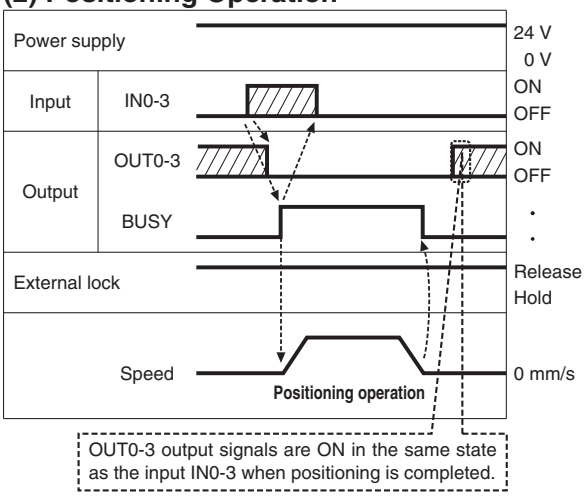
Signal Timing

(1) Return to Origin

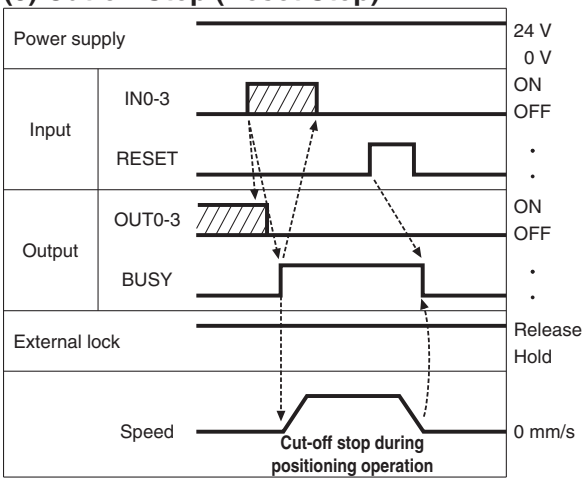


∗ "∗ALARM" is expressed as negative-logic circuit.

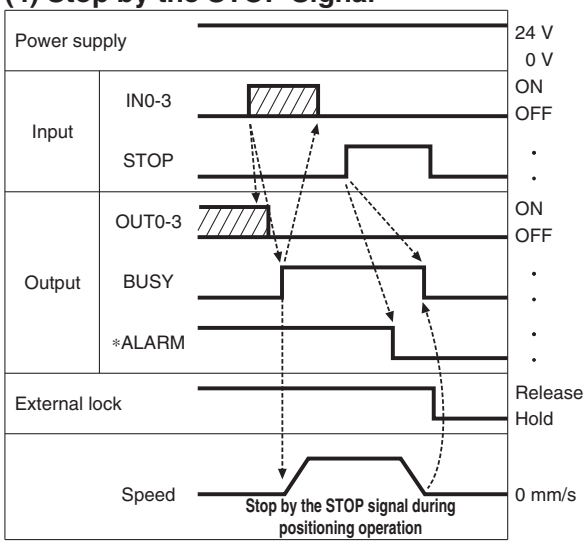
(2) Positioning Operation



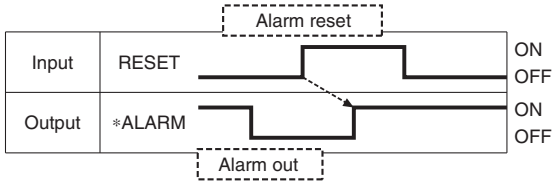
(3) Cut-off Stop (Reset Stop)



(4) Stop by the STOP Signal



(5) Alarm Reset



∗ "∗ALARM" is expressed as negative-logic circuit.

Options: Actuator Cable

[Robotic cable, standard cable for step motor (Servo/24 VDC)]

LE − CP − 1 − ☐

Cable length (L) [m]

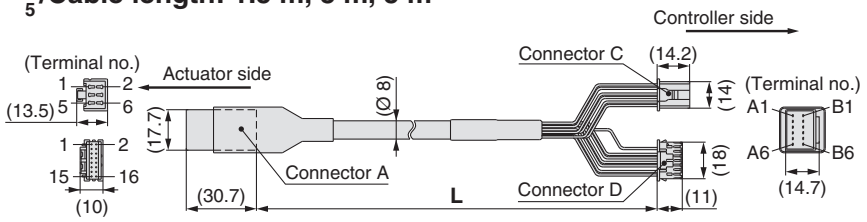
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

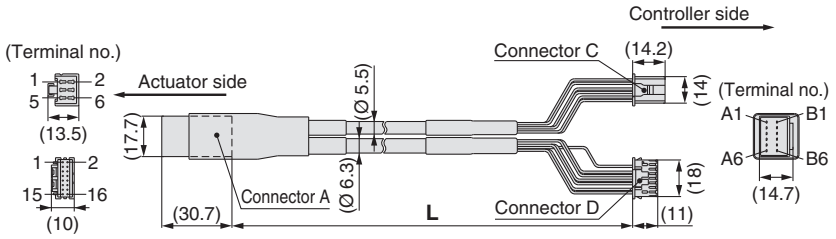
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$^{1}_{3}$$_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$^{8}_{A}$$^{B}_{C}$/Cable length: 8 m, 10 m, 15 m, 20 m
(* Produced upon receipt of order)



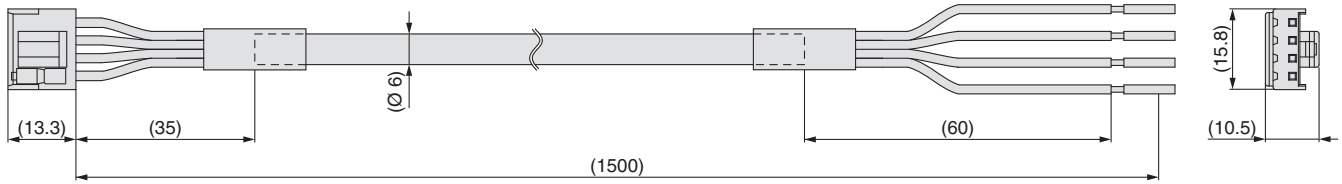
Signal	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Brown	12
GND	A-4	Black	13
A	B-5	Red	7
A	A-5	Black	6
B	B-6	Orange	9
B	A-6	Black	8
		—	3

Cable colour	Connector D terminal no.
Brown	12
Black	13
Red	7
Black	6
Orange	9
Black	8
—	3

Options

[Power supply cable]

LEC−CK1−1



Terminal name	Covered colour	Function
0V	Blue	Common supply (−)
M 24V	White	Motor power supply (+)
C 24V	Brown	Control power supply (+)
BK RLS	Black	Lock release (+)

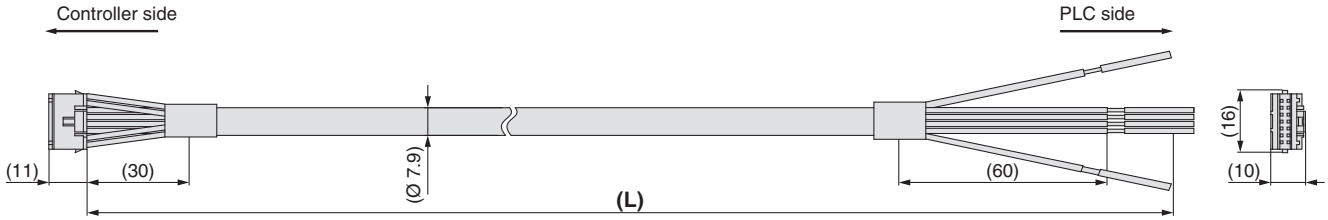
∗ Conductor size: AWG20

[I/O cable]

LEC−CK4−□

Cable length (L) [m]

1	1.5
3	3
5	5



Terminal no.	Insulation colour	Dot mark	Dot colour	Function
1	Light brown	■	Black	COM+
2	Light brown	■	Red	COM−
3	Yellow	■	Black	OUT0
4	Yellow	■	Red	OUT1
5	Light green	■	Black	OUT2
6	Light green	■	Red	OUT3
7	Grey	■	Black	BUSY
8	Grey	■	Red	ALARM
9	White	■	Black	IN0
10	White	■	Red	IN1
11	Light brown	■ ■	Black	IN2
12	Light brown	■ ■	Red	IN3
13	Yellow	■ ■	Black	RESET
14	Yellow	■ ■	Red	STOP

∗ Conductor size: AWG26

∗ Parallel I/O signal is valid in auto mode. While the test function operates at manual mode, only the output is valid.

Pulse Input Type
Series LECPA

How to Order

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LE series and the LECPA series. The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.

② For the LECPA series (step motor driver), EMC compliance was tested by installing a noise filter set (LEC-NFA).
Refer to page 81 for the noise filter set. Refer to the LECPA Operation Manual for installation.

[UL-compliant products]

When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

LECP AP 1 – LEPY10K-50

Driver type

AN	Pulse input type (NPN)
AP	Pulse input type (PNP)

I/O cable length [m]

—	None
1	1.5
3	3*
5	5*

* Pulse input usable only with differential. Only 1.5 m cables usable with open collector.

Driver mounting

—	Screw mounting
D Note)	DIN rail mounting

Note) DIN rail is not included. Order it separately.

Actuator part number

Part number except cable specifications and actuator options
Example: Enter "**LEPY10K-50**" for the LEPY10K-50U-R1AN1D.

BC	Blank controller Note)

Note) The dedicated software (LEC-BCW) is required.

* When controller equipped type is selected when ordering the LE series, you do not need to order this driver.
* When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) separately.

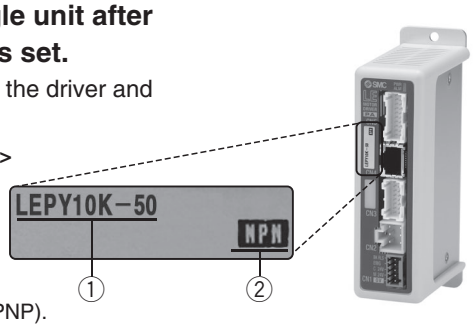
The driver is sold as single unit after the compatible actuator is set.

Confirm that the combination of the driver and the actuator is correct.

<Check the following before use.>

① Check the actuator label for model number. This matches the driver.

② Check Parallel I/O configuration matches (NPN or PNP).



* Refer to the operation manual for using the products. Please download it via our website, http://www.smc.eu

Precautions on blank controller (LECPA□□-BC)

Blank controller is a controller to which the customer can write the data of the actuator to be combined and used. Use the dedicated software (LEC-BCW) for data writing.

- Please download the dedicated software (LEC-BCW) via our website.
- Order the controller setting kit (LEC-W2) separately to use this software.

SMC website
http://www.smc.eu

Specifications

Item	LECPA
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10 % Note 2) [Including motor drive power, control power, stop, lock release]
Parallel input	5 inputs (Except photo-coupler isolation, pulse input terminal, COM terminal)
Parallel output	9 outputs (Photo-coupler isolation)
Pulse signal input	Maximum frequency: 60 kpps (Open collector), 200 kpps (Differential) Input method: 1 pulse mode (Pulse input in direction), 2 pulse mode (Pulse input in differing directions)
Compatible encoder	Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Serial communication	RS485 (Modbus protocol compliant)
Memory	EEPROM
LED indicator	LED (Green/Red) one of each
Lock control	Forced-lock release terminal Note 3)
Cable length [m]	I/O cable: 1.5 or less (Open collector), 5 or less (Differential), Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 40 (No freezing)
Operating humidity range [%RH]	90 or less (No condensation)
Storage temperature range [°C]	−10 to 60 (No freezing)
Storage humidity range [%RH]	90 or less (No condensation)
Insulation resistance [MΩ]	Between the housing and SG terminal: 50 (500 VDC)
Weight [g]	120 (Screw mounting), 140 (DIN rail mounting)

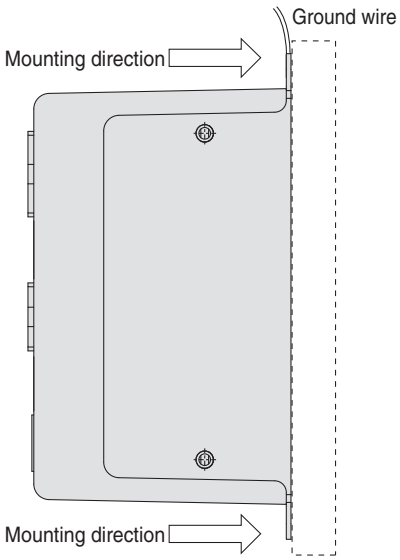
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply. When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

Note 2) The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.

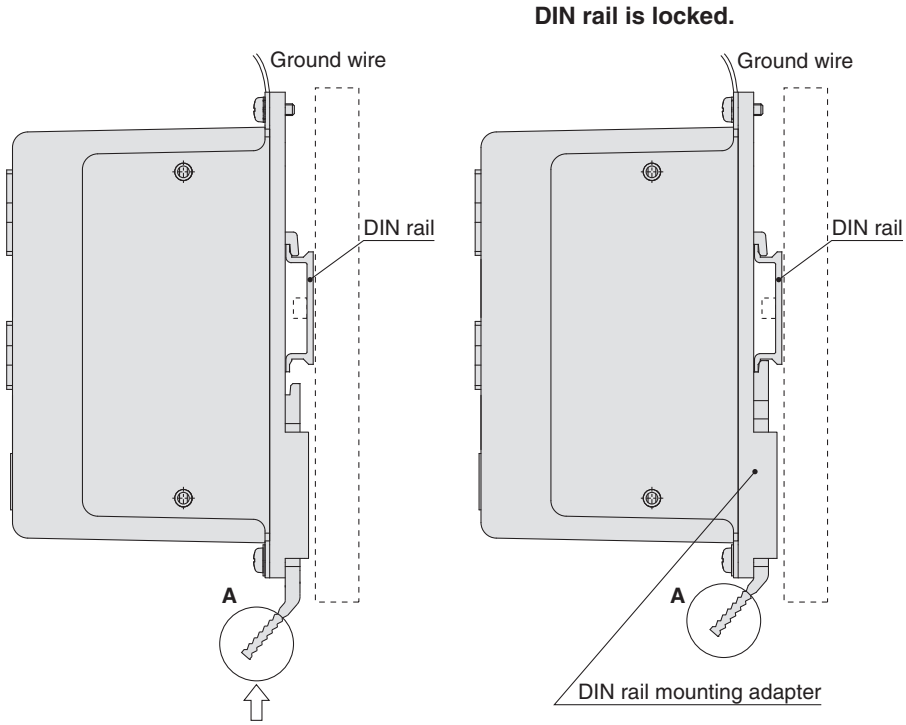
Note 3) Applicable to non-magnetizing lock.

How to Mount

a) Screw mounting (LECPA□□-□)
(Installation with two M4 screws)



b) DIN rail mounting (LECPA□□D-□)
(Installation with the DIN rail)

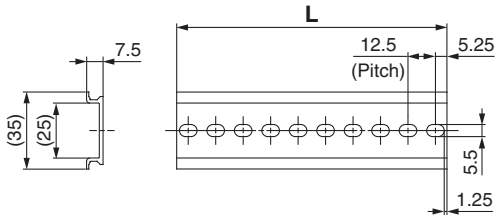


Hook the driver on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

Note) The space between the drivers should be 10 mm or more.

DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions on page 37 for the mounting dimensions.



L Dimension [mm]

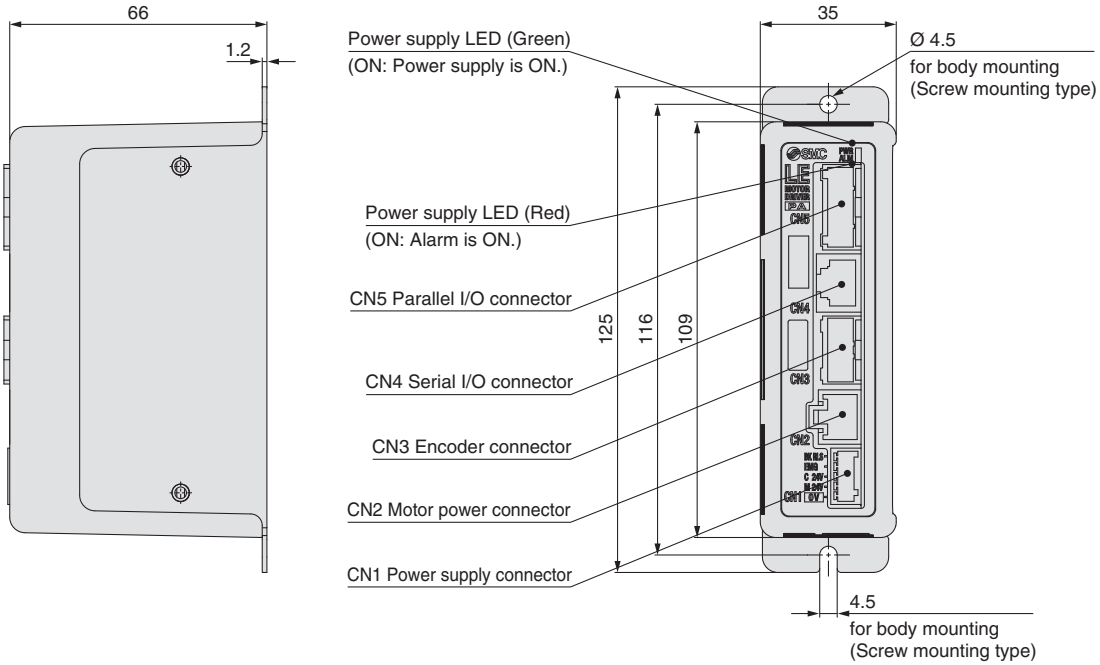
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

DIN rail mounting adapter
LEC-2-D0 (with 2 mounting screws)

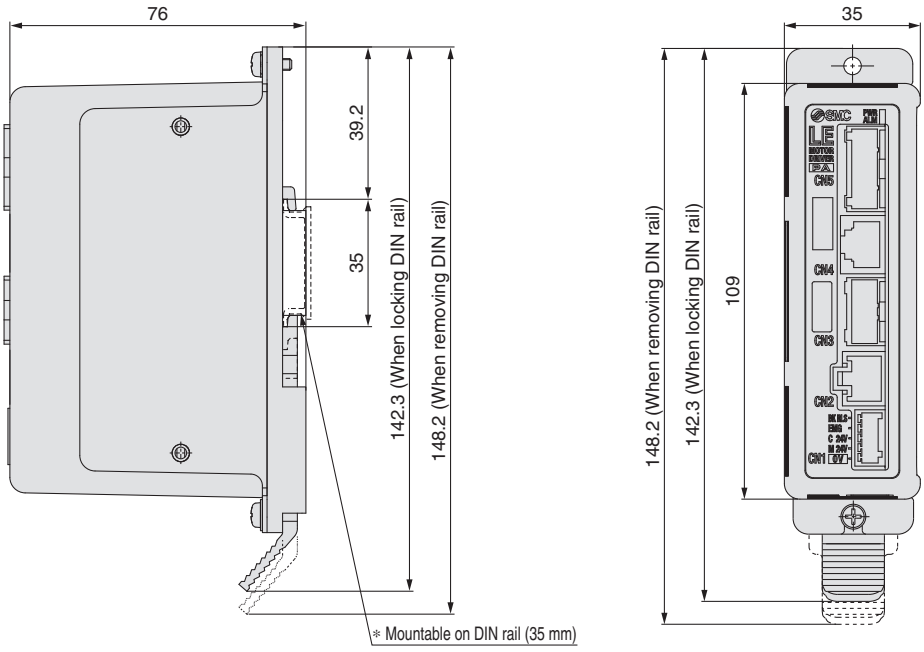
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterward.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



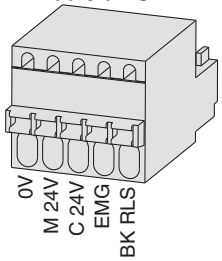
Wiring Example 1

Power Supply Connector: CN1 * Power supply plug is an accessory.

CN1 Power Supply Connector Terminal for LECPA (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M 24V terminal/C 24V terminal/EMG terminal/BK RLS terminal are common (–).
M 24V	Motor power supply (+)	Motor power supply (+) supplied to the driver
C 24V	Control power supply (+)	Control power supply (+) supplied to the driver
EMG	Stop (+)	Input (+) for releasing the stop
BK RLS	Lock release (+)	Input (+) for releasing the lock

Power supply plug for LECPA



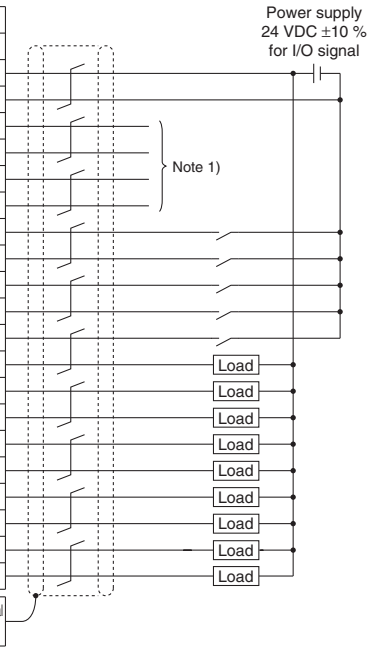
Wiring Example 2

Parallel I/O Connector: CN5

* When you connect a PLC etc., to the CN5 parallel I/O connector, use the I/O cable (LEC-CL5-□).
* The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

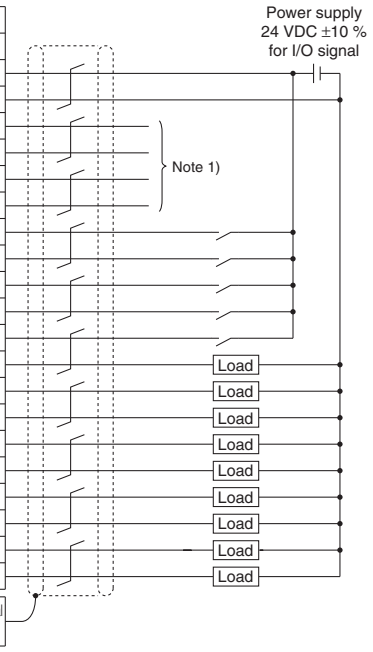
LECPAN□□-□ (NPN)

CN5		
Terminal name	Function	Pin no.
COM+	24 V	1
COM–	0 V	2
NP+	Pulse signal	3
NP–	Pulse signal	4
PP+	Pulse signal	5
PP–	Pulse signal	6
SETUP	Input	7
RESET	Input	8
SVON	Input	9
CLR	Input	10
TL	Input	11
TLOUT	Output	12
WAREA	Output	13
BUSY	Output	14
SETON	Output	15
INP	Output	16
SVRE	Output	17
∗ESTOP Note 2)	Output	18
∗ALARM Note 2)	Output	19
AREA	Output	20
FG	Round terminal 0.5-5	



LECPAP□□-□ (PNP)

CN5		
Terminal name	Function	Pin no.
COM+	24 V	1
COM–	0 V	2
NP+	Pulse signal	3
NP–	Pulse signal	4
PP+	Pulse signal	5
PP–	Pulse signal	6
SETUP	Input	7
RESET	Input	8
SVON	Input	9
CLR	Input	10
TL	Input	11
TLOUT	Output	12
WAREA	Output	13
BUSY	Output	14
SETON	Output	15
INP	Output	16
SVRE	Output	17
∗ESTOP Note 2)	Output	18
∗ALARM Note 2)	Output	19
AREA	Output	20
FG	Round terminal 0.5-5	



Note 1) For pulse signal wiring method, refer to "Pulse Signal Wiring Details".
Note 2) Output when the power supply of the driver is ON. (N.C.)

Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM–	Connects the power supply 0 V for input/output signal
SETUP	Instruction to return to origin
RESET	Alarm reset
SVON	Servo ON instruction
CLR	Deviation reset
TL	Instruction to pushing operation

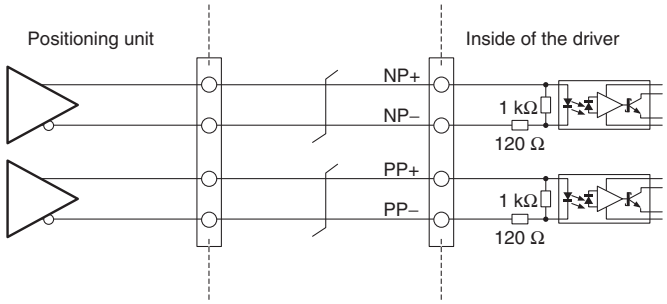
Output Signal

Name	Details
BUSY	Outputs when the actuator is operating
SETON	Outputs when returning to origin
INP	Outputs when target position is reached
SVRE	Outputs when servo is on
∗ESTOP Note 3)	Not output when EMG stop is instructed
∗ALARM Note 3)	Not output when alarm is generated
AREA	Outputs within the area output setting range
WAREA	Outputs within W-AREA output setting range
TLOUT	Outputs during pushing operation

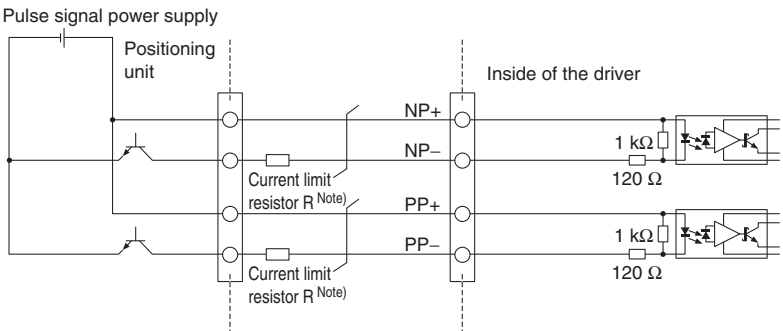
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

•Pulse signal output of positioning unit is differential output



•Pulse signal output of positioning unit is open collector output

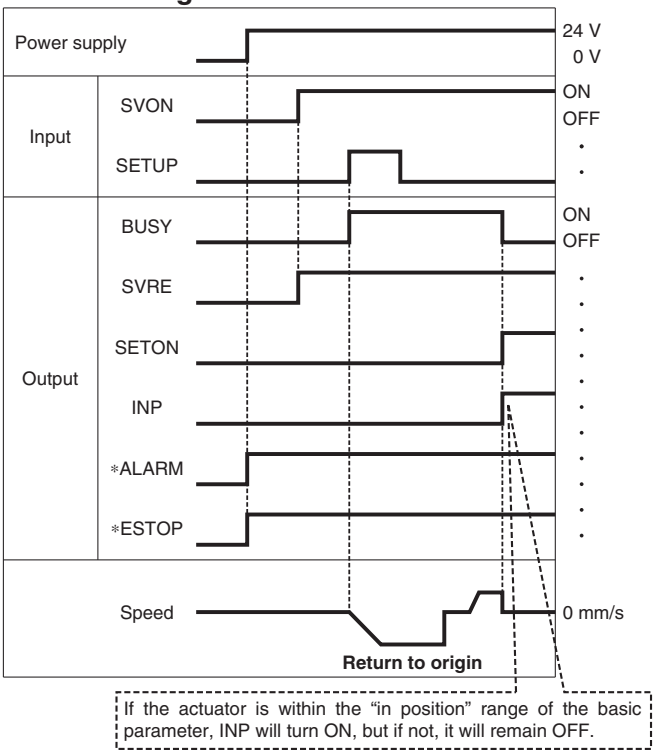


Note) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

Pulse signal power supply voltage	Current limit resistor R specifications	Current limit resistor part no.
24 VDC ±10 %	3.3 kΩ ±5 % (0.5 W or more)	LEC-PA-R-332
5 VDC ±5 %	390 Ω ±5 % (0.1 W or more)	LEC-PA-R-391

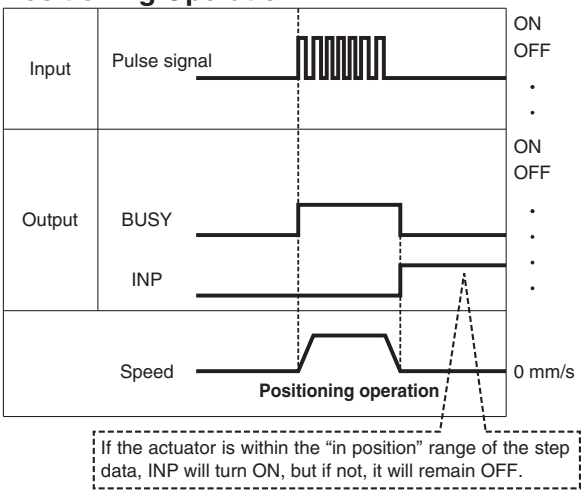
Signal Timing

Return to Origin

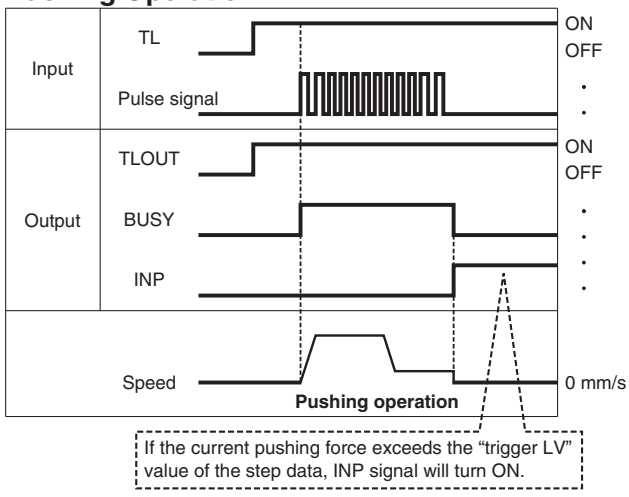


∗ “∗ALARM” and “∗ESTOP” are expressed as negative-logic circuit.

Positioning Operation

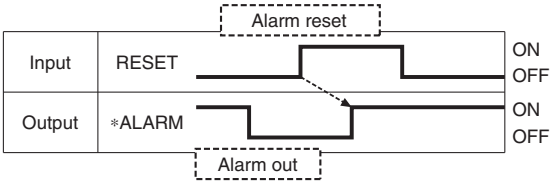


Pushing Operation



Note) If pushing operation is stopped when there is no pulse deviation, the moving part of the actuator may pulsate.

Alarm Reset



∗ “∗ALARM” is expressed as negative-logic circuit.

Options: Actuator Cable

[Robotic cable, standard cable for step motor (Servo/24 VDC)]

LE – CP – 1 – ☐

Cable length (L) [m]

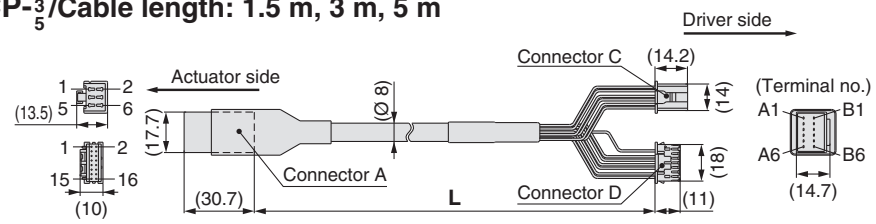
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

Cable type

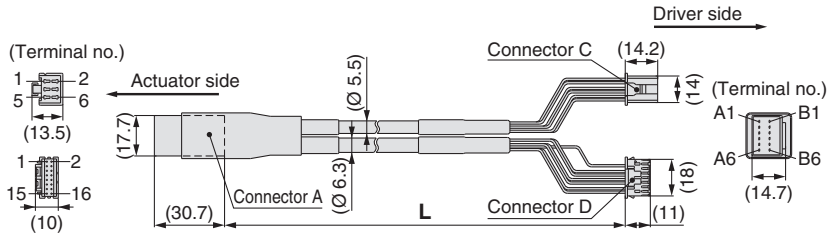
—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$^{1}_{3}$ $_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$^{8\ B}_{A\ C}$/Cable length: 8 m, 10 m, 15 m, 20 m

(* Produced upon receipt of order)



Signal	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Cable colour	Connector D terminal no.
GND	A-4	Brown	12
$\overline{A}$	B-5	Black	13
A	A-5	Red	7
$\overline{B}$	B-6	Black	6
B	A-6	Orange	9
		Black	8
		—	3

Options

[I/O cable]

LEC-C L5-1

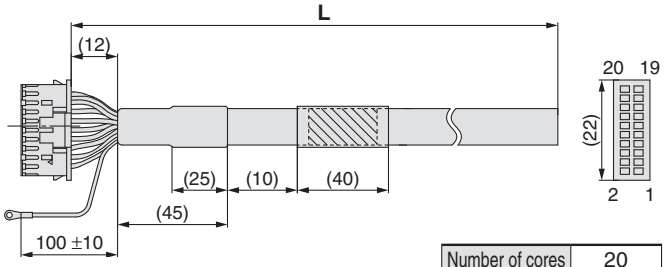
I/O cable type

L5	For LECPA

I/O cable length (L)

1	1.5 m
3	3 m*
5	5 m*

* Pulse input usable only with differential. Only 1.5 m cables usable with open collector.



Number of cores	20
AWG size	24

Pin no.	Insulation colour	Dot mark	Dot colour
1	Light brown	■	Black
2	Light brown	■	Red
3	Yellow	■	Black
4	Yellow	■	Red
5	Light green	■	Black
6	Light green	■	Red
7	Grey	■	Black
8	Grey	■	Red
9	White	■	Black
10	White	■	Red
11	Light brown	■■	Black

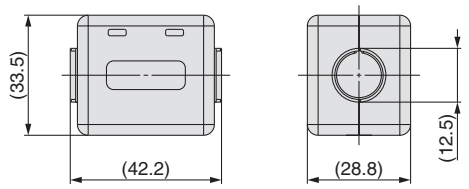
Pin no.	Insulation colour	Dot mark	Dot colour
12	Light brown	■■	Red
13	Yellow	■■	Black
14	Yellow	■■	Red
15	Light green	■■	Black
16	Light green	■■	Red
17	Grey	■■	Black
18	Grey	■■	Red
19	White	■■	Black
20	White	■■	Red

Round terminal 0.5-5	Green

[Noise filter set]
Step motor driver (Pulse input type)

LEC-NFA

Contents of the set: 2 noise filters
(Manufactured by WURTH ELEKTRONIK: 74271222)



* Refer to the LECPA series Operation Manual for installation.

[Current limit resistor]

This optional resistor (LEC-PA-R-□) is used when the pulse signal output of the positioning unit is open collector output.

LEC-PA-R-□

Current limit resistor

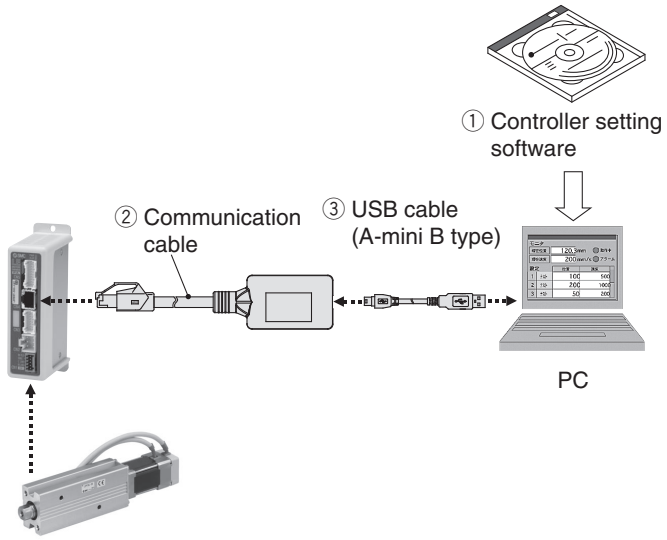
Symbol	Resistance	Pulse signal power supply voltage
332	3.3 kΩ ±5 %	24 VDC ±10 %
391	390 Ω ±5 %	5 VDC ±5 %

* Select a current limit resistor that corresponds to the pulse signal power supply voltage.
* For the LEC-PA-R-□, two pieces are shipped as a set.

Series LEC

Windows®XP, Windows®7 compatible

Controller Setting Kit/LEC-W2



How to Order

LEC-W2

Controller setting kit
(Japanese and English are available.)

Contents

	Description	Model*
①	Controller setting software (CD-ROM)	LEC-W2-S
②	Communication cable	LEC-W2-C
③	USB cable (between the PC and the communication cable)	LEC-W2-U

* Can be ordered separately.

Compatible Controller/Driver

Pulse input type ***Series LECPA***

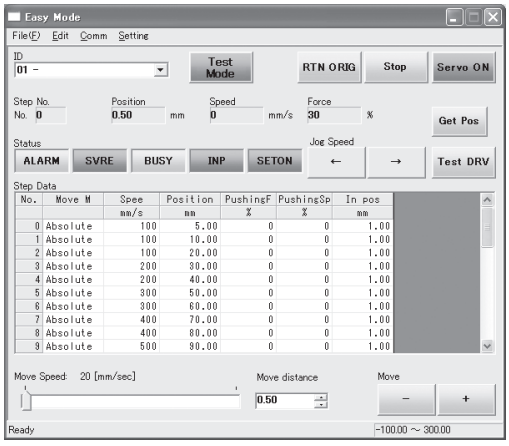
Hardware Requirements

OS	IBM PC/AT compatible machine running Windows®XP (32-bit), Windows®7 (32-bit and 64-bit), Windows®8.1 (32-bit and 64-bit).
Communication interface	USB 1.1 or USB 2.0 ports
Display	XGA (1024 x 768) or more

* Windows®XP, Windows®7 and Windows®8.1 are registered trademarks of Microsoft Corporation in the United States.
* Refer to SMC website for version upgrade information, http://www.smc.eu

Screen Example

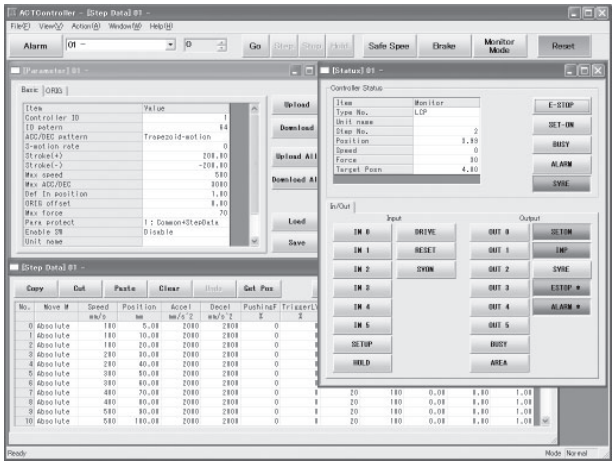
Easy mode screen example



Easy operation and simple setting

- Allowing to set and display actuator step data such as position, speed, force, etc.
- Setting of step data and testing of the drive can be performed on the same page.
- Can be used to jog and move at a constant rate.

Normal mode screen example



Detailed setting

- Step data can be set in detail.
- Signals and terminal status can be monitored.
- Parameters can be set.
- JOG and constant rate movement, return to origin, test operation and testing of forced output can be performed.

Series LEC

Teaching Box/LEC-T1

How to Order

LEC-T1-3EG

Teaching box

Cable length [m]

3	3

Initial language

J	Japanese
E	English

∗ The displayed language can be changed to English or Japanese.

Stop switch

G	Equipped with stop switch

Enable switch

—	None
S	Equipped with enable switch

∗ Interlock switch for jog and test function

Standard functions
- **Chinese character display**
- **Stop switch is provided.**

Option
- **Enable switch is provided.**

Specifications

Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

[CE-compliant products]
The EMC compliance of the teaching box was tested with a step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

Easy Mode

Function	Details
Step data	• Setting of step data
Jog	• Jog operation • Return to origin
Test	• 1 step operation Note 1) • Return to origin
Monitor	• Display of axis and step data no. • Display of two items selected from Position, Speed, Force.
ALM	• Active alarm display • Alarm reset
TB setting	• Reconnection of axis (Ver. 1.∗∗) • Displayed language setting (Ver. 2.∗∗) • Setting of easy/normal mode • Setting step data and selection of items from easy mode monitor

Menu Operations Flowchart

Menu
- Data
- Monitor
- Jog
- Test
- ALM
- TB setting

Data
Step data no.
Setting of two items selected below
Ver. 1.∗∗:
Position, Speed, Force, Acceleration, Deceleration
Ver. 2.∗∗:
Position, Speed, Pushing force, Acceleration, Deceleration, Movement MOD, Trigger LV, Pushing speed, Moving force, Area 1, Area 2, In position

Monitor
Display of step no.
Display of two items selected below
(Position, Speed, Force)

Jog
Return to origin
Jog operation

Test Note 1)
1 step operation

ALM
Active alarm display
Alarm reset

TB setting
Reconnect (Ver. 1.∗∗)
Japanese/English (Ver. 2.∗∗)
Easy/Normal
Set item

Note 1) Not compatible with the LECPA.

Normal Mode

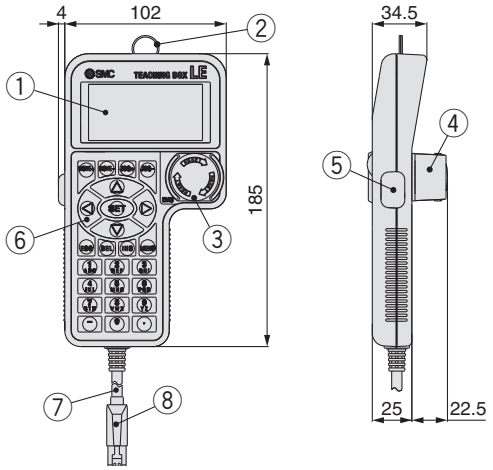
Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive Note 1) (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output) Note 2)
Monitor	• Drive monitor • Output signal monitor Note 2) • Input signal monitor Note 2) • Output terminal monitor • Input terminal monitor
ALM	• Active alarm display (Alarm reset) • Alarm log record display
File	• Data saving Save the step data and parameters of the driver which is being used for communication (it is possible to save four files, with one set of step data and parameters defined as one file). • Load to driver Loads the data which is saved in the teaching box to the driver which is being used for communication. • Delete the saved data. • File protection (Ver. 2.**)
TB setting	• Display setting (Easy/Normal mode) • Language setting (Japanese/English) • Backlight setting • LCD contrast setting • Beep sound setting • Max. connection axis • Distance unit (mm/inch)
Reconnect	• Reconnection of axis

Menu Operations Flowchart

- **Menu**: Step data, Parameter, Monitor, Test, ALM, File, TB setting, Reconnect
- **Step data**: Step data no., Movement MOD, Speed, Position, Acceleration, Deceleration, Pushing force, Trigger LV, Pushing speed, Moving force, Area 1, 2, In position
- **Parameter**: Basic, ORIG
  - **Basic setting**
  - **ORIG setting**
- **Monitor**: Drive, Output signal Note 2), Input signal Note 2), Output terminal, Input terminal
  - **DRV monitor**: Position, Speed, Torque, Step no., Last step no.
  - **Output signal monitor**
  - **Input signal monitor**
  - **Output terminal monitor**
  - **Input terminal monitor**
- **Test**: JOG/MOVE, Return to ORIG, Test drive Note 1), Forced output Note 2)
- **ALM**: Status, ALM Log record
  - **Status**: Active alarm display, Alarm reset
  - **ALM Log record display**: Log entry display
- **File**: Data saving, Load to driver, File deletion, File protection (Ver. 2.**)
- **TB setting**: Easy/Normal, Language, Backlight, LCD contrast, Beep, Max. connection axis, Password, Distance unit
- **Reconnect**

Note 1) Not compatible with the LECPA.
Note 2) The following signals are compatible with LECPA with TB Ver. 2.10 or newer.
Input: CLR, TL
Output: TLOUT

Dimensions



No.	Description	Function
1	**LCD**	A screen of liquid crystal display (with backlight)
2	**Ring**	A ring for hanging the teaching box
3	**Stop switch**	When switch is pushed in, the switch locks and stops. The lock is released when it is turned to the right.
4	**Stop switch guard**	A guard for the stop switch
5	**Enable switch (Option)**	Prevents unintentional operation (unexpected operation) of the jog test function. Other functions such as data change are not covered.
6	**Key switch**	Switch for each input
7	**Cable**	Length: 3 meters
8	**Connector**	A connector connected to CN4 of the driver

Step Motor Controller

5 types of communication protocols

New IO-Link EtherCAT PROFINET DeviceNet EtherNet/IP

Application

Communication protocol

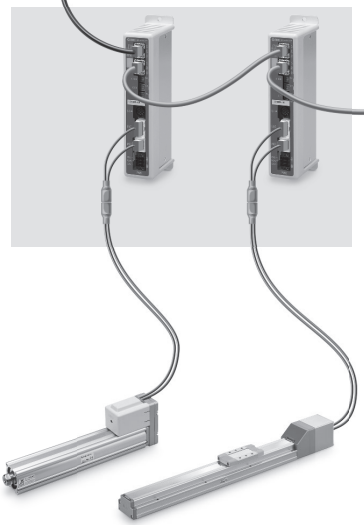
EtherCAT EtherNet/IP PROFINET DeviceNet IO-Link

PLC

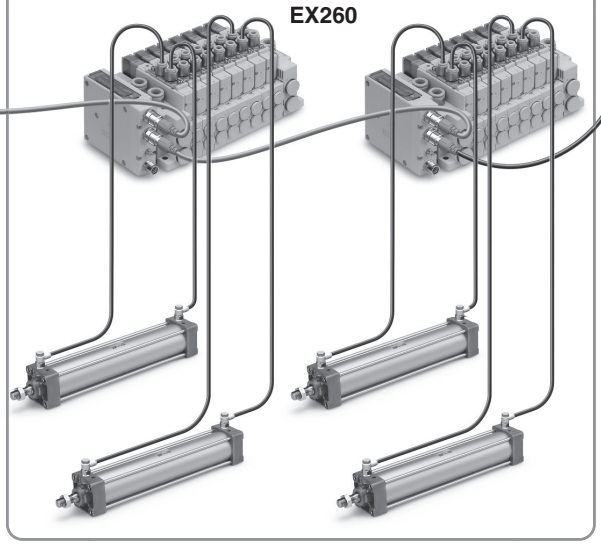
Both air and electric systems can be established under the same protocol.

Can be additionally installed in an existing network

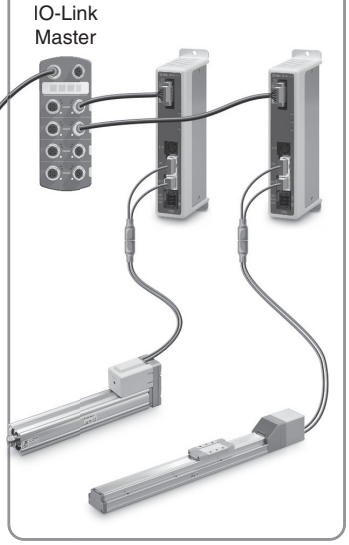
Electric Actuators



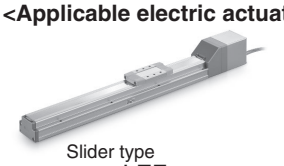
Air Cylinders



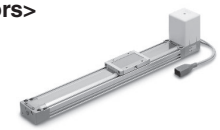
IO-Link Communication



<Applicable electric actuators>



Slider type
Series LEF



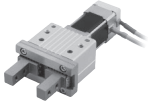
Low-profile slider type
Series LEM

Guide rod slider
Series LEL

Rod type
Series LEY/LEYG

Slide table
Series LES/LESH

Miniature type
Series LEPY/LEPS



Gripper
Series LEH

Rotary table
Series LER

Series JXCE1/91/P1/D1/L1

Two types of operation command

Step no. defined operation: Operate using the preset step data in the controller.
Numerical data defined operation: The actuator operates using values such as position and speed from the PLC.

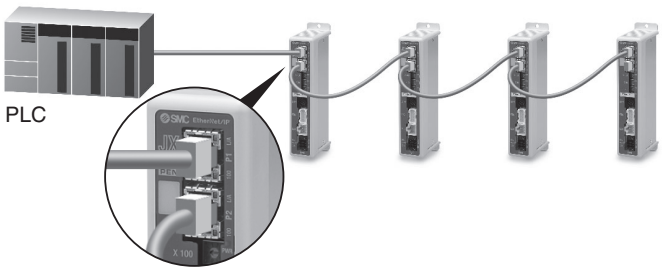
Numerical monitoring available

Numerical information, such as the current speed, current position, and alarm codes, can be monitored on the PLC.

Transition wiring of communication cables

Two communication ports are provided.

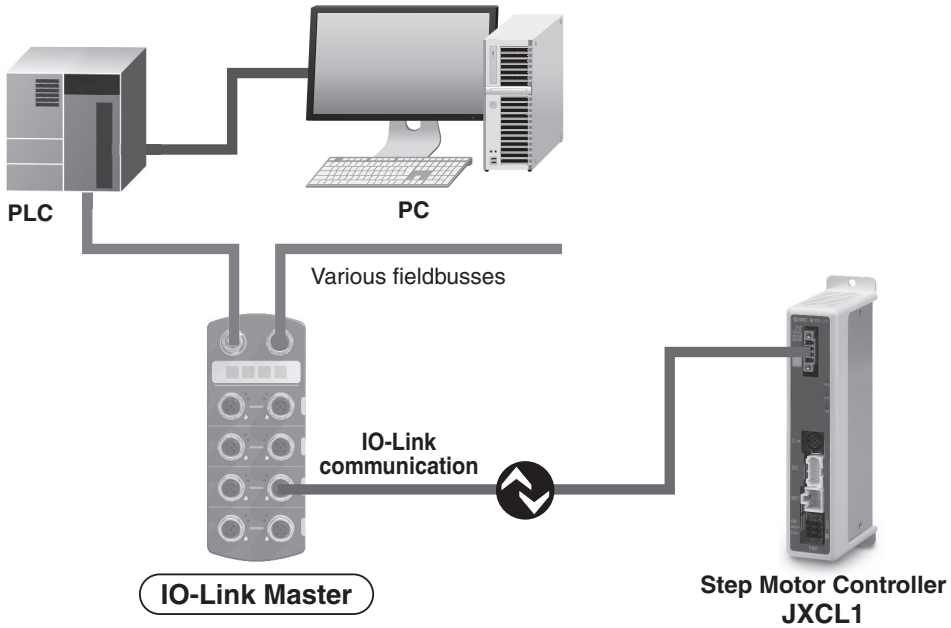
* For the DeviceNet™ type, transition wiring is possible using a branch connector.
* 1 to 1 in the case of IO-Link



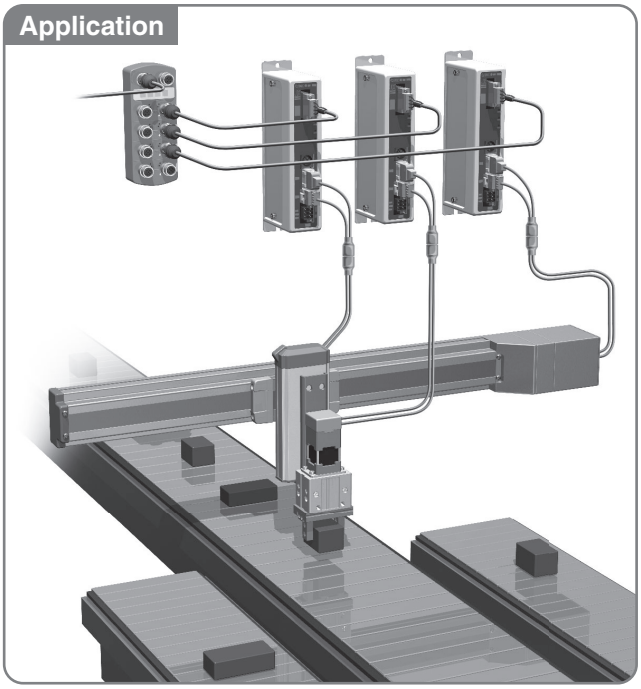
IO-Link communication can be performed.

The data storage function eliminates the need for troublesome resetting of step data and parameters when changing over the controller.

IO-Link
IO-Link is an open communication interface technology between the sensor/actuator and the I/O terminal that is an international standard, IEC61131-9.



Application



● Step data and parameters can be set from the master side.

Step data and parameters can be set or changed by means of IO-Link communication.

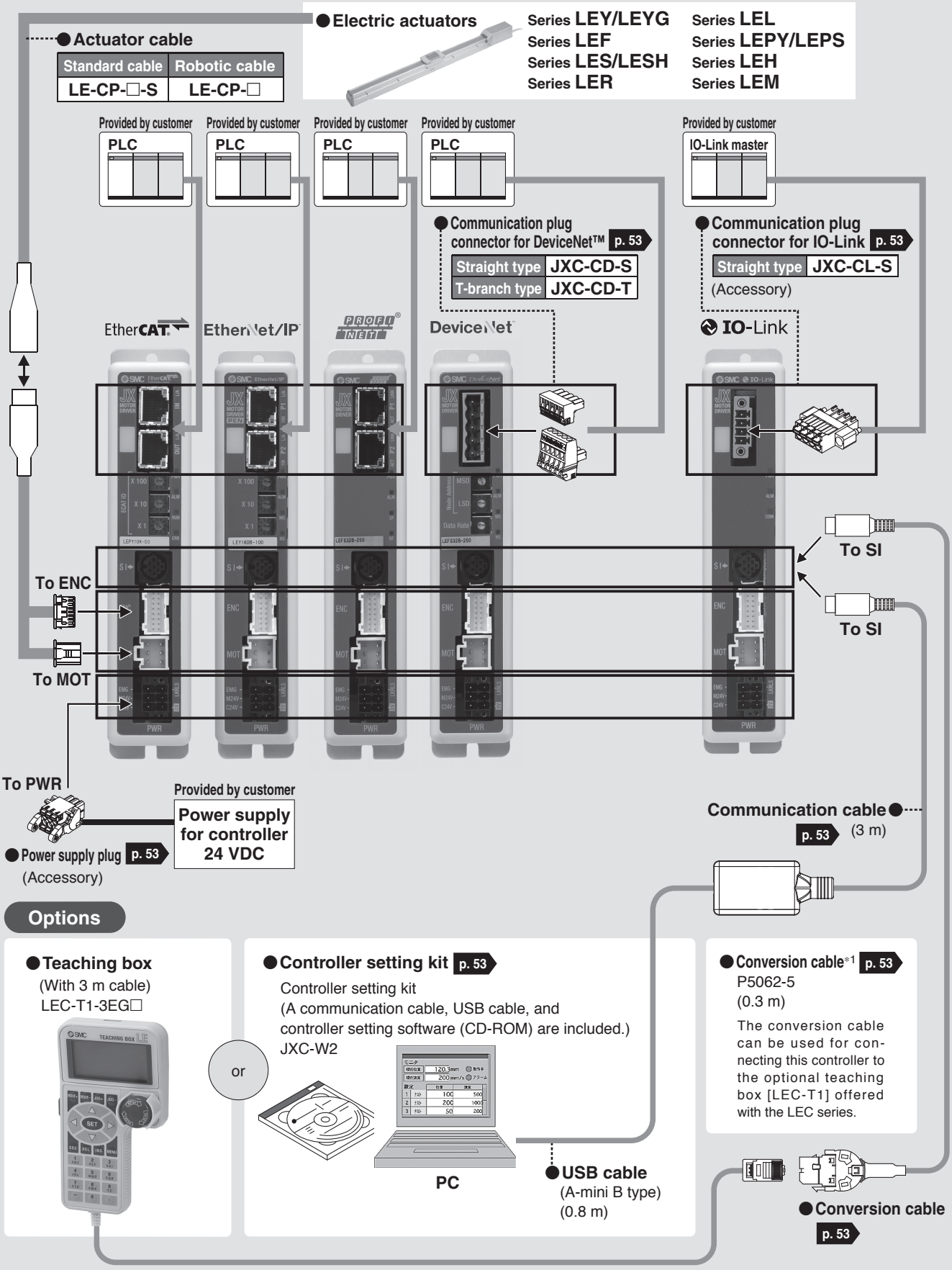
● Data storage function

When the controller is changed, the parameters and step data for the actuator are automatically set.*1

● 4-wire unshielded cables can be used.

*1 The “basic parameter” and the “return to origin parameter” are automatically set as the actuator parameters, and the 3 items of data consisting of No. 0 to 2 are automatically set as the step data.

System Construction



Options

Teaching box
(With 3 m cable)
LEC-T1-3EG□

or

Controller setting kit p. 53
Controller setting kit
(A communication cable, USB cable, and controller setting software (CD-ROM) are included.)
JXC-W2

PC

USB cable
(A-mini B type)
(0.8 m)

Conversion cable*1 p. 53
P5062-5
(0.3 m)
The conversion cable can be used for connecting this controller to the optional teaching box [LEC-T1] offered with the LEC series.

Conversion cable
p. 53

*1 A conversion cable is also required for connecting the controller to the LEC-W2. (A conversion cable is not required for the JXC-W2.)

Step Motor Controller

Series JXCE1/91/P1/D1/L1

How to Order

Actuator + Controller

LEPY16B-100 – R1 CD17T

Actuator type

Refer to "How to Order" in the actuator catalogue available at www.smc.eu.
For compatible actuators, refer to the table below. Example: LEPY16B-100B-R1C917

Compatible actuators	
Electric Actuator/Rod Series LEY	Refer to the **Web Catalogue**.
Electric Actuator/Guide Rod Series LEYG	
Electric Actuator/Slider Series LEF	
Electric Slide Table Series LES/LESH	
Electric Rotary Table Series LER	
Electric Actuator/Guide Rod Slider Series LEL	
Electric Actuator/Miniature Series LEPY/LEPS	
Electric Gripper Series LEH	
Electric Actuator/Low-Profile Slider Series LEM	

∗ Only the step motor type is applicable.

Controller

—	Without controller
C□1□□	With controller

C D 1 7 T

Communication protocol

E	EtherCAT®
9	EtherNet/IP™
P	PROFINET
D	DeviceNet™
L	IO-Link

For single axis

Mounting

7	Screw mounting
8∗1	DIN rail

∗1 The DIN rail is not included. It must be ordered separately. (Refer to page 53.)

Actuator cable type/length

—	Without cable
S1	Standard cable 1.5 m
S3	Standard cable 3 m
S5	Standard cable 5 m
R1	Robotic cable 1.5 m
R3	Robotic cable 3 m
R5	Robotic cable 5 m
R8	Robotic cable 8 m∗1
RA	Robotic cable 10 m∗1
RB	Robotic cable 15 m∗1
RC	Robotic cable 20 m∗1

∗1 Produced upon receipt of order (Robotic cable only)
∗ The standard cable should only be used on fixed parts. For use on moving parts, select the robotic cable.

Option

—	Without option
S	With straight type DeviceNet™ communication plug for JXCD1
T	With T-branch type DeviceNet™ communication plug for JXCD1

∗ Select "Nil" for anything other than JXCD1.

⚠Caution

[CE-compliant products]
EMC compliance was tested by combining the electric actuator LE series and the JXCE1/91/P1/D1/L1 series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

When selecting an electric actuator, refer to the model selection chart of each actuator. Also, for the "Speed–Work Load" graph of the actuator, refer to the LEC section on the model selection page of the electric actuators **Web Catalogue**.

Controller

JXC D 1 7 T – LEPY16B-100

Precautions for blank controllers (JXC□1□□-BC)

A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. Use the dedicated software (JXC-BCW) for data writing.
- Please download the dedicated software (JXC-BCW) via our website.
- Order the controller setting kit (LEC-W2) separately to use this software.

SMC website
http://www.smc.eu

Communication protocol

E	EtherCAT®
9	EtherNet/IP™
P	PROFINET
D	DeviceNet™
L	IO-Link

For single axis

Mounting

7	Screw mounting
8∗1	DIN rail

∗1 The DIN rail is not included. It must be ordered separately. (Refer to page 53.)

Option

—	Without option
S	With straight type DeviceNet™ communication plug for JXCD1
T	With T-branch type DeviceNet™ communication plug for JXCD1

∗ Select "Nil" for anything other than JXCD1.

Actuator part number

Without cable specifications and actuator options
Example: Enter "**LEPY16B-100**" for the LEPY16B-100B-S1□□.

BC	Blank controller∗1

∗1 Requires dedicated software (JXC-BCW)

When selecting an electric actuator, refer to the model selection chart of each actuator. Also, for the "Speed–Work Load" graph of the actuator, refer to the LEC section on the model selection page of the electric actuators **Web Catalogue**.

Specifications

Model			JXCE1	JXC91	JXCP1	JXCD1	JXCL1
Network			EtherCAT®	EtherNet/IP™	PROFINET	DeviceNet™	IO-Link
Compatible motor			Step motor (Servo/24 VDC)				
Power supply			Power voltage: 24 VDC ±10 %				
Current consumption (Controller)			200 mA or less	130 mA or less	200 mA or less	100 mA or less	100 mA or less
Compatible encoder			Incremental A/B phase (800 pulse/rotation)				
Communication specifications	Applicable system	Protocol	EtherCAT®*2	EtherNet/IP™*2	PROFINET*2	DeviceNet™	IO-Link
		Version*1	Conformance Test Record V.1.2.6	Volume 1 (Edition 3.14) Volume 2 (Edition 1.15)	Specification Version 2.32	Volume 1 (Edition 3.14) Volume 3 (Edition 1.13)	Version 1.1 Port Class A
	Communication speed		100 Mbps*2	10/100 Mbps*2 (Automatic negotiation)	100 Mbps*2	125/250/500 kbps	230.4 kbps (COM3)
	Configuration file*3		ESI file	EDS file	GSDML file	EDS file	IODD file
	I/O occupation area		Input 20 bytes Output 36 bytes	Input 36 bytes Output 36 bytes	Input 36 bytes Output 36 bytes	Input 4, 10, 20 bytes Output 4, 12, 20, 36 bytes	Input 14 bytes Output 22 bytes
	Terminating resistor		Not included				
Memory			EEPROM				
LED indicator			PWR, RUN, ALM, ERR	PWR, ALM, MS, NS	PWR, ALM, SF, BF	PWR, ALM, MS, NS	PWR, ALM, COM
Cable length [m]			Actuator cable: 20 or less				
Cooling system			Natural air cooling				
Operating temperature range [°C]			0 to 40 (No freezing)				
Operating humidity range [%RH]			90 or less (No condensation)				
Insulation resistance [MΩ]			Between all external terminals and the case 50 (500 VDC)				
Weight [g]			220 (Screw mounting) 240 (DIN rail mounting)	210 (Screw mounting) 230 (DIN rail mounting)	220 (Screw mounting) 240 (DIN rail mounting)	210 (Screw mounting) 230 (DIN rail mounting)	190 (Screw mounting) 210 (DIN rail mounting)

*1 Please note that versions are subject to change.
*2 Use a shielded communication cable with CAT5 or higher for the PROFINET, EtherNet/IP™, and EtherCAT®.
*3 The files can be downloaded from the SMC website: http://www.smc.eu

■Trademark
EtherNet/IP™ is a trademark of ODVA.
DeviceNet™ is a trademark of ODVA.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Example of Operation Command

In addition to the step data input of 64 points maximum in each communication protocol, the changing of each parameter can be performed in real time via numerical data defined operation.
* Numerical values other than “Moving force,” “Area 1,” and “Area 2” can be used to perform operation under numerical instructions from JXCL1.

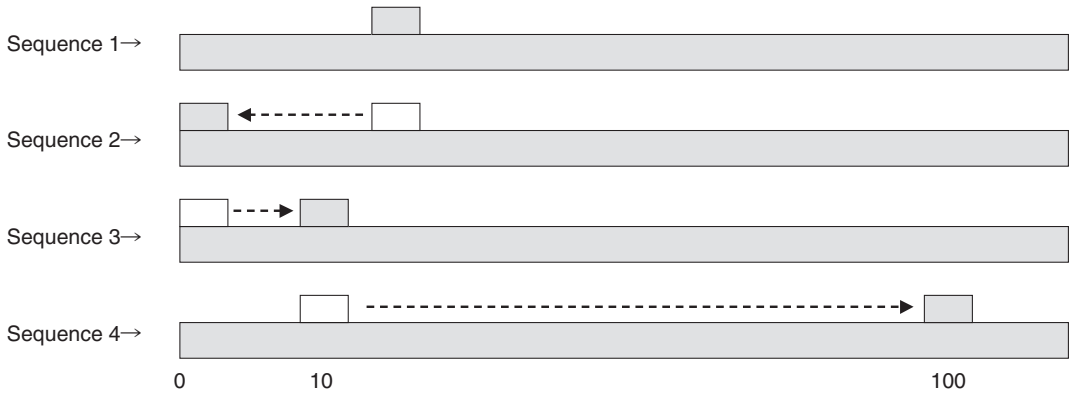
<Application example> Movement between 2 points

No.	Movement mode	Speed	Position	Acceleration	Deceleration	Pushing force	Trigger LV	Pushing speed	Moving force	Area 1	Area 2	In position
0	1: Absolute	100	10	3000	3000	0	0	0	100	0	0	0.50
1	1: Absolute	100	100	3000	3000	0	0	0	100	0	0	0.50

<Step no. defined operation>
Sequence 1: Servo ON instruction
Sequence 2: Instruction to return to origin
Sequence 3: Specify step data No. 0 to input the DRIVE signal.
Sequence 4: Specify step data No. 1 after the DRIVE signal has been temporarily turned OFF to input the DRIVE signal.

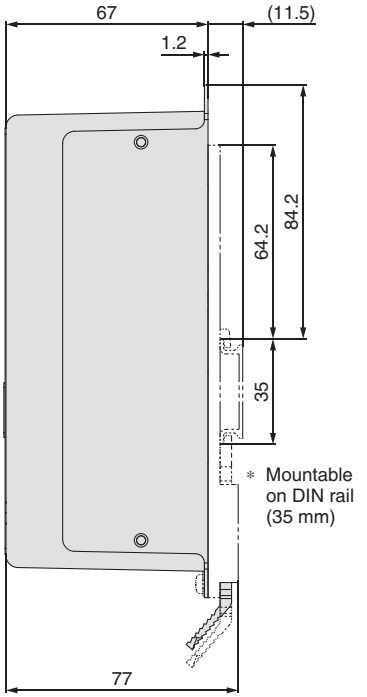
<Numerical data defined operation>
Sequence 1: Servo ON instruction
Sequence 2: Instruction to return to origin
Sequence 3: Specify step data No. 0 and turn ON the input instruction flag (position). Input 10 in the target position. Subsequently the start flag turns ON.
Sequence 4: Turn ON step data No. 0 and the input instruction flag (position) to change the target position to 100 while the start flag is ON.

The same operation can be performed with any operation command.

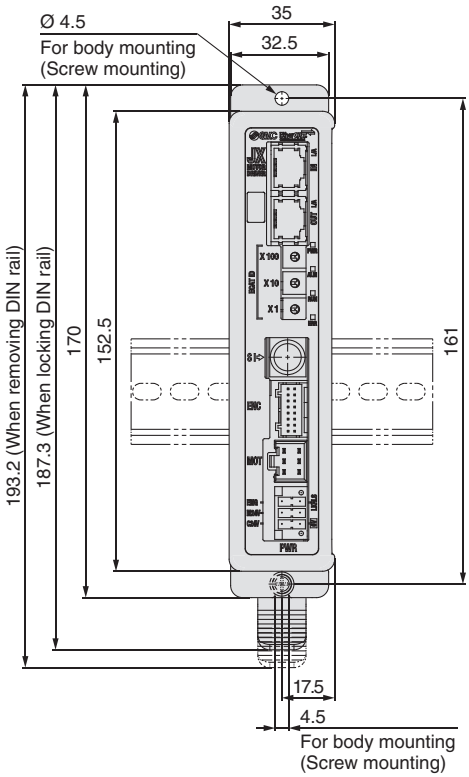


Dimensions

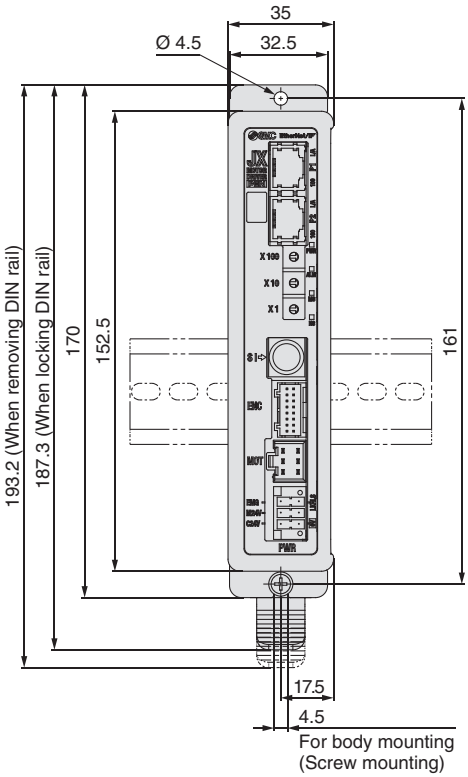
JXCE1/JXC91



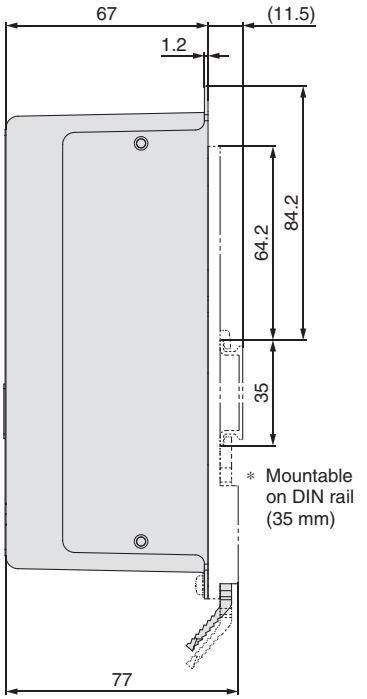
JXCE1



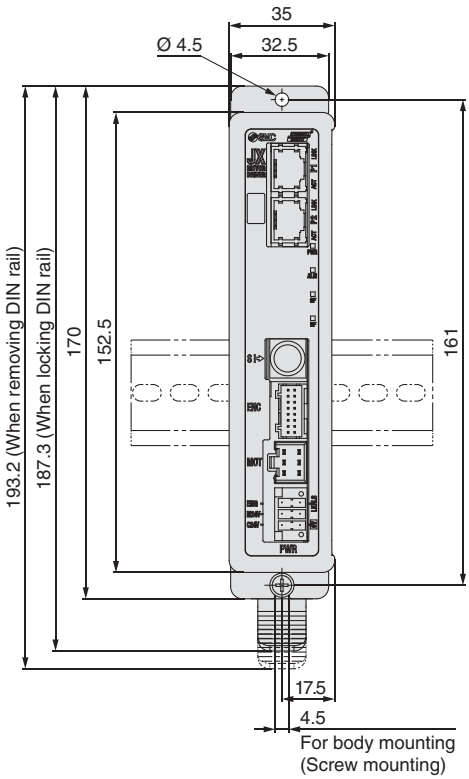
JXC91



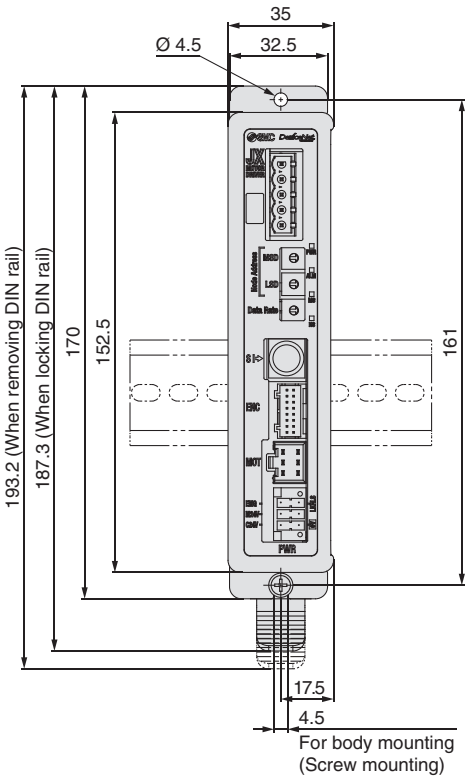
JXCP1/JXCD1



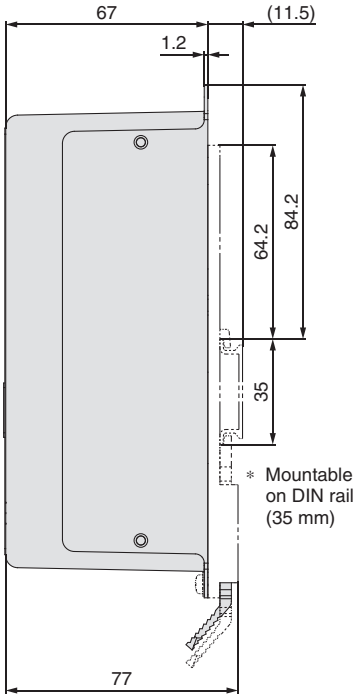
JXCP1



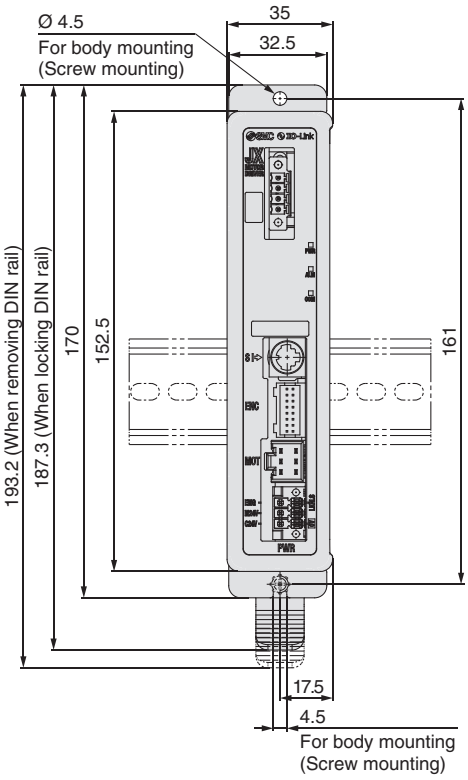
JXCD1



Dimensions

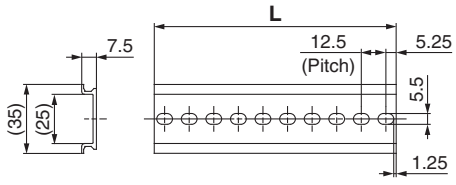


JXCL1



DIN rail
AXT100-DR-□

* For □, enter a number from the "No." line in the table below.



L Dimensions [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

Options

■ Controller setting kit JXC-W2

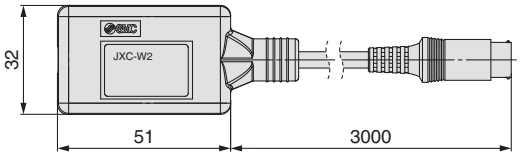
[Contents]
① Communication cable
② USB cable
③ Controller setting software
∗ A conversion cable (P5062-5) is not required.

JXC − W2 − □

Contents

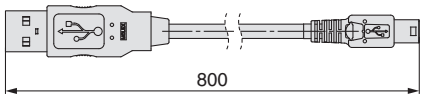
—	A kit includes: Communication cable, USB cable, Controller setting software
C	Communication cable
U	USB cable
S	Controller setting software (CD-ROM)

① Communication cable JXC-W2-C



∗ It can be connected to the controller directly.

② USB cable JXC-W2-U



③ Controller setting software JXC-W2-S

∗ CD-ROM

■ DIN rail mounting adapter LEC-3-D0

∗ With 2 mounting screws

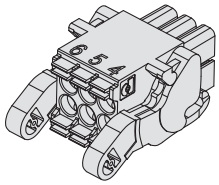
This should be used when a DIN rail mounting adapter is mounted onto a screw mounting type controller afterwards.

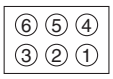
■ DIN rail AXT100-DR-□

∗ For □, enter a number from the No. line in the table on page 52. Refer to the dimension drawings on page 52 for the mounting dimensions.

■ Power supply plug JXC-CPW

∗ The power supply plug is an accessory.





① C24V ④ 0V
② M24V ⑤ N.C.
③ EMG ⑥ LK RLS

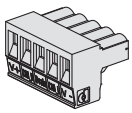
Power supply plug

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/ LK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) of the controller
C24V	Control power supply (+)	Control power supply (+) of the controller
EMG	Stop (+)	Connection terminal of the external stop circuit
LK RLS	Lock release (+)	Connection terminal of the lock release switch

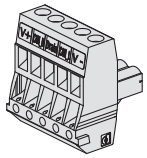
■ Communication plug connector

For DeviceNet™

Straight type
JXC-CD-S



T-branch type
JXC-CD-T

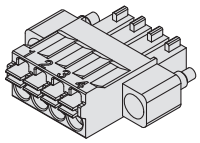


Communication plug connector for DeviceNet™

Terminal name	Details
V+	Power supply (+) for DeviceNet™
CAN_H	Communication wire (High)
Drain	Grounding wire/Shielded wire
CAN_L	Communication wire (Low)
V–	Power supply (–) for DeviceNet™

For IO-Link

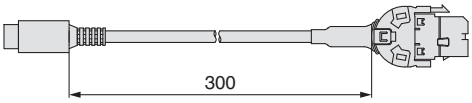
Straight type
JXC-CL-S



Communication plug connector for IO-Link

Terminal no.	Terminal name	Details
1	L+	+24 V
2	NC	N/A
3	L–	0 V
4	C/Q	IO-Link signal

■ Conversion cable P5062-5 (Cable length: 300 mm)



∗ To connect the teaching box (LEC-T1-3□G□) or controller setting kit (LEC-W2) to the controller, a conversion cable is required.

Series JXCE1/91/P1/D1
Precautions Related to Differences in Controller Versions

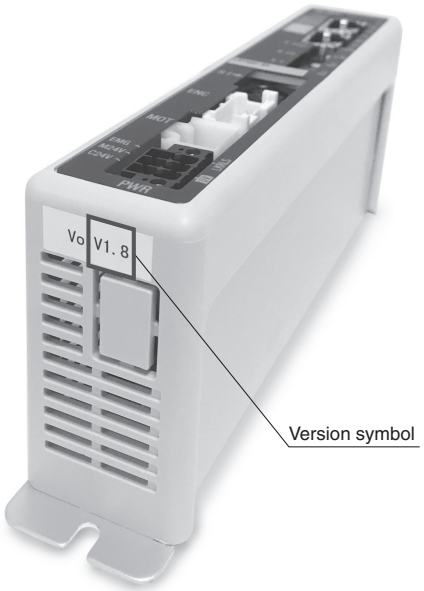
As the controller version of the JXC series differs, the internal parameters are not compatible.

■ Do not use a version V2.0 or S2.0 or higher controller with parameters lower than version V2.0 or S2.0.
Do not use a version V2.0 or S2.0 or lower controller with parameters higher than version V2.0 or S2.0.

■ Please use the latest version of the JXC-BCW (parameter writing tool).

∗ The latest version is Ver. 2.0 (as of December 2017).

Identifying Version Symbols



For versions lower than V2.0 and S2.0:

Do not use with controller parameters higher than V2.0 or S2.0.

VZ V1.8

Applicable models

Series JXC91□

VZ S1.3T1.0

Applicable models

Series JXCD1□
Series JXCP1□
Series JXCE1□

For versions higher than V2.0 and S2.0:

Do not use with controller parameters lower than V2.0 or S2.0.

VZ V2.0

Applicable models

Series JXC91□

VZ S2.0T1.0

Applicable models

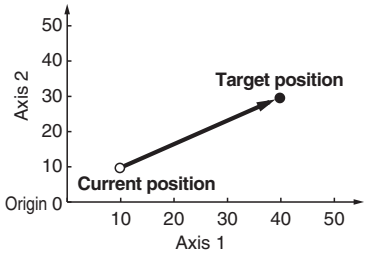
Series JXCD1□
Series JXCP1□
Series JXCE1□

Multi-Axis Step Motor Controller

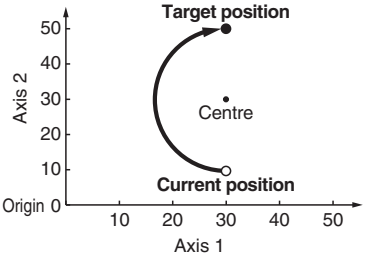
CE RoHS

- **Speed tuning control** *1
  (3 Axes: JXC92 4 Axes: JXC73/83/93)
- **Linear/circular interpolation**

Linear interpolation



Circular interpolation



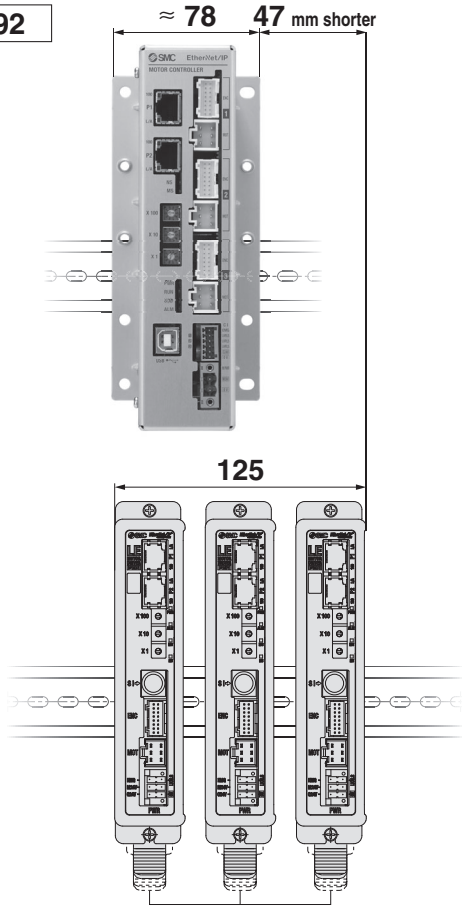
- **Positioning/pushing operation**
- **Step data input (Max. 2048 points)**
- **Space saving, reduced wiring**
- **Absolute/relative position coordinate instructions**

*1 This controls the speed of the slave axis when the speed of the main axis drops due to the effects of an external force and when a speed difference with the slave axis occurs. This control is not for synchronising the position of the main axis and slave axis.

For 3 Axes *Series JXC92*

- **EtherNet/IP™ Type**
- **Width: Approx. 38 % reduction**

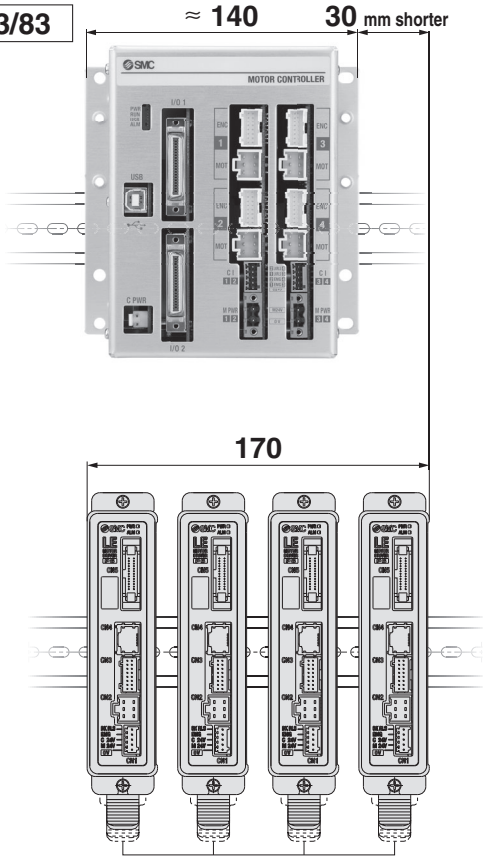
JXC92



For 4 Axes *Series JXC73/83/93*

- **Parallel I/O/ EtherNet/IP™ Type**
- **Width: Approx. 18 % reduction**

JXC73/83



* For LE□, size 25 or larger

Step Data Input: Max. 2048 points

For 3 Axes

3-axis operation can be set collectively in one step.

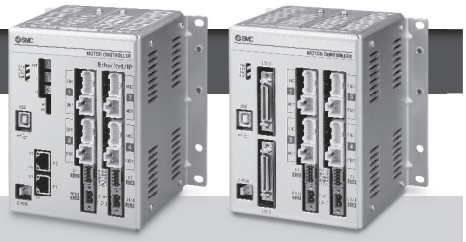
Step	Axis	Movement mode	Speed	Position	Acceleration	Deceleration	Pushing force	Trigger LV	Pushing speed	Moving force	Area 1	Area 2	In position	Comments
			mm/s	mm	mm/s²	mm/s²					mm	mm	mm	
0	Axis 1	ABS	500	100.00	3000	3000	0	85.0	50	100.0	10.0	30.0	0.5	
	Axis 2	ABS	500	100.00	3000	3000	0	85.0	50	100.0	10.0	30.0	0.5	
	Axis 3	ABS	500	100.00	3000	3000	0	85.0	50	100.0	10.0	30.0	0.5	
1	Axis 1	INC	500	200.00	3000	3000	0	85.0	50	100.0	0	0	0.5	
	Axis 2	INC	500	200.00	3000	3000	0	85.0	50	100.0	0	0	0.5	
	Axis 3	INC	500	200.00	3000	3000	0	85.0	50	100.0	0	0	0.5	
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	
2046	Axis 1	SYN-I	500	100.00	3000	3000	0	0	0	100.0	0	0	0.5	
	Axis 2	SYN-I	0	0.00	0	0	0	0	0	100.0	0	0	0.5	
	Axis 3	SYN-I	0	0.00	0	0	0	0	0	100.0	0	0	0.5	
2047	Axis 1	CIR-R	500	0.00	3000	3000	0	0	0	100.0	0	0	0.5	
	Axis 2	CIR-R	0	50.00	0	0	0	0	0	100.0	0	0	0.5	
	Axis 3 ∗1		0	0.00	0	0	0	0	0	100.0	0	0	0.5	
	Axis 4 ∗1		0	25.00	0	0	0	0	0	100.0	0	0	0.5	

∗1 When circular interpolation (CIR-R, CIR-L, CIR-3) is selected in the movement mode, input the X and Y coordinates in the rotation centre position or input the X and Y coordinates in the passing position.

Movement mode	Pushing operation	Details
Blank	×	Invalid data (Invalid process)
ABS	○	Moves to the absolute coordinate position based on the origin of the actuator
INC	○	Moves to the relative coordinate position based on the current position
LIN-A	×	Moves to the absolute coordinate position based on the origin of the actuator by linear interpolation
LIN-I	×	Moves to the relative coordinate position based on the current position by linear interpolation
CIR-R∗2	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3 ∗1: Rotation centre position X Axis 4 ∗1: Rotation centre position Y
CIR-L∗2	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the counter-clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3 ∗1: Rotation centre position X Axis 4 ∗1: Rotation centre position Y
SYN-I	×	Moves to the relative coordinate position based on the current position by speed tuning control ∗3
CIR-3∗2	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves based on the three specified points by circular interpolation. The target position and passing position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3 ∗1: Passing position X Axis 4 ∗1: Passing position Y

∗2 Performs a circular operation on a plane using Axis 1 and Axis 2

∗3 This controls the speed of the slave axis when the speed of the main axis drops due to the effects of an external force and when a speed difference with the slave axis occurs. This control is not for synchronising the position of the main axis and slave axis.



For 4 Axes

4-axis operation can be set collectively in one step.

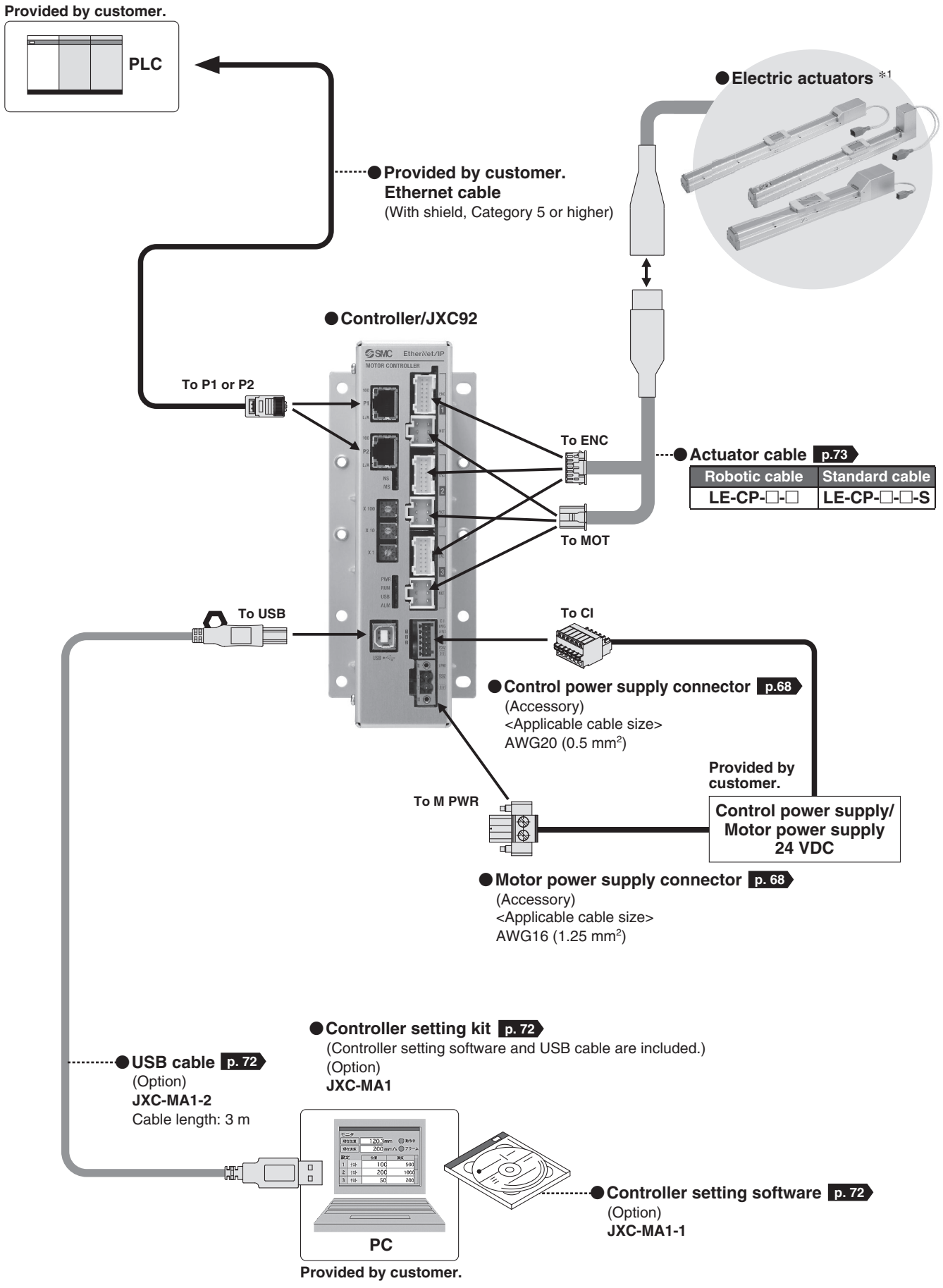
Step	Axis	Movement mode	Speed	Position	Acceleration	Deceleration	Positioning/ Pushing	Area 1	Area 2	In position	Comments
			mm/s	mm	mm/s²	mm/s²		mm	mm	mm	
0	Axis 1	ABS	100	200.00	1000	1000	0	6.0	12.0	0.5	
	Axis 2	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
	Axis 3	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
	Axis 4	ABS	50	100.00	1000	1000	0	6.0	12.0	0.5	
1	Axis 1	INC	500	250.00	1000	1000	1	0	0	20.0	
	Axis 2	INC	500	250.00	1000	1000	1	0	0	20.0	
	Axis 3	INC	500	250.00	1000	1000	1	0	0	20.0	
	Axis 4	INC	500	250.00	1000	1000	1	0	0	20.0	
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	
2046	Axis 4	ABS	200	700	500	500	0	0	0	0.5	
2047	Axis 1	ABS	500	0.00	3000	3000	0	0	0	0.5	
	Axis 2	ABS	500	0.00	3000	3000	0	0	0	0.5	
	Axis 3	ABS	500	0.00	3000	3000	0	0	0	0.5	
	Axis 4	ABS	500	0.00	3000	3000	0	0	0	0.5	

Movement mode	Pushing operation	Details
Blank	×	Invalid data (Invalid process)
ABS	○	Moves to the absolute coordinate position based on the origin of the actuator
INC	○	Moves to the relative coordinate position based on the current position
LIN-A	×	Moves to the absolute coordinate position based on the origin of the actuator by linear interpolation
LIN-I	×	Moves to the relative coordinate position based on the current position by linear interpolation
CIR-R*1	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3: Rotation centre position X Axis 4: Rotation centre position Y
CIR-L*1	×	With Axis 1 assigned to the X-axis and Axis 2 to the Y-axis, it moves in the counter-clockwise direction by circular interpolation. The target position and rotation centre position are specified according to the relative coordinates from the current position. The position data is assigned as follows. Axis 1: Target position X Axis 2: Target position Y Axis 3: Rotation centre position X Axis 4: Rotation centre position Y
SYN-I	×	Moves to the relative coordinate position based on the current position by speed tuning control *2

*1 Performs a circular operation on a plane using Axis 1 and Axis 2

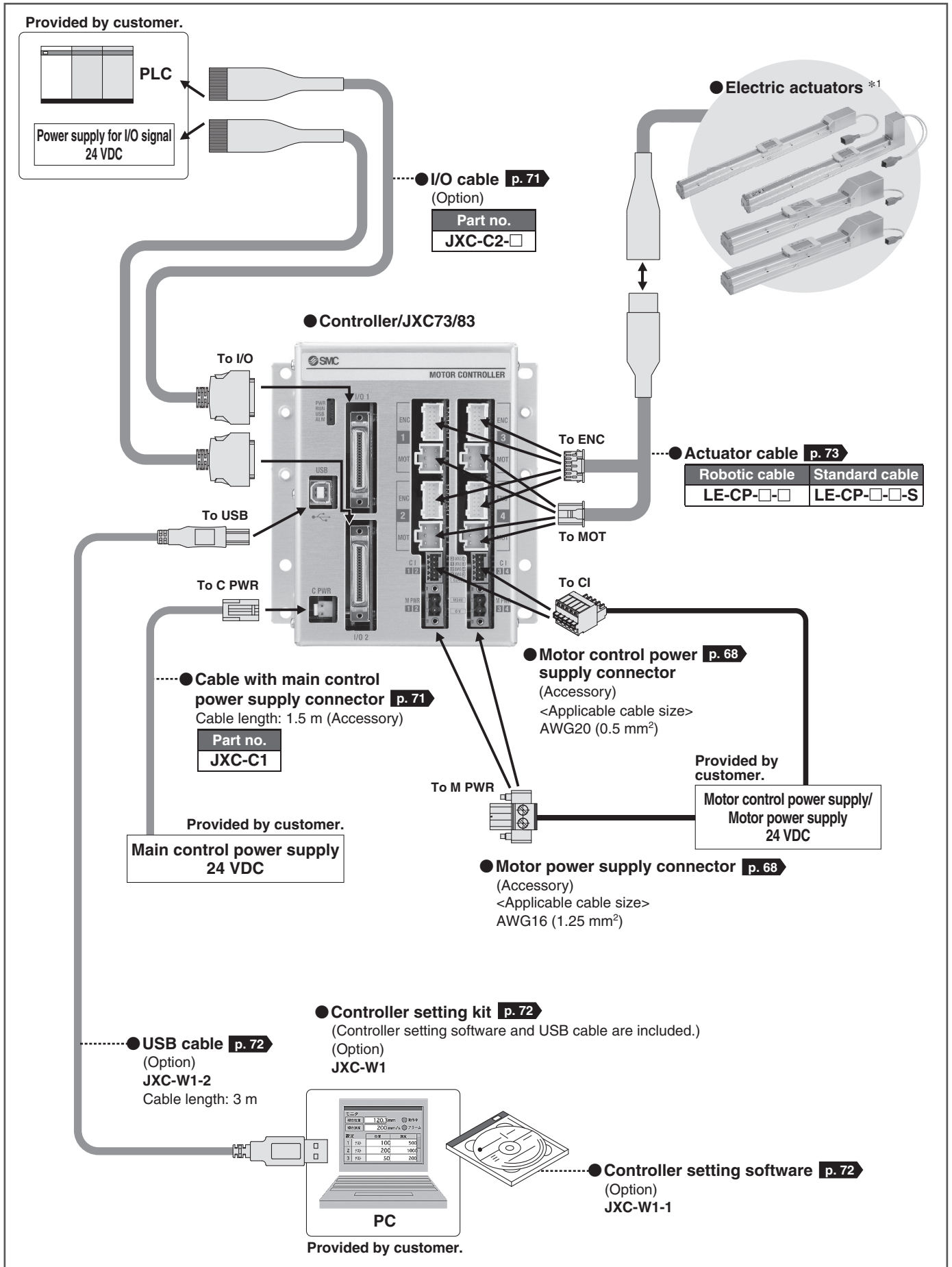
*2 This controls the speed of the slave axis when the speed of the main axis drops due to the effects of an external force and when a speed difference with the slave axis occurs. This control is not for synchronising the position of the main axis and slave axis.

For 3 Axes System Construction/EtherNet/IP™ Type (JXC92)



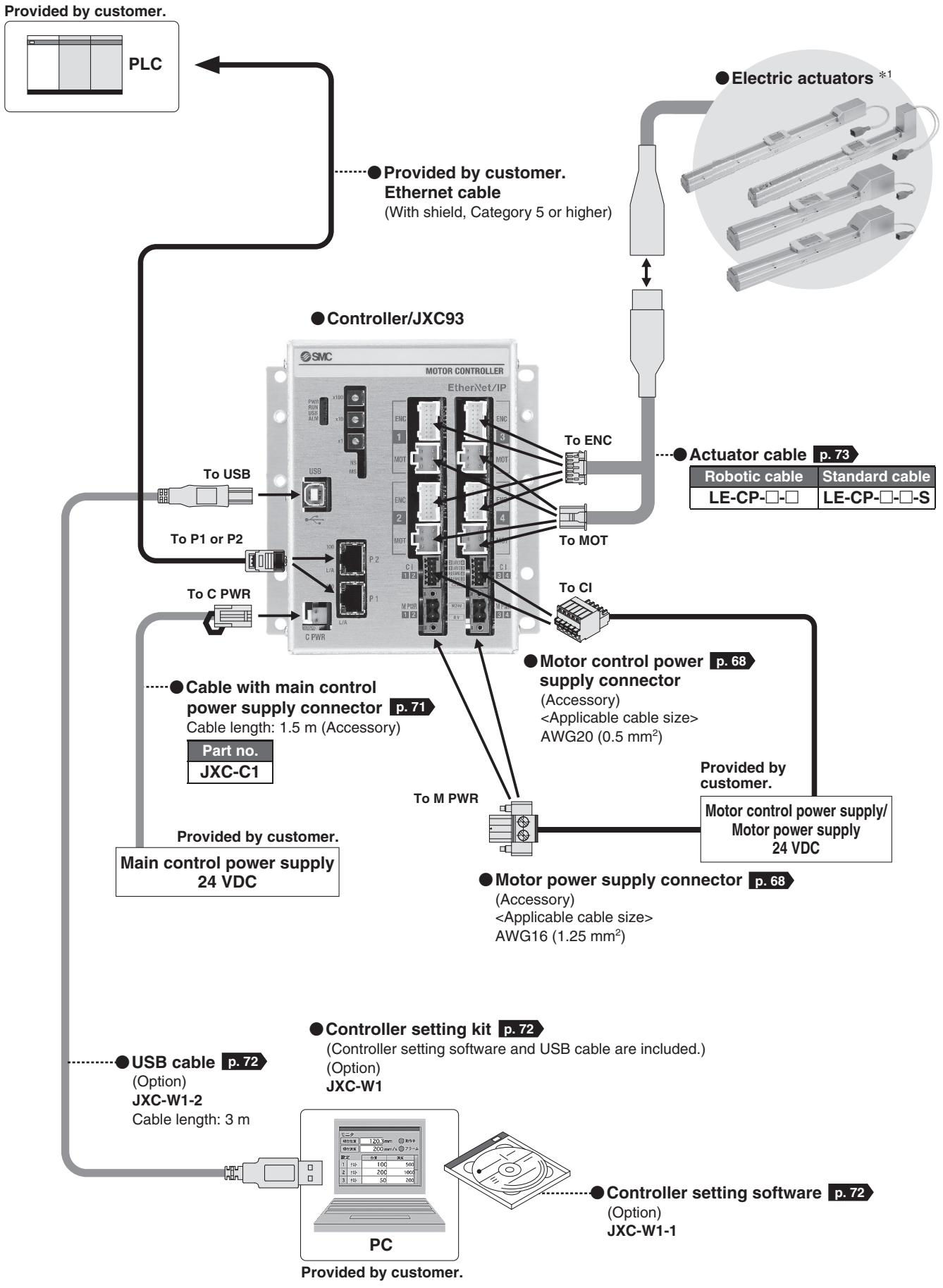
*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 62.)

For 4 Axes System Construction/Parallel I/O (JXC73/83)



*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 64.)

For 4 Axes System Construction/EtherNet/IP™ Type (JXC93)



*1 The connected actuators should be ordered separately. (Refer to the applicable actuators on page 64.)

3-Axis Step Motor Controller
(EtherNet/IP™ Type)
Series JXC92

How to Order

■ EtherNet/IP™ Type (JXC92)

Controller

JXC 9 2 7

- EtherNet/IP™ type
- 3-axis type
- Mounting

Symbol	Mounting
7	Screw mounting
8	DIN rail

Applicable Actuators

Applicable actuators	
Electric Actuator/Rod Series LEY	Refer to the **Web Catalogue**.
Electric Actuator/Guide Rod Series LEYG	
Electric Actuator/Slider Series LEF	
Electric Slide Table Series LES/LESH	
Electric Rotary Table Series LER	
Electric Actuator/Miniature Series LEPY/LEPS	
Electric Gripper (2-Finger Type, 3-Finger Type) Series LEH	

∗ Order the actuator separately, including the actuator cable. (Example: LEFS16B-100B-S1)

∗ For the "Speed–Work Load" graph of the actuator, refer to the LECPA section on the model selection page of the electric actuators **Web Catalogue**.

Specifications

For the setting of functions and operation methods, refer to the operation manual on the SMC website. (Documents/Download --> Instruction Manuals)

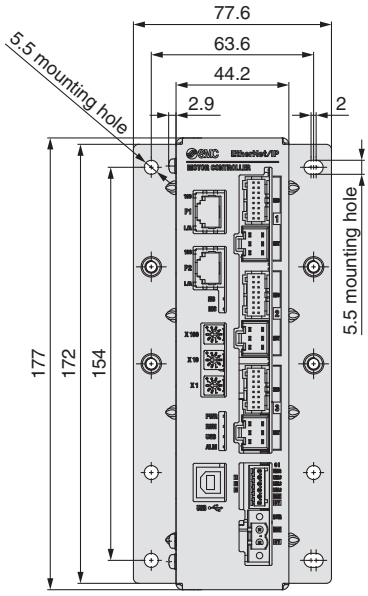
EtherNet/IP™ Type (JXC92)

Item		Specifications
Number of axes		Max. 3 axes
Compatible motor		Step motor (Servo/24 VDC)
Compatible encoder		Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply ∗1		Control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 500 mA Motor power supply Power voltage: 24 VDC ±10 % Max. current consumption: Based on the connected actuator ∗2
Communication	**Protocol**	EtherNet/IP™ ∗3
	Communication speed	10 Mbps/100 Mbps (automatic negotiation)
	Communication method	Full duplex/Half duplex (automatic negotiation)
	Configuration file	EDS file
	Occupied area	Input 16 bytes/Output 16 bytes
	IP address setting range	Manual setting by switches: From 192.168.1.1 to 254, Via DHCP server: Arbitrary address
	Vendor ID	7 h (SMC Corporation)
	Product type	2 Bh (Generic Device)
	Product code	DEh
Serial communication		USB2.0 (Full Speed 12 Mbps)
Memory		Flash-ROM
LED indicator		PWR, RUN, USB, ALM, NS, MS, L/A, 100
Lock control		Forced-lock release terminal ∗4
Cable length		Actuator cable: 20 m or less
Cooling system		Natural air cooling
Operating temperature range		0 °C to 40 °C (No freezing)
Operating humidity range		90 % RH or less (No condensation)
Storage temperature range		-10 °C to 60 °C (No freezing)
Storage humidity range		90 % RH or less (No condensation)
Insulation resistance		Between all external terminals and the case: 50 MΩ (500 VDC)
Weight		600 g (Screw mounting), 650 g (DIN rail mounting)

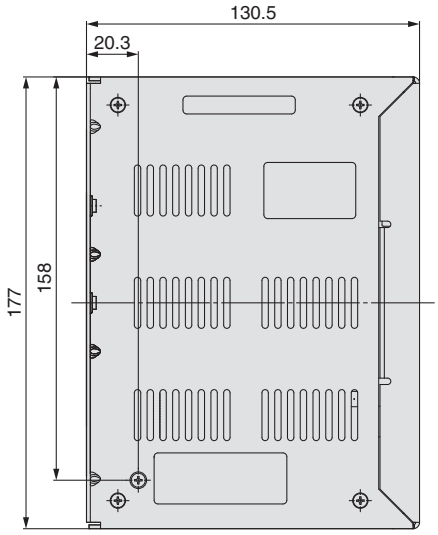
∗1 Do not use a power supply with inrush current protection for the motor drive power supply.
∗2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
∗3 EtherNet/IP™ is a trademark of ODVA.
∗4 Applicable to non-magnetising locks

Dimensions

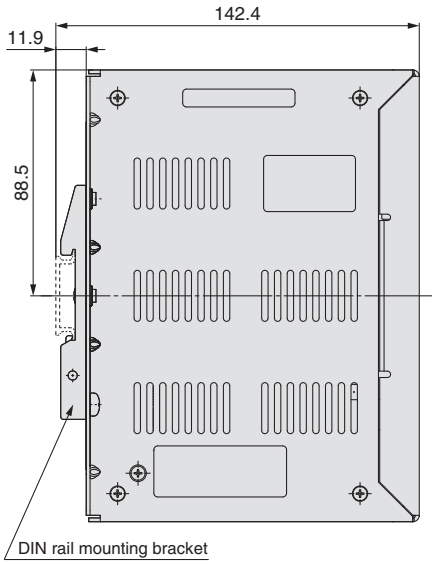
EtherNet/IP™ Type JXC92



Screw mounting

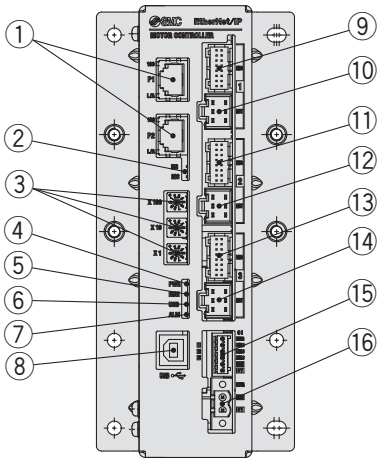


DIN rail mounting



Controller Details

EtherNet/IP™ Type JXC92



No.	Name	Description	Details
①	**P1, P2**	EtherNet/IP™ communication connector	Connect Ethernet cable.
②	**NS, MS**	Communication status LED	Displays the status of the EtherNet/IP™ communication
③	**X100** **X10** **X1**	IP address setting switches	Switch to set the 4th byte of the IP address by X1, X10 and X100.
④	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
⑤	**RUN**	Operation LED (Green)	Running in EtherNet/IP™: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
⑥	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
⑦	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑧	**USB**	Serial communication connector	Connect to a PC via the USB cable.
⑨	**ENC** 1	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT** 1	Motor power connector (6 pins)	
⑪	**ENC** 2	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT** 2	Motor power connector (6 pins)	
⑬	**ENC** 3	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑭	**MOT** 3	Motor power connector (6 pins)	
⑮	**CI**	Control power supply connector ∗1	Control power supply (+), All axes stop (+), Axis 1 lock release (+), Axis 2 lock release (+), Axis 3 lock release (+), Common (–)
⑯	**M PWR**	Motor power supply connector ∗1	Motor power supply (+), Motor power supply (–)

∗1 Connectors are included. (Refer to page 68.)

4-Axis Step Motor Controller
(Parallel I/O/EtherNet/IP™ Type)
Series JXC73/83/93

CE RoHS

How to Order

■ Parallel I/O (JXC73/83)

Controller

JXC 8 3 2

I/O type

Symbol	I/O type
7	NPN
8	PNP

4-axis type

I/O cable, mounting

Symbol	I/O cable	Mounting
1	1.5 m	Screw mounting
2	1.5 m	DIN rail
3	3 m	Screw mounting
4	3 m	DIN rail
5	5 m	Screw mounting
6	5 m	DIN rail
7	None	Screw mounting
8	None	DIN rail

∗ Two I/O cables are included.

■ EtherNet/IP™ Type (JXC93)

Controller

JXC 9 3 8

EtherNet/IP™ type

4-axis type

Mounting

Symbol	Mounting
7	Screw mounting
8	DIN rail

Applicable Actuators

Applicable actuators	
Electric Actuator/Rod Series LEY	Refer to the **Web Catalogue**.
Electric Actuator/Guide Rod Series LEYG	
Electric Actuator/Slider Series LEF	
Electric Slide Table Series LES/LESH	
Electric Rotary Table Series LER ∗1	
Electric Actuator/Miniature Series LEPY/LEPS	
Electric Gripper (2-Finger Type, 3-Finger Type) Series LEH	

∗1 Except the continuous rotation (360°) specification.
∗ Order the actuator separately, including the actuator cable. (Example: LEFS16B-100B-S1)
∗ For the "Speed–Work Load" graph of the actuator, refer to the LECPA section on the model selection page of the electric actuators **Web Catalogue**.

Specifications

For the setting of functions and operation methods, refer to the operation manual on the SMC website. (Documents/Download --> Instruction Manuals)

Parallel I/O (JXC73/83)

Item	Specifications
Number of axes	Max. 4 axes
Compatible motor	Step motor (Servo/24 VDC)
Compatible encoder	Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply *1	Main control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 300 mA Motor power supply, Motor control power supply (Common) Power voltage: 24 VDC ±10 % Max. current consumption: Based on the connected actuator *2
Parallel input	16 inputs (Photo-coupler isolation)
Parallel output	32 outputs (Photo-coupler isolation)
Serial communication	USB2.0 (Full Speed 12 Mbps)
Memory	Flash-ROM/EEPROM
LED indicator	PWR, RUN, USB, ALM
Lock control	Forced-lock release terminal *3
Cable length	I/O cable: 5 m or less, Actuator cable: 20 m or less
Cooling system	Natural air cooling
Operating temperature range	0 °C to 40 °C (No freezing)
Operating humidity range	90 % RH or less (No condensation)
Storage temperature range	-10 °C to 60 °C (No freezing)
Storage humidity range	90 % RH or less (No condensation)
Insulation resistance	Between all external terminals and the case: 50 MΩ (500 VDC)
Weight	1050 g (Screw mounting), 1100 g (DIN rail mounting)

*1 Do not use a power supply with inrush current protection for the motor drive power and motor control power supply.
*2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
*3 Applicable to non-magnetising locks

For the setting of functions and operation methods, refer to the operation manual on the SMC website. (Documents/Download --> Instruction Manuals)

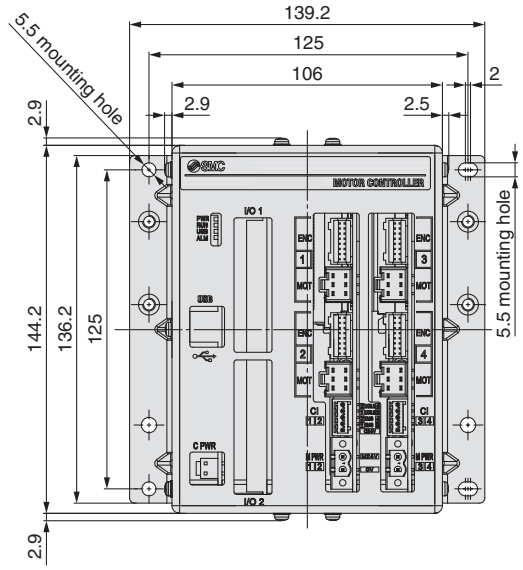
EtherNet/IP™ Type (JXC93)

Item		Specifications
Number of axes		Max. 4 axes
Compatible motor		Step motor (Servo/24 VDC)
Compatible encoder		Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply *1		Main control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 350 mA Motor power supply, Motor control power supply (Common) Power voltage: 24 VDC ±10 % Max. current consumption: Based on the connected actuator *2
Communication	**Protocol**	EtherNet/IP™ *4
	Communication speed	10 Mbps/100 Mbps (automatic negotiation)
	Communication method	Full duplex/Half duplex (automatic negotiation)
	Configuration file	EDS file
	Occupied area	Input 16 bytes/Output 16 bytes
	IP address setting range	Manual setting by switches: From 192.168.1.1 to 254, Via DHCP server: Arbitrary address
	Vendor ID	7 h (SMC Corporation)
	Product type	2 Bh (Generic Device)
	Product code	DCh
Serial communication		USB2.0 (Full Speed 12 Mbps)
Memory		Flash-ROM/EEPROM
LED indicator		PWR, RUN, USB, ALM, NS, MS, L/A, 100
Lock control		Forced-lock release terminal *3
Cable length		Actuator cable: 20 m or less
Cooling system		Natural air cooling
Operating temperature range		0° C to 40 °C (No freezing)
Operating humidity range		90 % RH or less (No condensation)
Storage temperature range		-10 °C to 60 °C (No freezing)
Storage humidity range		90 % RH or less (No condensation)
Insulation resistance		Between all external terminals and the case: 50 MΩ (500 VDC)
Weight		1050 g (Screw mounting), 1100 g (DIN rail mounting)

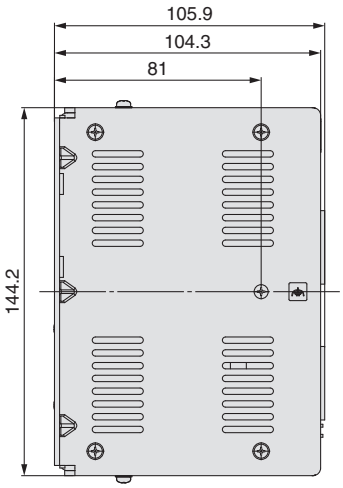
*1 Do not use a power supply with inrush current protection for the motor drive power and motor control power supply.
*2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
*3 Applicable to non-magnetising locks
*4 EtherNet/IP™ is a trademark of ODVA.

Dimensions

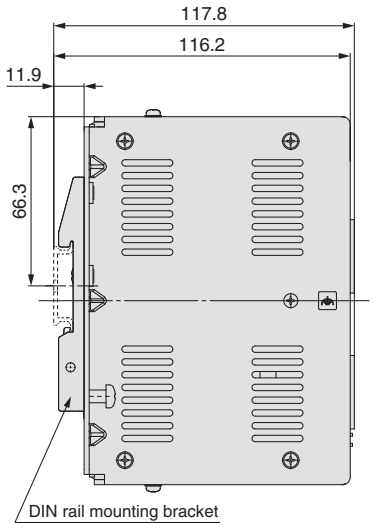
Parallel I/O JXC73/83



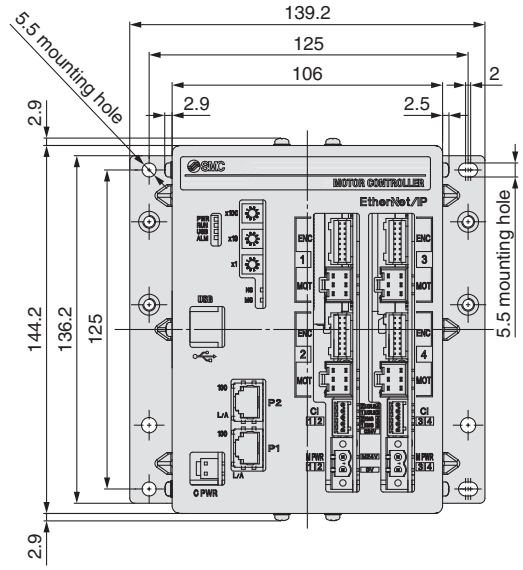
Screw mounting



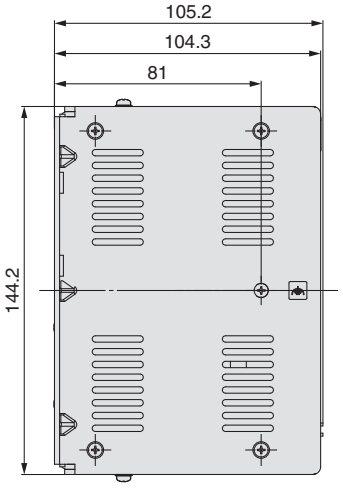
DIN rail mounting



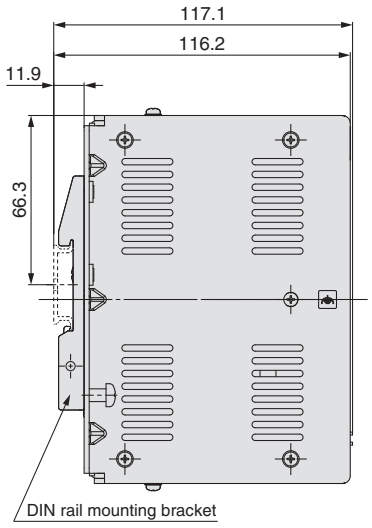
EtherNet/IP™ Type JXC93



Screw mounting

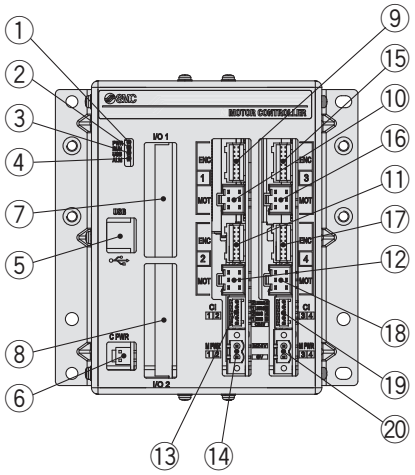


DIN rail mounting



Controller Details

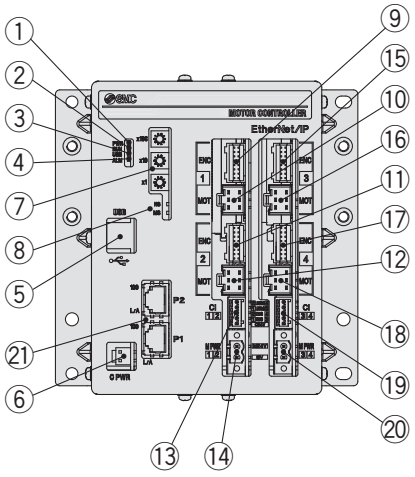
Parallel I/O JXC73/83



No.	Name	Description	Details
①	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
②	**RUN**	Operation LED (Green)	Running in parallel I/O: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
③	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
④	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑤	**USB**	Serial communication	Connect to a PC via the USB cable.
⑥	**C PWR**	Main control power supply connector (2 pins) *1	Main control power supply (+) (–)
⑦	**I/O 1**	Parallel I/O connector (40 pins)	Connect to a PLC via the I/O cable.
⑧	**I/O 2**	Parallel I/O connector (40 pins)	Connect to a PLC via the I/O cable.
⑨	**ENC** 1	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT** 1	Motor power connector (6 pins)	
⑪	**ENC** 2	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT** 2	Motor power connector (6 pins)	
⑬	**CI** 1 2	Motor control power supply connector *1	Motor control power supply (+), Axis 1 stop (+), Axis 1 lock release (+), Axis 2 stop (+), Axis 2 lock release (+)
⑭	**M PWR** 1 2	Motor power supply connector *1	For Axis 1, 2. Motor power supply (+), Common (–)
⑮	**ENC** 3	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑯	**MOT** 3	Motor power connector (6 pins)	
⑰	**ENC** 4	Encoder connector (16 pins)	Axis 4: Connect the actuator cable.
⑱	**MOT** 4	Motor power connector (6 pins)	
⑲	**CI** 3 4	Motor control power supply connector *1	Motor control power supply (+), Axis 3 stop (+), Axis 3 lock release (+), Axis 4 stop (+), Axis 4 lock release (+)
⑳	**M PWR** 3 4	Motor power supply connector *1	For Axis 3, 4. Motor power supply (+), Common (–)

*1 Connectors are included. (Refer to page 68.)

EtherNet/IP™ Type JXC93



No.	Name	Description	Details
①	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
②	**RUN**	Operation LED (Green)	Running in EtherNet/IP™: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
③	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
④	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑤	**USB**	Serial communication	Connect to a PC via the USB cable.
⑥	**C PWR**	Main control power supply connector (2 pins) *1	Main control power supply (+) (–)
⑦	**x100** **x10** **x1**	IP address setting switches	Switch to set the 4th byte of the IP address by X1, X10 and X100.
⑧	**MS, NS**	Communication status LED	Displays the status of the EtherNet/IP™ communication
⑨	**ENC** 1	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT** 1	Motor power connector (6 pins)	
⑪	**ENC** 2	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT** 2	Motor power connector (6 pins)	
⑬	**CI** 1 2	Motor control power supply connector *1	Motor control power supply (+), Axis 1 stop (+), Axis 1 lock release (+), Axis 2 stop (+), Axis 2 lock release (+)
⑭	**M PWR** 1 2	Motor power supply connector *1	For Axis 1, 2. Motor power supply (+), Common (–)
⑮	**ENC** 3	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑯	**MOT** 3	Motor power connector (6 pins)	
⑰	**ENC** 4	Encoder connector (16 pins)	Axis 4: Connect the actuator cable.
⑱	**MOT** 4	Motor power connector (6 pins)	
⑲	**CI** 3 4	Motor control power supply connector *1	Motor control power supply (+), Axis 3 stop (+), Axis 3 lock release (+), Axis 4 stop (+), Axis 4 lock release (+)
⑳	**M PWR** 3 4	Motor power supply connector *1	For Axis 3, 4. Motor power supply (+), Common (–)
㉑	**P1, P2**	EtherNet/IP™ communication connector	Connect Ethernet cable.

*1 Connectors are included. (Refer to page 68.)

Wiring Example 1

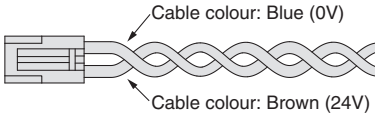
Cable with Main Control Power Supply Connector (For 4 Axes)*1: C PWR 1 pc.

For 4 Axes: JXC73/83/93

Terminal name	Function	Details
+24V	Main control power supply (+)	Power supply (+) supplied to the main control
24–0V	Main control power supply (–)	Power supply (–) supplied to the main control

*1 Part no.: JXC-C1 (Cable length: 1.5 m)

Cable with main control power supply connector



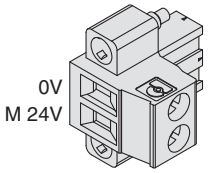
Motor Power Supply Connector (For 3/4 Axes)*2: M PWR 2 pcs.*3

For 3 Axes: JXC92; For 4 Axes: JXC73/83/93

Terminal name	Function	Details	Note
0V	Motor power supply (–)	Power supply (–) supplied to the motor power	For 3 axes JXC92
		The M 24V terminal, C 24V terminal, EMG terminal, and LKRLS terminal are common (–).	For 4 axes JXC73/83/93
M 24V	Motor power supply (+)	Power supply (+) supplied to the motor power	

*2 Manufactured by PHOENIX CONTACT (Part no.: MSTB2, 5/2-STF-5, 08)
*3 1 pc. for 3 axes (JXC92)

Motor power supply connector



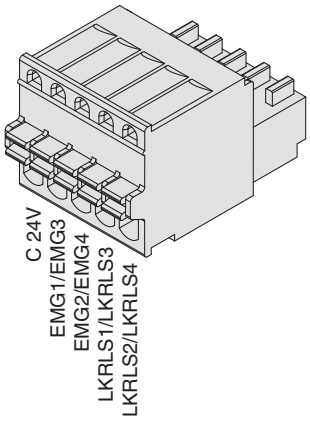
Motor Control Power Supply Connector (For 4 Axes)*4: CI 2 pcs.

For 4 Axes: JXC73/83/93

Terminal name	Function	Details
C 24V	Motor control power supply (+)	Power supply (+) supplied to the motor control
EMG1/EMG3	Stop (+)	Axis 1/Axis 3: Input (+) for releasing the stop
EMG2/EMG4	Stop (+)	Axis 2/Axis 4: Input (+) for releasing the stop
LKRLS1/LKRLS3	Lock release (+)	Axis 1/Axis 3: Input (+) for releasing the lock
LKRLS2/LKRLS4	Lock release (+)	Axis 2/Axis 4: Input (+) for releasing the lock

*4 Manufactured by PHOENIX CONTACT (Part no.: FK-MC0, 5/5-ST-2, 5)

Motor control power supply connector



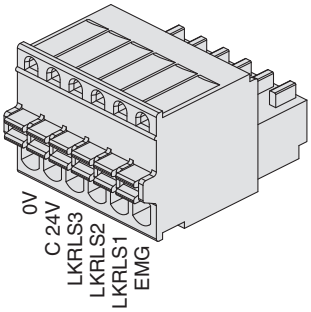
Control Power Supply Connector (For 3 Axes)*5: CI 1 pc.

For 3 Axes: JXC92

Terminal name	Function	Details
0V	Control power supply (–)	The C 24V terminal, LKRLS terminal, and EMG terminal are common (–).
C 24V	Control power supply (+)	Power supply (+) supplied to the control
LKRLS3	Lock release (+)	Axis 3: Input (+) for releasing the lock
LKRLS2	Lock release (+)	Axis 2: Input (+) for releasing the lock
LKRLS1	Lock release (+)	Axis 1: Input (+) for releasing the lock
EMG	Stop (+)	All axes: Input (+) for releasing the stop

*5 Manufactured by PHOENIX CONTACT (Part no.: FK-MC0, 5/6-ST-2, 5)

Control power supply connector



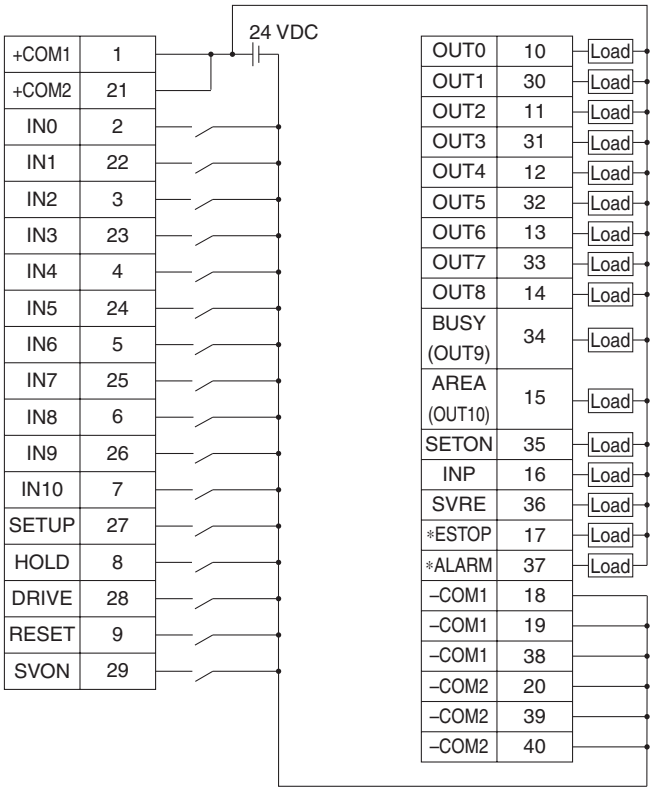
Wiring Example 2

Parallel I/O Connector

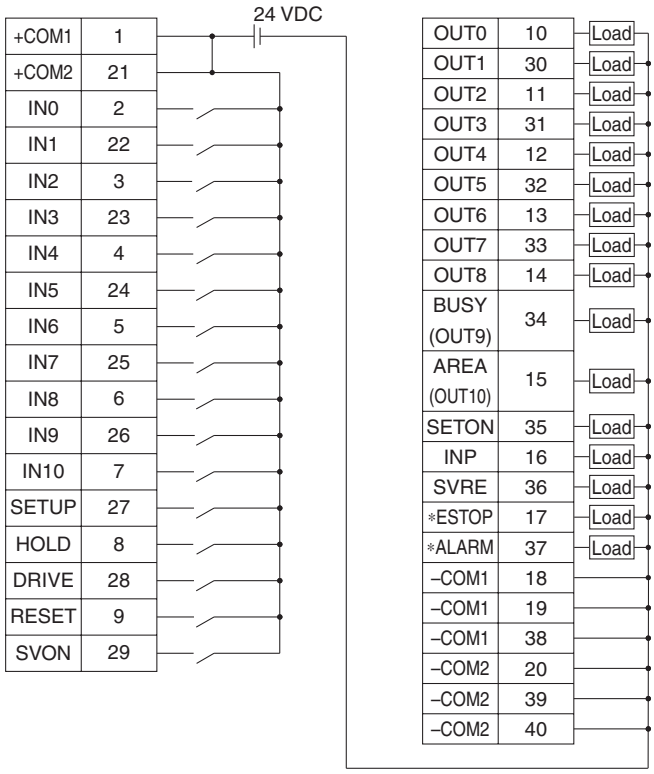
* When you connect a PLC to the I/O 1 or I/O 2 parallel I/O connector, use the I/O cable (JXC-C2-□).
* The wiring changes depending on the type of the parallel I/O (NPN or PNP).

I/O 1 Wiring example

NPN JXC73



PNP JXC83



I/O 1 Input Signal

Name	Details
+COM1 +COM2	Connects the power supply 24 V for input/output signal
IN0 to IN8	Step data specified Bit No. (Standard: When 512 points are used)
IN9 IN10	Step data specified extension Bit No. (Extension: When 2048 points are used)
SETUP	Instruction to return to origin
HOLD	Operation is temporarily stopped
DRIVE	Instruction to drive
RESET	Alarm reset and operation interruption
SVON	Servo ON instruction

I/O 1 Output Signal

Name	Details
OUT0 to OUT8	Outputs the step data no. during operation
BUSY (OUT9)	Outputs when the operation of the actuator is in progress
AREA (OUT10)	Outputs when all actuators are within the area output range
SETON	Outputs when the return to origin of all actuators is completed
INP	Outputs when the positioning or pushing of all actuators is completed
SVRE	Outputs when servo is ON
∗ESTOP ∗1	Not output when EMG stop is instructed
∗ALARM ∗1	Not output when alarm is generated
–COM1 –COM2	Connects the power supply 0 V for input/output signal

∗1 Negative-logic circuit signal

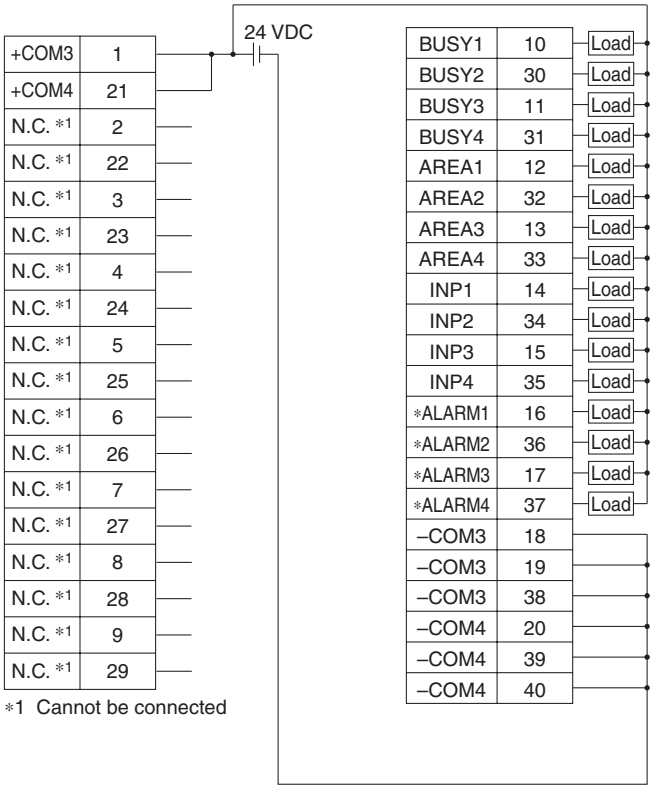
Wiring Example 2

Parallel I/O Connector

* When you connect a PLC to the I/O 1 or I/O 2 parallel I/O connector, use the I/O cable (JXC-C2-□).
* The wiring changes depending on the type of the parallel I/O (NPN or PNP).

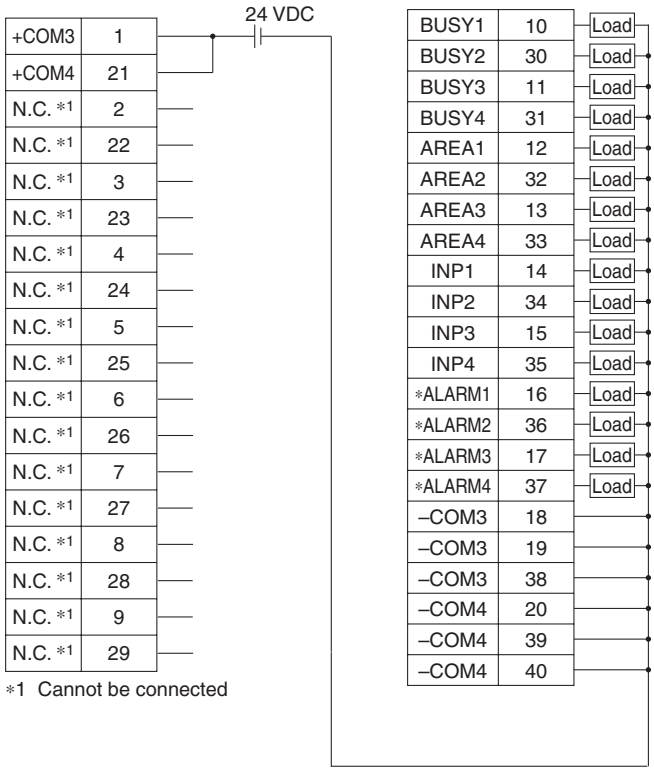
I/O 2 Wiring example

NPN JXC73



*1 Cannot be connected

PNP JXC83



*1 Cannot be connected

I/O 2 Input Signal

Name	Details
+COM3 +COM4	Connects the power supply 24 V for input/output signal
N.C.	Cannot be connected

I/O 2 Output Signal

Name	Details
BUSY1	Busy signal for axis 1
BUSY2	Busy signal for axis 2
BUSY3	Busy signal for axis 3
BUSY4	Busy signal for axis 4
AREA1	Area signal for axis 1
AREA2	Area signal for axis 2
AREA3	Area signal for axis 3
AREA4	Area signal for axis 4
INP1	Positioning or pushing completion signal for axis 1
INP2	Positioning or pushing completion signal for axis 2
INP3	Positioning or pushing completion signal for axis 3
INP4	Positioning or pushing completion signal for axis 4
*ALARM1 *2	Alarm signal for axis 1
*ALARM2 *2	Alarm signal for axis 2
*ALARM3 *2	Alarm signal for axis 3
*ALARM4 *2	Alarm signal for axis 4
–COM3 –COM4	Connects the power supply 0 V for input/output signal

*2 Negative-logic circuit signal

Options

Cable with main control power supply connector

For 4 Axes
JXC73/83/93

JXC − C1

Cable length: 1.5 m (Accessory)

Number of cores	2
AWG size	AWG20

I/O cable (1 pc.)

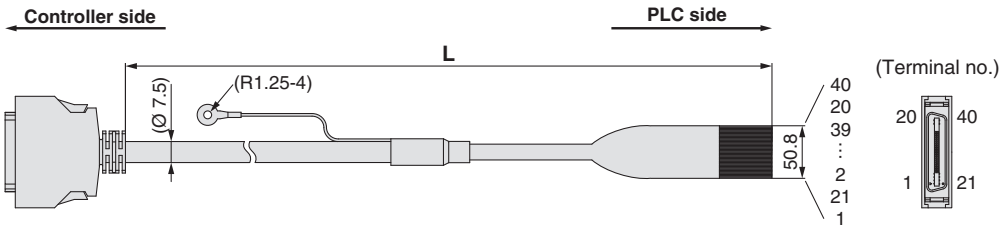
For 4 Axes
JXC73/83

JXC − C2 − □

Cable length (L) [m]

1	1.5
3	3
5	5

Number of cores	40
AWG size	AWG28



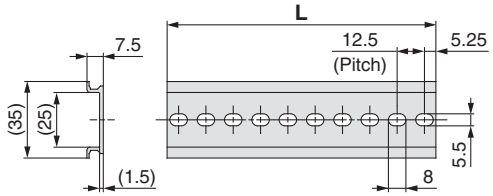
Pin no.	Wire colour	Pin no.	Wire colour	Pin no.	Wire colour	Pin no.	Wire colour
1	Orange (Black 1)	6	Orange (Black 2)	11	Orange (Black 3)	16	Orange (Black 4)
21	Orange (Red 1)	26	Orange (Red 2)	31	Orange (Red 3)	36	Orange (Red 4)
2	Grey (Black 1)	7	Grey (Black 2)	12	Grey (Black 3)	17	Grey (Black 4)
22	Grey (Red 1)	27	Grey (Red 2)	32	Grey (Red 3)	37	Grey (Red 4)
3	White (Black 1)	8	White (Black 2)	13	White (Black 3)	18	White (Black 4)
23	White (Red 1)	28	White (Red 2)	33	White (Red 3)	38	White (Red 4)
4	Yellow (Black 1)	9	Yellow (Black 2)	14	Yellow (Black 3)	19	Yellow (Black 4)
24	Yellow (Red 1)	29	Yellow (Red 2)	34	Yellow (Red 3)	39	Yellow (Red 4)
5	Pink (Black 1)	10	Pink (Black 2)	15	Pink (Black 3)	20	Pink (Black 4)
25	Pink (Red 1)	30	Pink (Red 2)	35	Pink (Red 3)	40	Pink (Red 4)

DIN rail

For 3 Axes
JXC92
For 4 Axes
JXC73/83/93

AXT100 − DR − □

∗ For □, enter a number from the No. line in the table below. Refer to the dimension drawings on pages 63 and 66 for the mounting dimensions.



L Dimension

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5

No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

DIN rail mounting bracket (with 6 mounting screws)

For 3 Axes
JXC92
For 4 Axes
JXC73/83/93

JXC − Z1

This should be used when the DIN rail mounting bracket is mounted onto a screw mounting type controller afterwards.

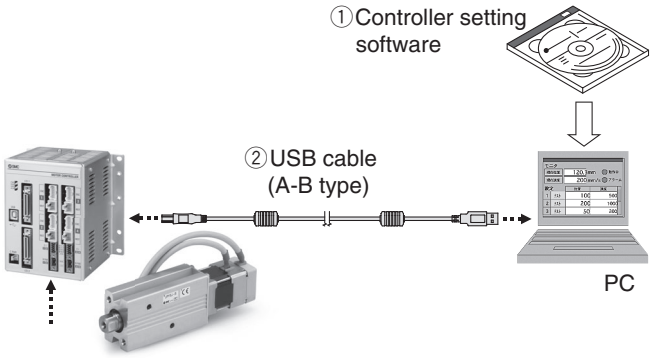
Options

Controller setting kit

For 4 Axes
JXC73/83/93

JXC – W1

Controller setting kit
(Japanese and English are available.)



Contents

①Controller setting software (CD-ROM)
②USB cable (Cable length: 3 m)

Description		Model
①	Controller setting software	JXC-W1-1
②	USB cable	JXC-W1-2

∗ Can be ordered separately

Hardware Requirements

PC/AT compatible machine with Windows 7 or Windows 8.1 and USB1.1 or USB2.0 port

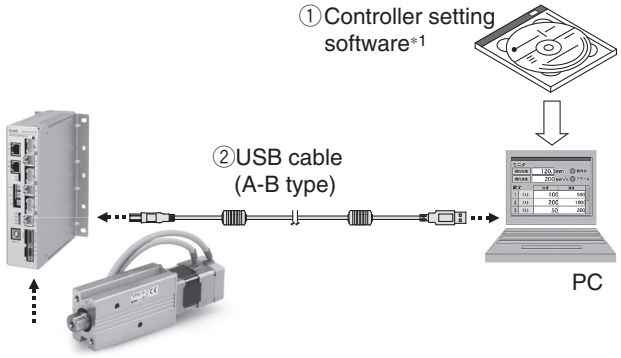
∗ Windows® is a registered trademark of Microsoft Corporation in the United States.

Controller setting kit

For 3 Axes
JXC92

JXC – MA1∗1

Controller setting kit
(Japanese and English are available.)



Contents

①Controller setting software (CD-ROM)∗1
②USB cable (Cable length: 3 m)

Description		Model
①	Controller setting software	JXC-MA1-1
②	USB cable	JXC-MA1-2

∗ Can be ordered separately

Hardware Requirements

PC/AT compatible machine with Windows 7 or Windows 8.1 and USB1.1 or USB2.0 port

∗1 The controller setting software also includes software dedicated for 4 axes.
∗ Windows® is a registered trademark of Microsoft Corporation in the United States.

Options: Actuator Cable

[Robotic cable, standard cable for step motor (Servo/24 VDC)]

For 3 Axes	For 4 Axes
JXC92	JXC73/83/93

LE − CP − 1 − □

Cable length (L) [m]

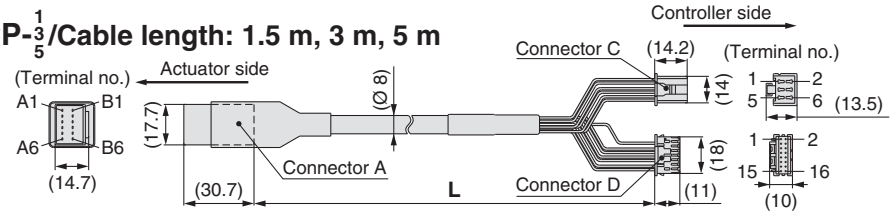
1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

*1 Produced upon receipt of order (Robotic cable only)

Cable type

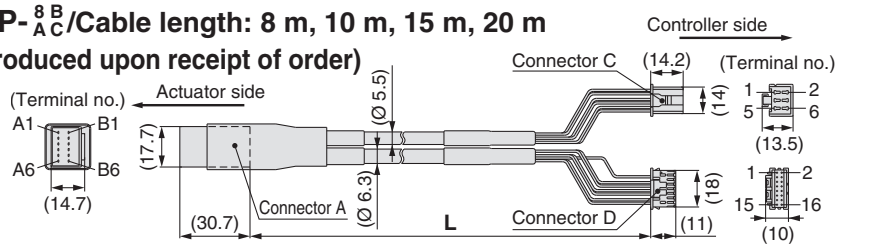
—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\frac{1}{3}_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$\frac{8}{A}\frac{B}{C}$/Cable length: 8 m, 10 m, 15 m, 20 m

(*1 Produced upon receipt of order)



Signal	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

Cable colour	Connector D terminal no.
Brown	12
Black	13
Red	7
Black	6
Orange	9
Black	8
—	3

[Robotic cable, standard cable with lock and sensor for step motor (Servo/24 VDC)]

For 3 Axes	For 4 Axes
JXC92	JXC73/83/93

LE − CP − 1 − B − □

Cable length (L) [m]

1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

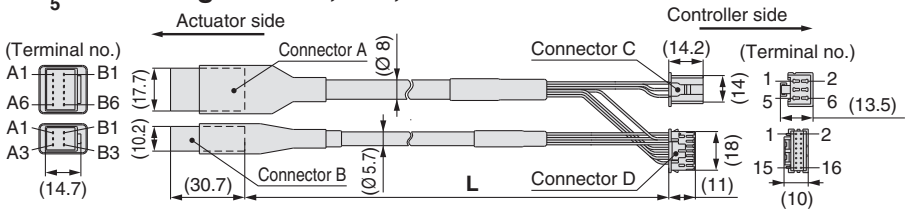
*1 Produced upon receipt of order (Robotic cable only)

With lock and sensor

Cable type

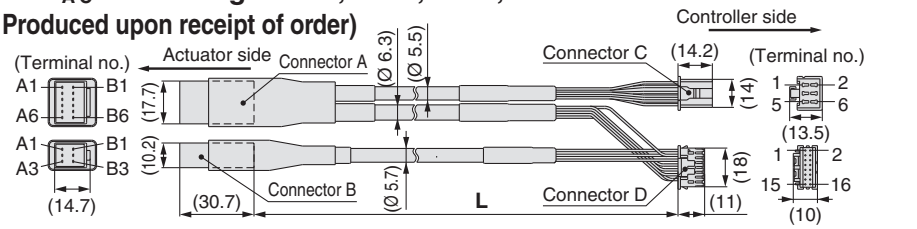
—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\frac{1}{3}_{5}$/Cable length: 1.5 m, 3 m, 5 m



LE-CP-$\frac{8}{A}\frac{B}{C}$/Cable length: 8 m, 10 m, 15 m, 20 m

(*1 Produced upon receipt of order)



Signal	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+)	B-3	Brown	1
Sensor (–)	A-3	Blue	2

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) [1], and other safety regulations.

⚠ **Caution:**	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
⚠ **Warning:**	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Danger:**	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. [2] Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

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