New

Electric Actuators

Miniature Rod Type **Miniature Slide Table Type**

Step Motor (Servo/24 VDC)

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





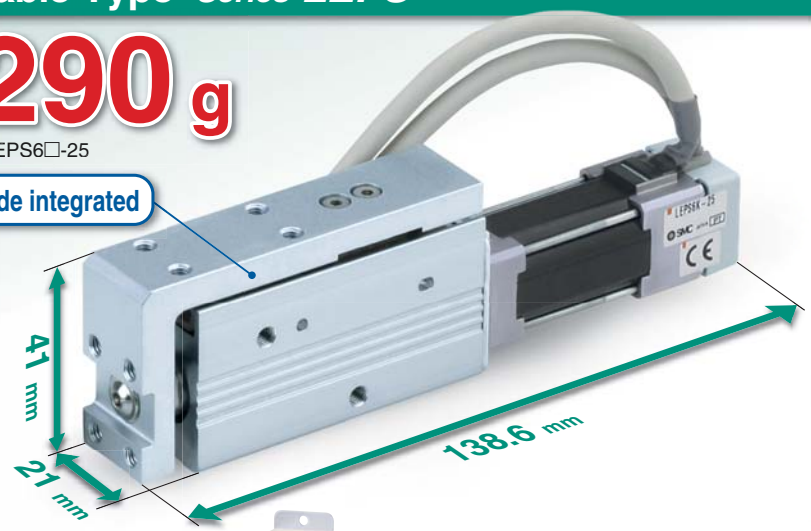
Slide Table Type *Series LEPS*

Size: 6, 10

Weight **290 g**

∗ LEPS6□-25

Linear guide integrated





Step Motor (Servo/24 VDC)

Controller/Driver



Step data input type
Series **LECP6**
- 64 points positioning
- Input using controller setting kit or teaching box



Programless type
Series **LECP1**
- 14 points positioning
- Control panel setting



Pulse input type
Series **LECPA**

Series LEPY/LEPS

SMC

CAT.EUS100-92B-UK

Compact and lightweight

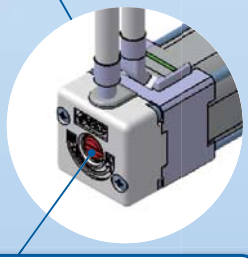
Rod Type Series LEPY

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

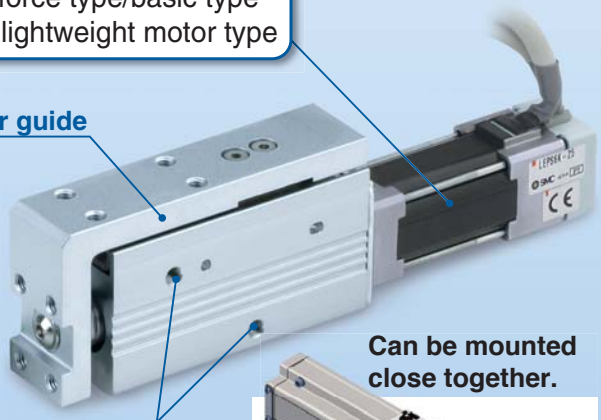


Manual override screw
For rod/table operation.
Adjustment operation possible when power OFF

Slide Table Type Series LEPS

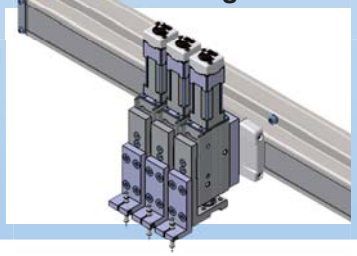
Weight 290 g
(LEPS6□-25)

Linear guide

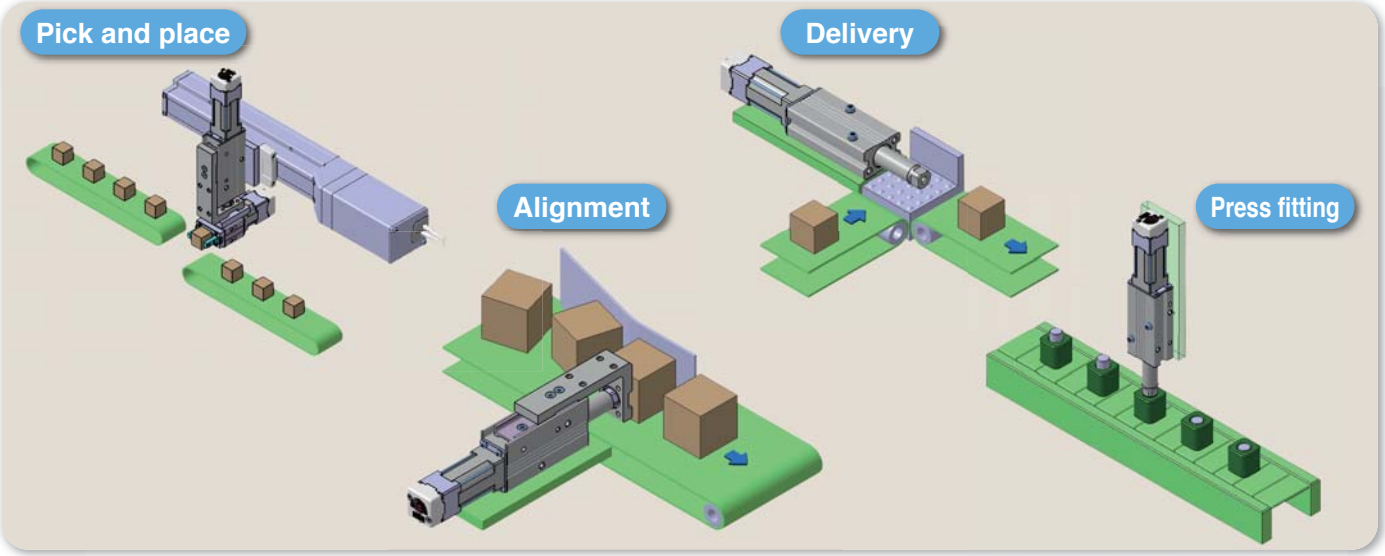


Body mounting through-hole

Can be mounted close together.



Application Examples



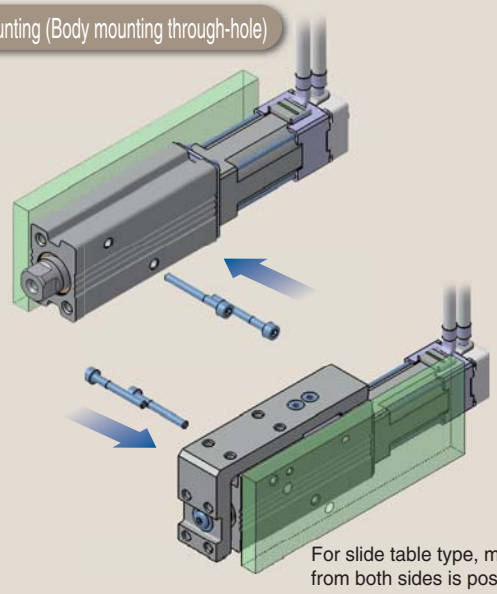
Variations

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

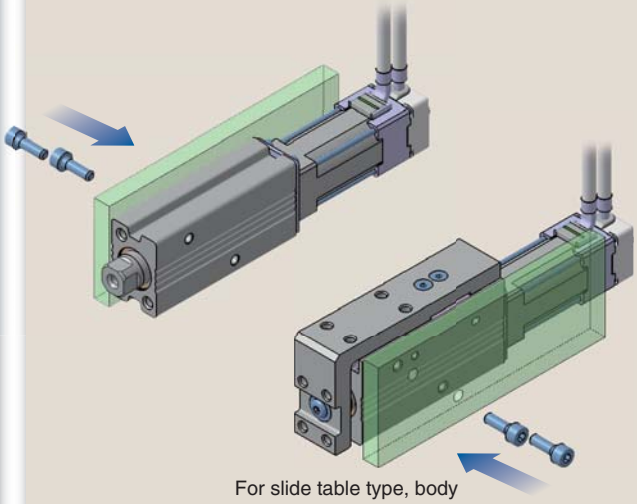
Mounting from various directions

Side mounting (Body mounting through-hole)



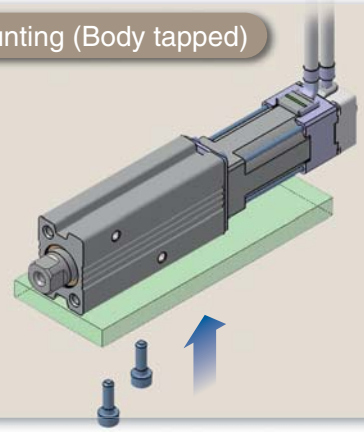
For slide table type, mounting from both sides is possible.

Side mounting (Body tapped)

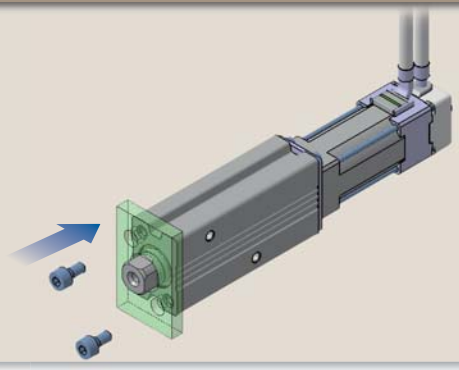


For slide table type, body tapped from both sides.

Bottom mounting (Body tapped)



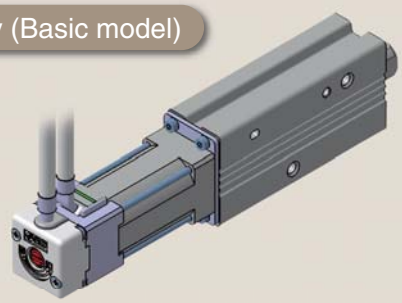
Axial mounting * Rod type only (Body tapped)



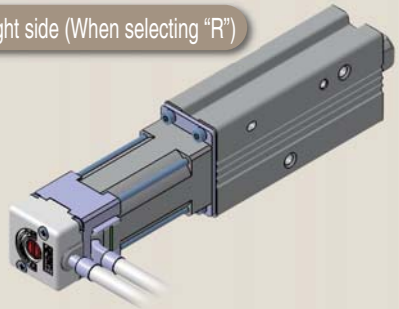
Motor Cable Entry Direction

Can be selected from 4 directions.

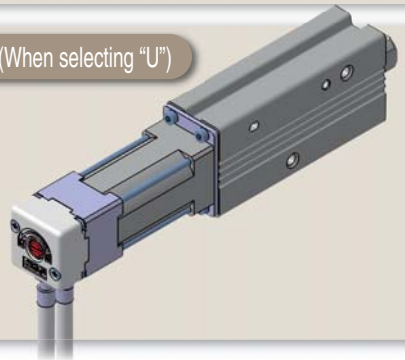
Top entry (Basic model)



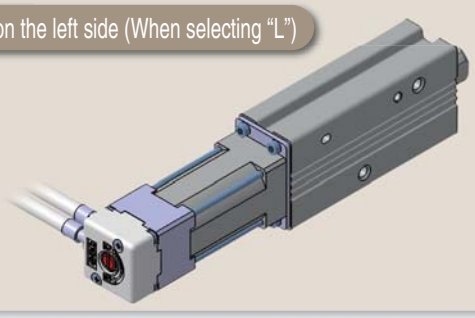
Entry on the right side (When selecting "R")



Bottom entry (When selecting "U")



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



Step Data Input Type Series LECP6

Simple Setting to Use Straight Away

◎Easy Mode for Simple Setting

If you want to use it right away, select "Easy Mode."

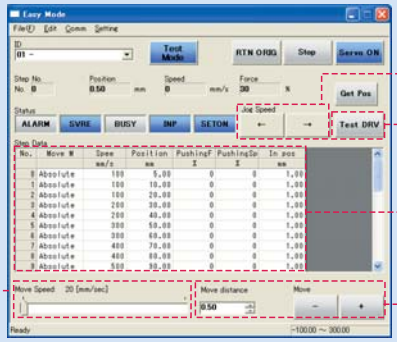


Step motor
(Servo/24 VDC)
LECP6

<When a PC is used>
Controller setting software

- Step data setting, test operation, move jog and move for the constant rate can be set and operated on one screen.



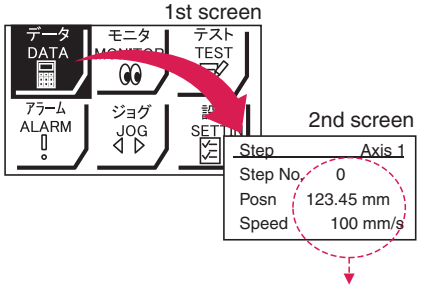


<When a TB (teaching box) is used>

- Simple screen without scrolling promotes ease of setting and operating.
- Pick up an icon from the first screen to select a function.
- Set up the step data and check the monitor on the second screen.

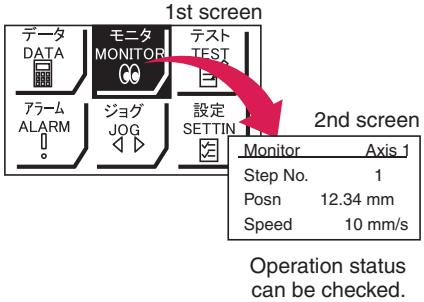


Example of setting the step data



It can be registered by "SET" after entering the values.

Example of checking the operation status



Operation status can be checked.

Teaching box screen

- **Data can be set with position and speed.** (Other conditions are already set.)

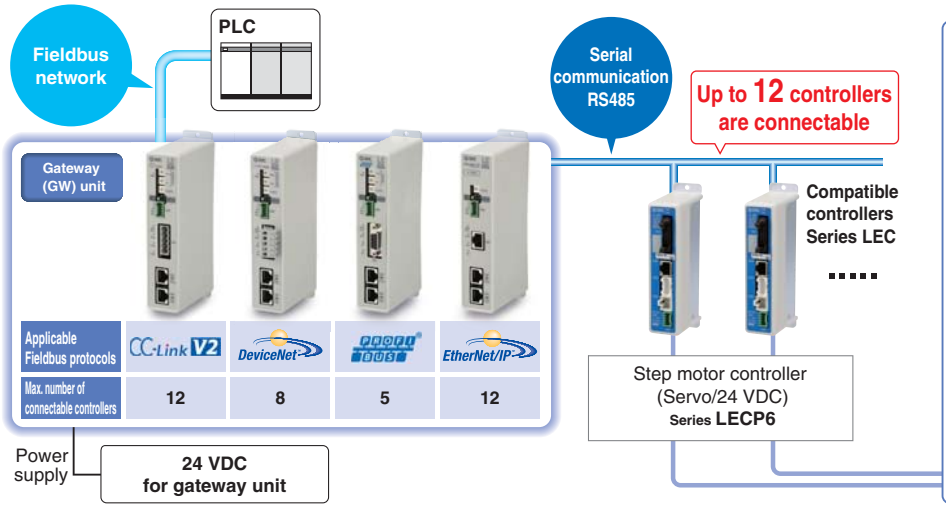
Step	Axis 1
Step No.	0
Posn	50.00 mm
Speed	200 mm/s



Step	Axis 1
Step No.	1
Posn	80.00 mm
Speed	100 mm/s

Gateway Unit Series LEC-G

- Unit linking the LECP6 series and Fieldbus network
- 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.



Compatible electric actuators


Electric gripper
Series **LEH**


Electric slide table
Series **LES**


Electric actuator/ Rod type
Series **LEY**


Electric actuator/ Slider type
Series **LEF**


Electric actuator/ Rotary table
Series **LER**


Electric actuator/ Miniature type
Series **LEP**


Electric actuator/ Guide rod slider
Series **LEL**

SMC

◎Normal Mode for Detailed Setting

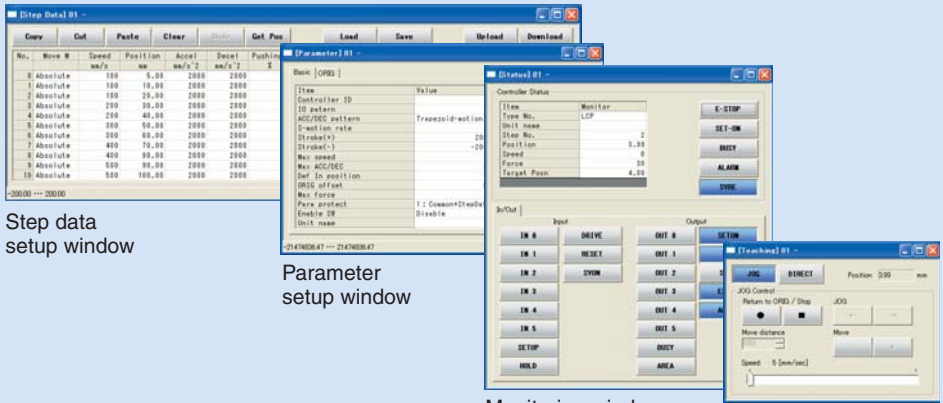
Select normal mode when detailed setting is required.

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

<When a PC is used>
Controller setting software

- Step data setting, parameter setting, monitor, teaching, etc., are indicated in different windows.





Step data setup window

Parameter setup window

Monitoring window

Teaching window

<When a TB (teaching box) is used>

- Multiple step data can be stored in the teaching box, and transferred to the controller.
- Continuous test operation by up to 5 step data.

Teaching box screen

- Each function (step data setting, test, monitor, etc.) can be selected from the main menu.



Main menu screen

Step data setup screen

Test screen

Monitoring screen

The actuator and controller are provided as a set. (They can be ordered separately.)

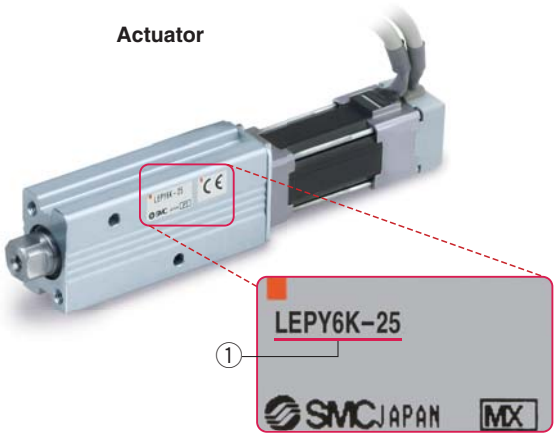
Confirm that the combination of the controller and the actuator is correct label.

<Check the following before use.>

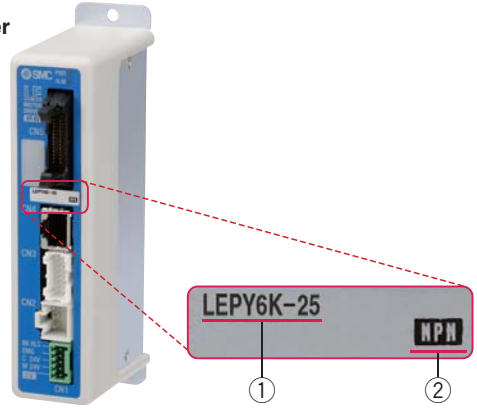
① Check the actuator label for model number matches the controller.

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

Actuator



Controller



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

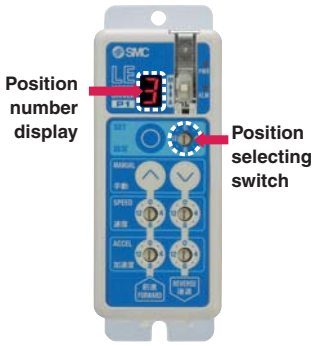
Setting a registered number for the stop position
Maximum 14 points

2 Setting a stop position

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

3 Registration

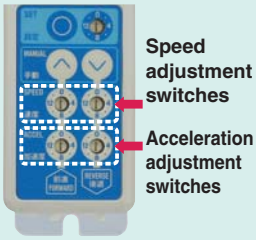
Registering the stop position using SET button







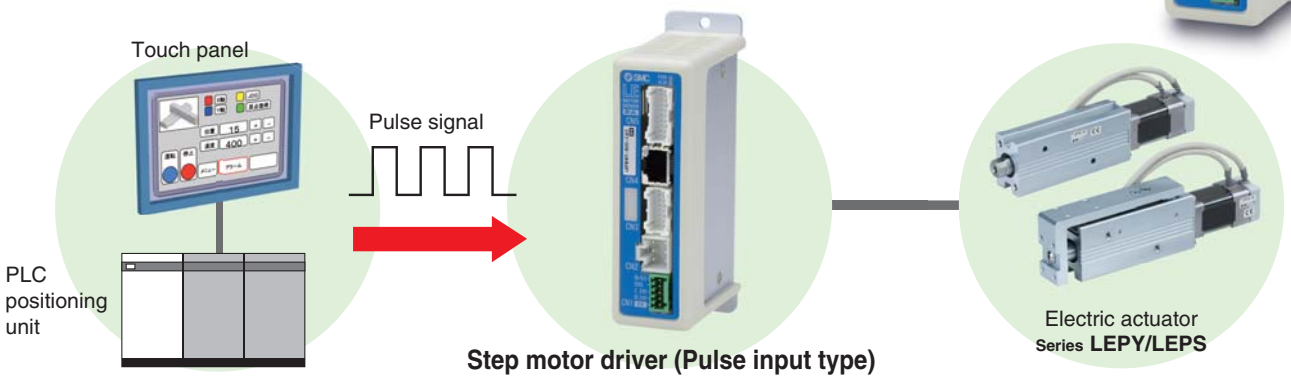
Speed/Acceleration
16-level adjustment



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	Step data input type LECP6	Programless type LECP1	Pulse input type LECPA
Step data and parameter setting	• Input from controller setting software (PC) • Input from teaching box	• Select using controller operation buttons	• Input from controller setting software (PC) • Input from teaching box
Step data "position" setting	• Input the numerical value from controller setting software (PC) or teaching box • Input the numerical value • Direct teaching • JOG teaching	• Direct teaching • JOG teaching	• No "Position" setting required Position and speed set by pulse signal
Number of step data	64 points	14 points	—
Operation command (I/O signal)	Step No. [IN*] input ⇒ [DRIVE] input	Step No. [IN*] input only	Pulse signal
Completion signal	[INP] output	[OUT*] output	[INP] output

Setting Items

TB: Teaching box PC: Controller setting software

Item		Contents	Easy mode		Normal mode	Step data input type LECP6	Pulse input type LECPA	Programless type LECP1*
			TB	PC	TB, PC			
Step data setting (Excerpt)	Movement MOD	Selection of "absolute position" and "relative position"	△	●	●	Set at ABS/INC	No setting required	Fixed value (ABS)
	Speed	Transfer speed	●	●	●	Set in units of 1 mm/s		Select from 16-level
	Position	[Position]: Target position [Pushing]: Pushing start position	●	●	●	Set in units of 0.01 mm		Direct teaching JOG teaching
	Acceleration/Deceleration	Acceleration/deceleration during movement	●	●	●	Set in units of 1 mm/s²		Select from 16-level
	Pushing force	Rate of force during pushing operation	●	●	●	Set in units of 1%	Set in units of 1%	Select from 3-level (weak, medium, strong)
	Trigger LV	Target force during pushing operation	△	●	●	Set in units of 1%	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	Set in units of 1 mm/s	No setting required
	Moving force	Force during positioning operation	△	●	●	Set to 100%	Set to (Different values for each actuator)%	
	Area output	Conditions for area output signal to turn ON	△	●	●	Set in units of 0.01 mm	Set in units of 0.01 mm	
	In position	[Position]: Width to the target position [Pushing]: How much it moves during pushing	△	●	●	Set to 0.5 mm or more (Units: 0.01 mm)	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	Set in units of 0.01 mm	
	Stroke (–)	– side limit of position	×	×	●	Set in units of 0.01 mm	Set in units of 0.01 mm	
	ORIG direction	Direction of the return to origin can be set.	×	×	●	Compatible	Compatible	Compatible
	ORIG speed	Speed during return to origin	×	×	●	Set in units of 1 mm/s	Set in units of 1 mm/s	No setting required
	ORIG ACC	Acceleration during return to origin	×	×	●	Set in units of 1 mm/s²	Set in units of 1 mm/s	
Test	JOG		●	●	●	Continuous operation at the set speed can be tested while the switch is being pressed.	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.	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	Compatible
	Test drive	Operation of the specified step data	●	●	● (Continuous operation)	Compatible	Not compatible	Compatible
	Forced output	ON/OFF of the output terminal can be tested.	×	×	●	Compatible	Compatible	Not compatible
Monitor	DRV mon	Current position, speed, force and the specified step data can be monitored.	●	●	●	Compatible	Compatible	
	In/Out mon	Current ON/OFF status of the input and output terminal can be monitored.	×	×	●	Compatible	Compatible	
ALM	Status	Alarm currently being generated can be confirmed.	●	●	●	Compatible	Compatible	Compatible (display alarm group)
	ALM Log record	Alarm generated in the past can be confirmed.	×	×	●	Compatible	Compatible	Not compatible
File	Save/Load	Step data and parameter can be saved, forwarded and deleted.	×	×	●	Compatible	Compatible	
Other	Language	Can be changed to Japanese or English.	●	●	●	Compatible	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/General Purpose I/O

●Electric actuator



Provided by customer

PLC

Power supply for I/O signal
24 VDC Note)

●I/O cable Pages 31, 43

Controller type	Part no.
LECP6	LEC-CN5-□
LECP1 (Programless)	LEC-CK4-□

●Controller* Page 24

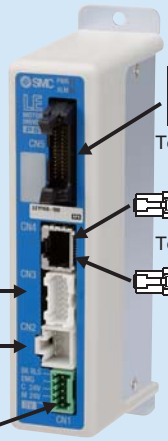
To CN5

To CN4

To CN3

To CN2

To CN1



Step data input type
LECP6
Page 25



Programless type
LECP1
Page 38

Note) The teaching box, controller setting kit and Touch Operator Interface cannot be connected.

Provided by customer

Power supply for controller
24 VDC Note)

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

●Power supply plug
(Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

●Touch Operator Interface (Provided by customer)
GP4501T/GP3500T
Manufactured by Digital Electronics Corp.

Pro-face
for the best interface



Cockpit parts can be downloaded free via the Pro-face website. Using cockpit parts makes adjustment from the Touch Operator Interface possible.

●Actuator cable* Pages 31, 43

Controller type	Standard cable	Robotic cable
LECP6 (Step data input type)	LE-CP-□-S	LE-CP-□
LECP1 (Programless type)	LE-CP-□-S	LE-CP-□

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

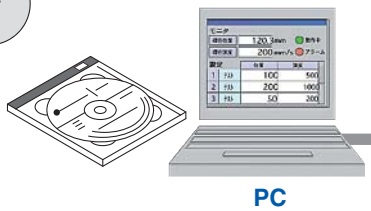
Option

●Teaching box Page 33
(With 3 m cable)
Part no.: LEC-T1-3JG□



Or

●Controller setting kit Page 32
Controller setting kit
(Communication cable, conversion unit and USB cable are included.)
Part no.: LEC-W2



Communication cable●
(3 m)

●USB cable
(A-miniB type)
(0.3 m)

PC

Note) Cannot be used with the programless type (LECP1).

System Construction/Pulse Signal

●Electric actuator



Provided by customer

PLC

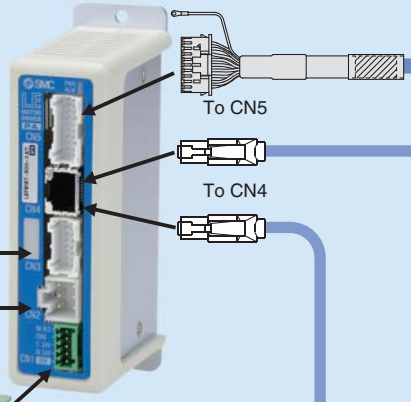
Power supply for I/O signal
24 VDC Note)

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

●Driver* Page 44

●I/O cable Page 50

Driver type	Part no.
LECPA	LEC-CL5-□



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 UL1310 Class 2 power supply.

●Power supply plug (Accessory)
<Applicable cable size>
AWG20 (0.5 mm²)

●Actuator cable* Page 49

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.

Option

●Teaching box Page 52
(With 3 m cable)
Part no.: LEC-T1-3JG□



Or

●Controller setting software Page 51
Communication cable (With conversion unit) and USB cable are included.
Part no.: LEC-W2



Communication cable●



●USB cable
(A-miniB type)

PC

System Construction/Fieldbus Network

PLC
(Provided by customer)

Power supply for gateway unit 24 VDC Note 1)

Power supply

Fieldbus network

Gateway (GW) unit Page 35

Applicable Fieldbus protocols
CC-Link Ver. 2.0
DeviceNet™
PROFIBUS DP
EtherNet/IP™



●Power supply connector (Accessory) — To CN4

●Communication connector (Accessory)* — To CN3

* CC-Link Ver. 2.0
DeviceNet™ only

To CN2

To CN1

●Communication cable Page 35
LEC-CG1-□

Option

●Controller setting software Page 32
(Communication cable and USB cable are included.)
Part no.: LEC-W2



●Communication cable

●USB cable
(A-miniB type)



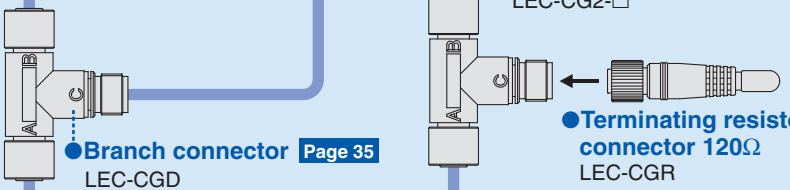
PC
(Provided by customer)

Or

●Teaching box Page 33
(With 3 m cable)
Part no.: LEC-T1-3JG□



Page 35
●Cable between branches
LEC-CG2-□



●Branch connector Page 35
LEC-CGD

●Terminating resistor connector 120Ω
LEC-CGR

Page 35
●Communication cable
LEC-CG1-□

●Controller Page 25



To CN4

●Power supply connector (Accessory)

To CN1

Controller input power supply Note 1)

●Controller Page 25



●Power supply connector (Accessory)

To CN1

Controller input power supply Note 1)

●Electric actuator



Series LEPY/LEPS

Applicable Fieldbus protocols	Max. number of connectable controllers
CC-Link Ver. 2.0	12
DeviceNet™	8
PROFIBUS DP	5
EtherNet/IP™	12

Compatible controllers

Step motor controller (Servo/24 VDC)	Series LECP6

Note 1) Connect the 0 V terminals for both the controller input power supply and gateway unit power supply.
When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

Actionneurs électriques SMC

Modèle guidé

Moteur pas à pas (Servo/24 Vcc) | Servomoteur (24 Vcc) | Servomoteur CA



CAT.ES100-87

Entraînement par vis à billes
Série LEFS

Modèle pour salle blanche



Série LEFS

Taille	Charge max. [kg]	Course [mm]
16	10	Jusqu'à 500
25	20	Jusqu'à 600
32	45	Jusqu'à 800
40	60	Jusqu'à 1000

Guidage par courroie
Série LEFB



Série LEFB

Taille	Charge max. [kg]	Course [mm]
16	1	Jusqu'à 1000
25	5	Jusqu'à 2000
32	14	Jusqu'à 2000

Entraînement par vis à billes
Série LEFS

Modèle pour salle blanche



Série LEFS

Taille	Charge max. [kg]	Course [mm]
25	20	Jusqu'à 600
32	45	Jusqu'à 800
40	60	Jusqu'à 1000

Guidage par courroie
Série LEFB

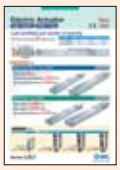


Série LEFB

Taille	Charge max. [kg]	Course [mm]
25	5	Jusqu'à 2000
32	15	Jusqu'à 2500
40	25	Jusqu'à 3000

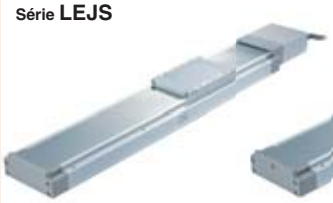
Modèle guidé haute rigidité

Servomoteur CA



CAT.ES100-104

Entraînement par vis à billes
Série LEJS



Série LEJS

Taille	Charge max [kg]	Course [mm]
40	55	200 à 1200
63	85	300 à 1500

Guidage par courroie
Série LEJB

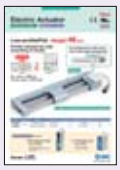


Série LEJB

Taille	Charge max [kg]	Course [mm]
40	20	200 à 2000
63	30	300 à 3000

Table linéaire

Moteur pas à pas (Servo/24 Vcc)



CAT.ES100-101

Guidage par courroie
Série LEL



Série LEL25M
Guide lisse

Taille	Charge max [kg]	Course [mm]
25	3	Jusqu'à 1000

Série LEL25L
Guide à billes

Taille	Charge max [kg]	Course [mm]
25	5	Jusqu'à 1000

Tige

Moteur pas à pas (Servo/24 Vcc) | Servomoteur (24 Vcc)



CAT.ES100-83

Standard
Série LEY



Série LEY

Taille	Force de poussée [N]	Course [mm]
16	141	Jusqu'à 300
25	452	Jusqu'à 400
32	707	Jusqu'à 500
40	1058	Jusqu'à 500

Version moteur en ligne
Série LEY□D



Version à guidage intégré
Série LEYG



Série LEYG

Taille	Force de poussée [N]	Course [mm]
16	141	Jusqu'à 200
25	452	Jusqu'à 300
32	707	Jusqu'à 300
40	1058	Jusqu'à 300

Version à guidage intégré /Version moteur en ligne
Série LEYG□D



Servomoteur CA

Standard
Série LEY



Série LEY

Taille	Force de poussée [N]	Course [mm]
25	485	Jusqu'à 400
32	588	Jusqu'à 500

Version moteur en ligne
Série LEY□D

Étanche aux poussières et aux projections d'eau

* Taille: 63



Série LEY

Taille	Force de poussée [N]	Course [mm]
25	485	Jusqu'à 400
32	736	Jusqu'à 500
63	1910	Jusqu'à 800

Version à guidage intégré
Série LEYG



Série LEYG

Taille	Force de poussée [N]	Course [mm]
25	485	300
32	588	

Version à guidage intégré /Version moteur en ligne
Série LEYG□D



Série LEYG

Taille	Force de poussée [N]	Course [mm]
25	485	300
32	736	

SMC Electric Actuators

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


CAT.ES100-78

Compact type Series LES

Basic type/R type
Series LES□R



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

Symmetrical type/L type
Series LES□L



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



High rigidity type Series LESH

Basic type/R type
Series LESH□R



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

Symmetrical type/L type
Series LESH□L



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



Miniature
Step Motor (Servo/24 VDC)


CAT.ES100-92

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

Rotary Table
Step Motor (Servo/24 VDC)


CAT.ES100-94

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	0.2	0.3	420	280
30	0.8	1.2		
50	6.6	10		

Gripper
Step Motor (Servo/24 VDC)


CAT.ES100-77

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/both sides [mm]
	Basic	Compact	
10	5.5	3.5	4
20	22	17	6
32	90	—	8
40	130	—	12

Controller/Driver

Controller

Step data input type
For step motor
Series LECP6



Control motor
Step motor (Servo/24 VDC)

Step data input type
For servo motor
Series LECA6



Control motor
Servo motor (24 VDC)

Programless type
Series LECP1



Control motor
Step motor (Servo/24 VDC)

Driver

Pulse input type
Series LECPA



Control motor
Step motor (Servo/24 VDC)

Gateway Unit

Fieldbus-compatible gateway (GW) unit
Series LEC-G






Applicable Fieldbus protocols	CC-Link V2	DeviceNet	PROFIBUS	EtherNet/IP
Max. number of connectable controllers	12	8	5	12

Driver

AC Servo Motor Driver

Pulse input type/ Positioning type
Series LECSA
(Incremental type)



Control motor
AC servo motor (100/200/400 W)

Pulse input type
Series LECSB
(Absolute type)



Control motor
AC servo motor (100/200/400 W)

CC-Link direct input type
Series LECSC
(Absolute type)



Control motor
AC servo motor (100/200/400 W)

SSCNET III type
Series LECSS
(Absolute type)



Control motor
AC servo motor (100/200/400 W)

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 LECP6 Series LECP1 Series LECPA	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	—		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*



LECP6



LECP1



LECPA

Type	Series	Compatible motor	Power supply voltage	Parallel I/O		Number of positioning pattern points	Reference page
				Input	Output		
Step data input type	**LECP6**	Step motor (Servo/24 VDC)	24 VDC ±10%	11 inputs (Photo-coupler isolation)	13 outputs (Photo-coupler isolation)	64	Page 25
Programless type	**LECP1**	Step motor (Servo/24 VDC)	24 VDC ±10%	6 inputs (Photo-coupler isolation)	6 outputs (Photo-coupler isolation)	14	Page 38
Pulse input type	**LECPA**	Step motor (Servo/24 VDC)	24 VDC ±10%	5 inputs (Photo-coupler isolation)	9 outputs (Photo-coupler isolation)	—	Page 44

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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

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How to Order ..... Page 15
Specifications ..... Page 17
Construction ..... Page 17
Dimensions ..... Page 18
Specific Product Precautions ..... Page 20



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

Step Data Input Type/Series **LECP6** ..... Page 25
Controller Setting Kit/**LEC-W2** ..... Page 32
Teaching Box/**LEC-T1** ..... Page 33
Gateway Unit/Series **LEC-G** ..... Page 35
Programless Controller/Series **LECP1** ..... Page 38
Step Motor Driver/Series **LECPA** ..... Page 44
Controller Setting Kit/**LEC-W2** ..... Page 51
Teaching Box/**LEC-T1** ..... Page 52

Electric Actuator/Miniature Rod Type

Step Motor (Servo/24 VDC)

Series LEPY

Model Selection



Selection Procedure

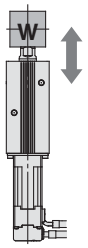
Positioning Control Selection Procedure

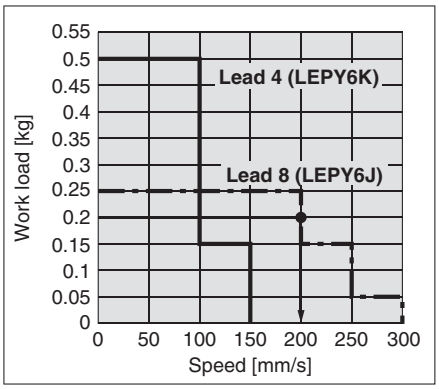
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

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 20 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.

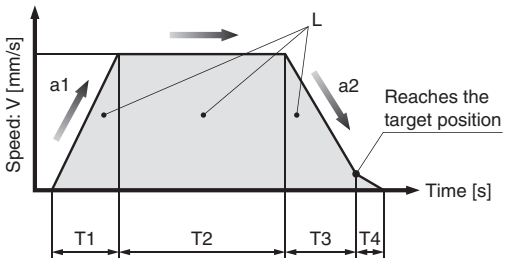
  $T1 = V/a1$ [s] $T3 = V/a2$ [s]

- 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.

Selection Procedure

Pushing Control Selection Procedure

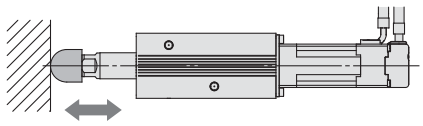
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the lateral load on the rod end.

∗ 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>.

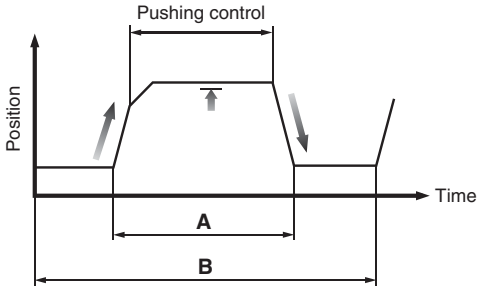
Selection example)
Based on the table below,
- Duty ratio: 70 [%]

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.



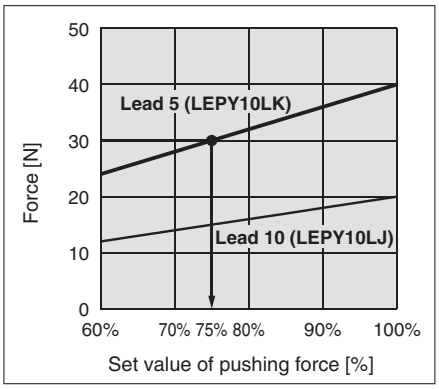
Duty ratio = A/B x 100 [%]

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>

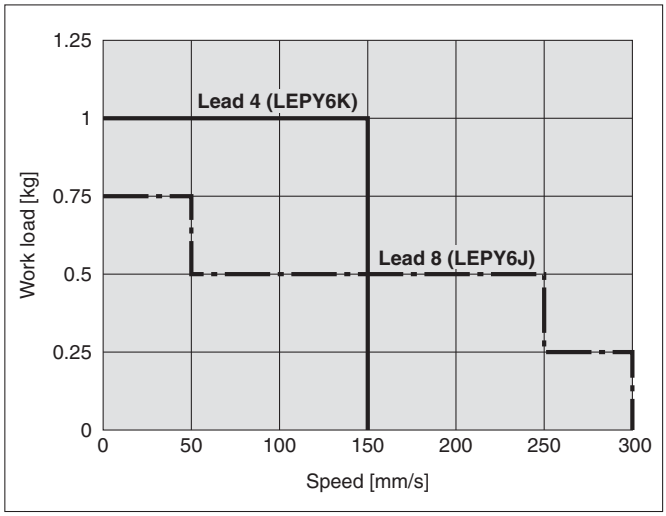
Model	Allowable lateral load on the rod end [N]
LEPY6 (Basic)	0.50
LEPY10 (Basic)	1.0
LEPY10L (Compact)	1.0

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

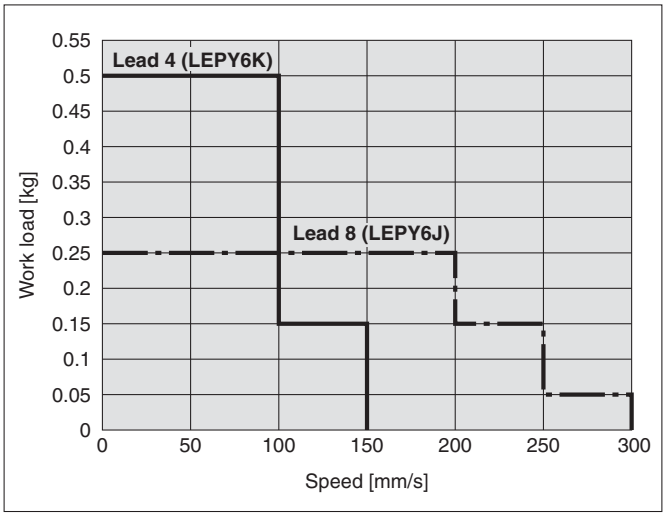
Speed–Work Load Graph (Guide)

LEPY6 (Basic)

Horizontal

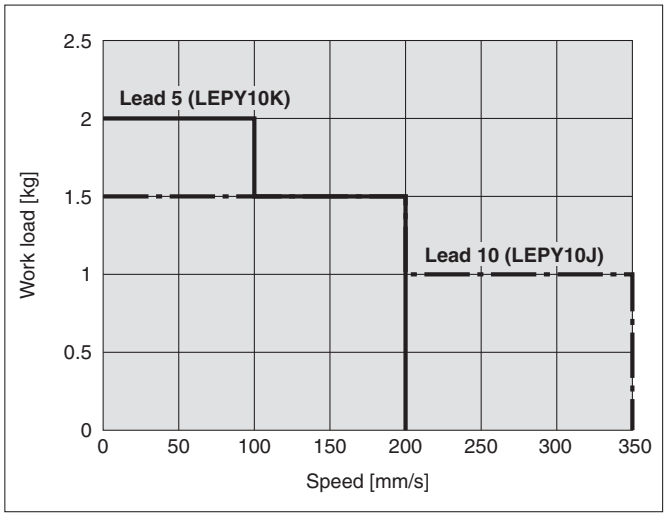


Vertical

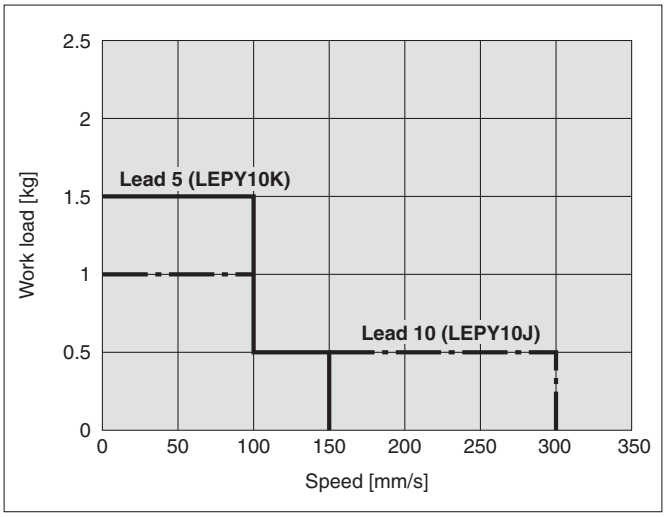


LEPY10(L) (Basic/Compact)

Horizontal

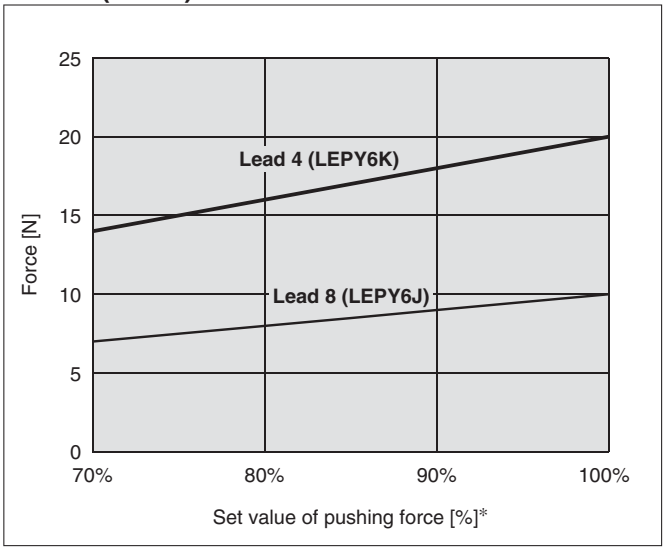


Vertical



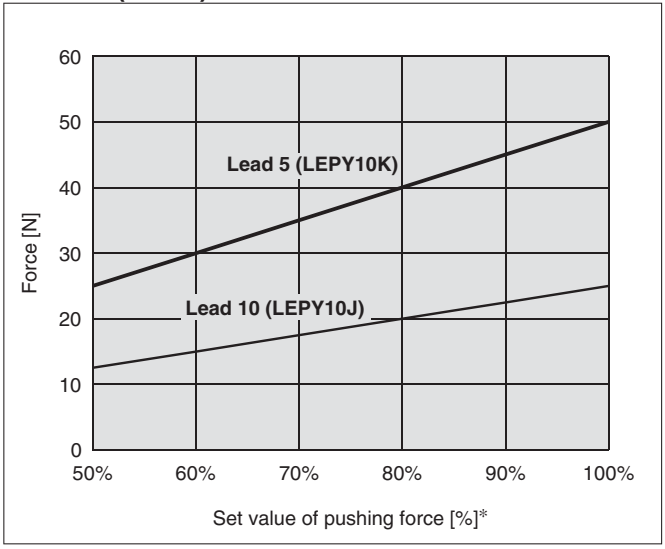
Set Value of Pushing Force–Force Graph (Guide)

LEPY6 (Basic)



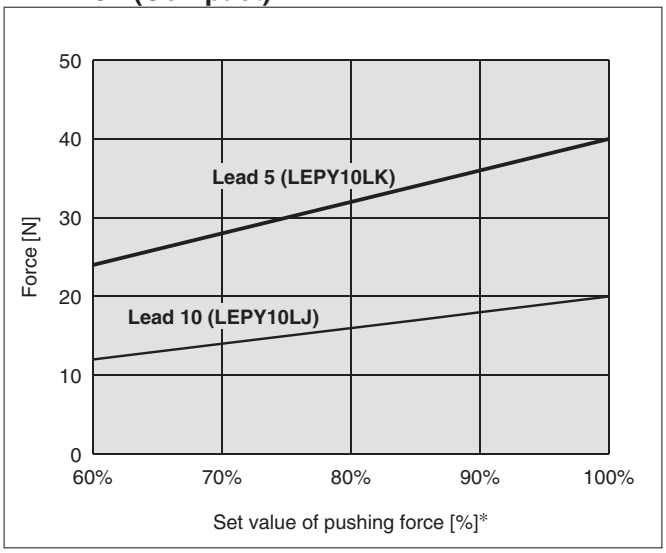
Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70	100	—
80	70	10
100	50	5

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)

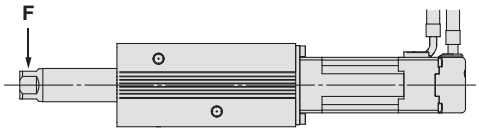


Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70 or less	100	—
80	70	10
100	50	5

∗ 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

How to Order

LEPY 10 ❶ K ❸ – 50 ❹ ❺ – R ❻ 1 ❼ 6N ❽ 1 ❾ ❿

❶ Size

6
10

❷ Motor size

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

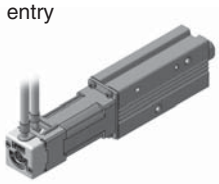
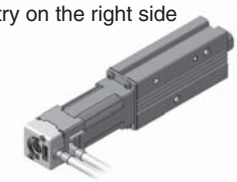
❸ Lead screw type [mm]

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

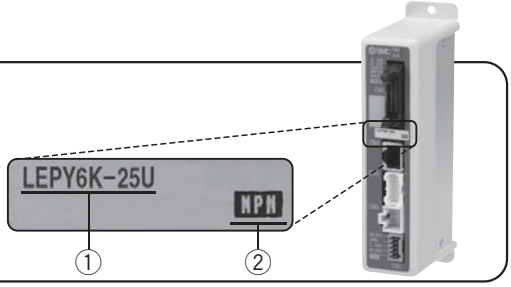
[CE-compliant products]
EMC compliance was tested by combining the electric actuator LEP series and the controller LEC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive 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	
6N	**LECP6** (Step data input type)	NPN
6P		PNP
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 to page 31 (For LECP6), page 43 (For LECP1) or page 50 (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. (Refer to page 26.)

Compatible Controllers/Driver

Type	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECP6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller	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)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points	14 points	—
Power supply voltage	24 VDC		
Reference page	Page 25	Page 38	Page 44



Specifications

Model				LEPY6		LEPY10	
Actuator specifications	Stroke [mm]			25, 50, 75			
	Screw lead [mm]			4	8	5	10
	Pushing force [N] Note 1)		Basic	14 to 20	7 to 10	25 to 50	12.5 to 25
			Compact	—	—	24 to 40	12 to 20
	Work load [kg] Note 2) Note 3)	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] Note 3) Note 6)	Horizontal	Basic	10 to 150	20 to 300 Note 4)	10 to 200	20 to 350 Note 4)
			Compact	—	—	10 to 200	20 to 350 Note 4)
		Vertical	Basic	10 to 150	20 to 300 Note 4)	10 to 150	20 to 300 Note 4)
			Compact	—	—	10 to 150	20 to 300 Note 4)
	Pushing speed [mm/s] Note 5)			10	20	10	20
	Acceleration/Deceleration [mm/s²]			3,000			
	Positioning repeatability [mm]			±0.05			
	Backlash [mm]			±0.1			
	Impact/Vibration resistance [m/s²] Note 7)			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 A/B phase (800 pulse/rotation)			
	Rated voltage [V]			24 VDC ±10%			
	Power consumption [W] Note 8)		Basic	12		28	
			Compact	—		22	
	Standby power consumption when operating [W] Note 9)		Basic	11		22	
			Compact	—		16	
	Max. instantaneous power consumption [W] Note 10)		Basic	22		55	
			Compact	—		45	

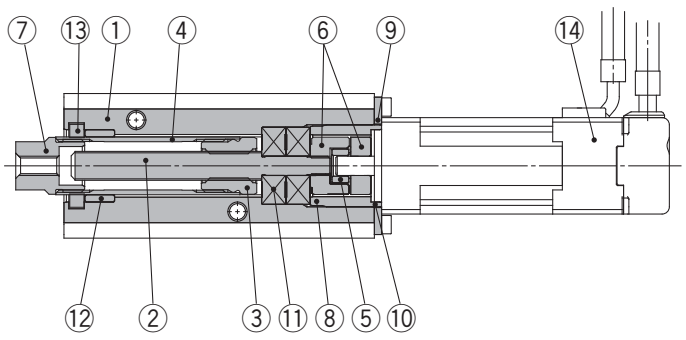
Note 1) Pushing force accuracy is LEPY6: ±30% (F.S.), LEPY10: ±25% (F.S.).
Refer to page 22 for the detailed setting range and precautions.
The pushing force and the duty ratio change according to the set value. Check "Set Value of Pushing Force–Force Graph (Guide)" on page 4 and [14] on page 22.
Note 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.
Note 3) Speed changes according to the work load. Check "Speed–Work Load Graph (Guide)" on page 3.
Note 4) When the stroke is 25 mm, the maximum speed will be 250 mm/sec.
Note 5) Set to the pushing force when pushing.
Note 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%)
Note 7) 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. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The power consumption (including the controller) is for when the actuator is operating.
Note 9) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during operation. Except during the pushing operation.
Note 10) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

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

Construction

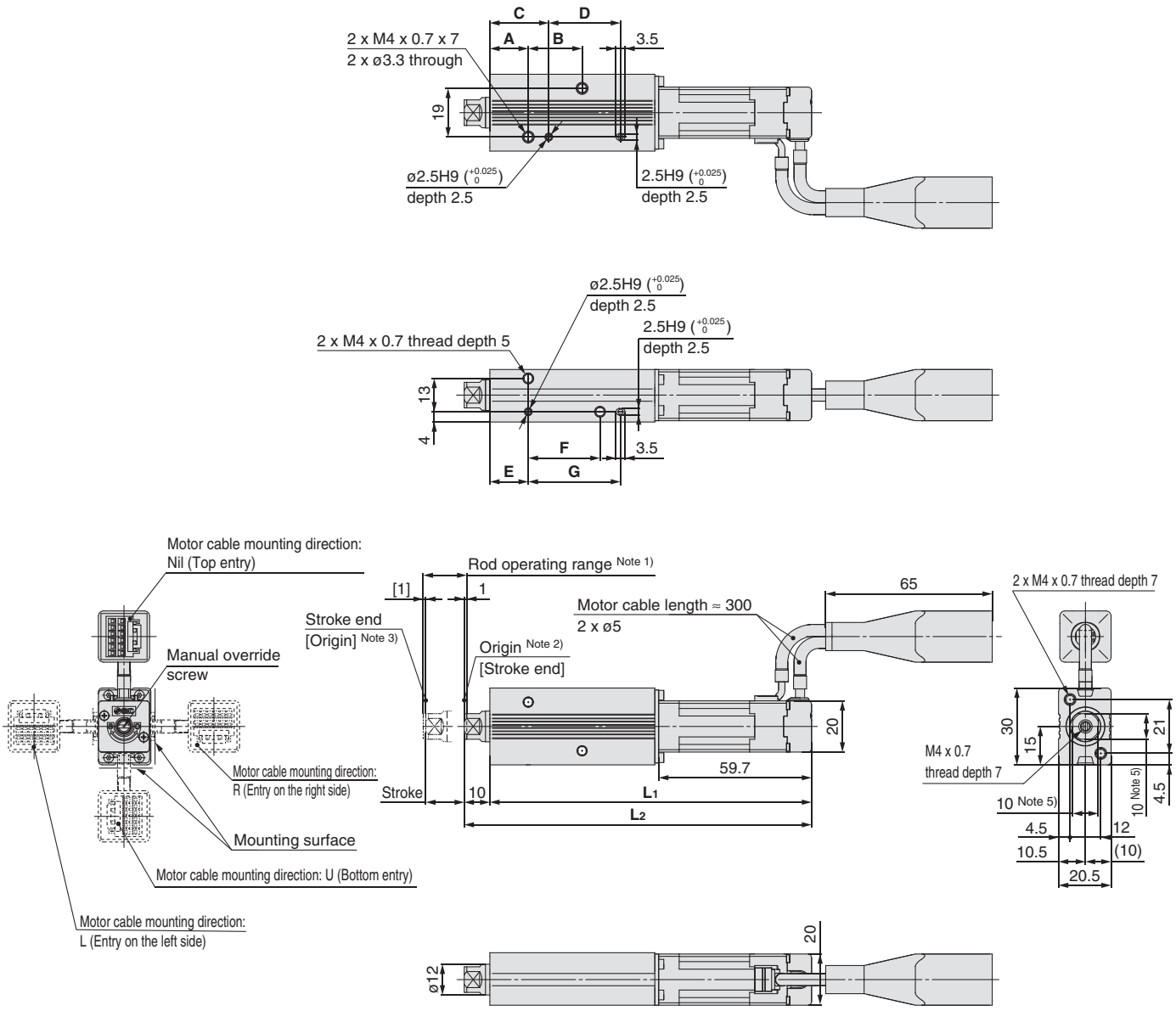


Component Parts

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



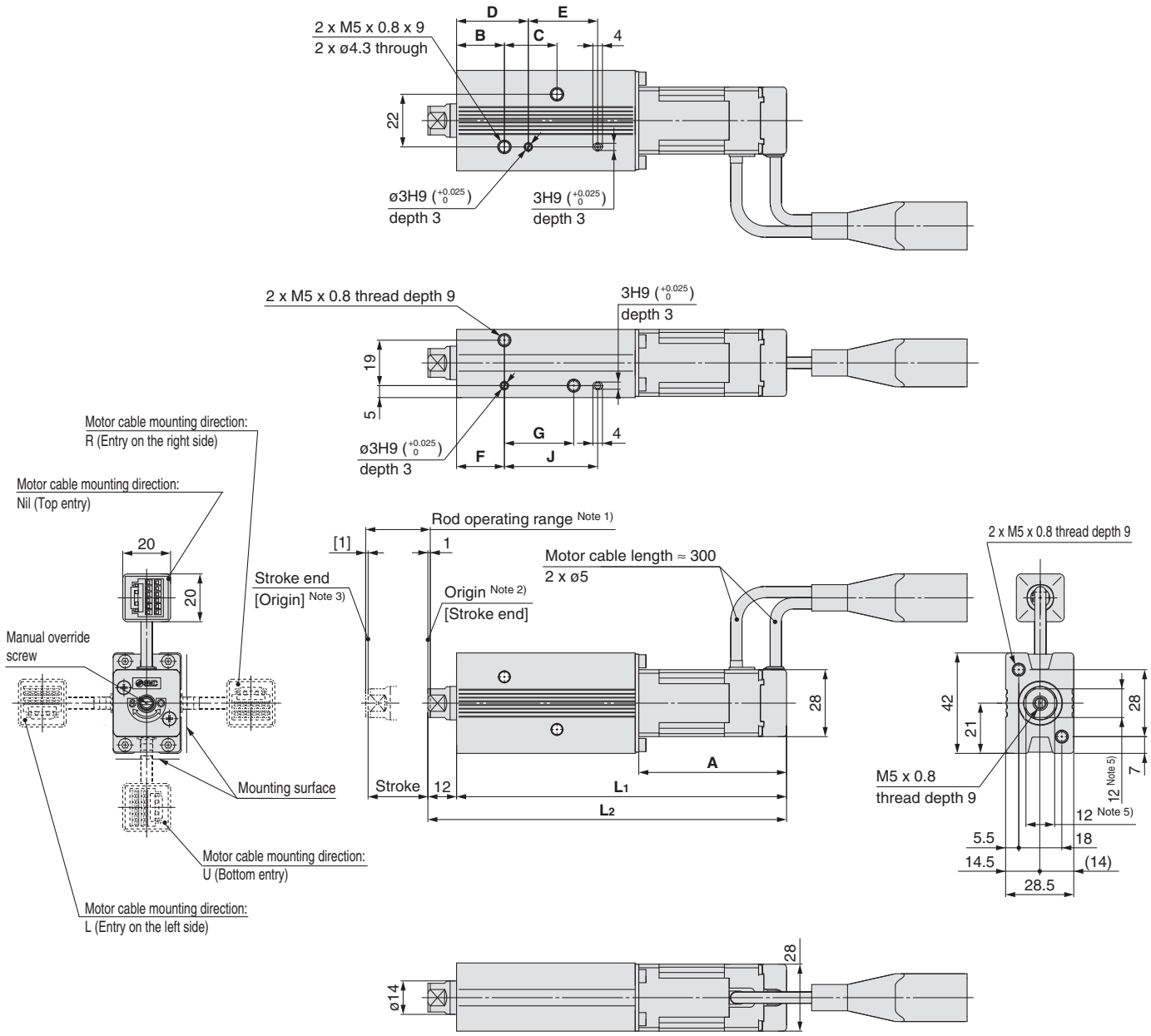
Note 1) Range within which the rod can move when it returns to origin.
Make sure a workpiece mounted on the rod does not interfere with the workpieces and facilities around the rod.
Note 2) Position after return to origin.
Note 3) The number in brackets indicates when the direction of return to origin 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	L_1	L_2	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

Series LEPS
Model Selection



Selection Procedure

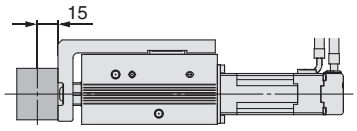
Positioning Control Selection Procedure

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

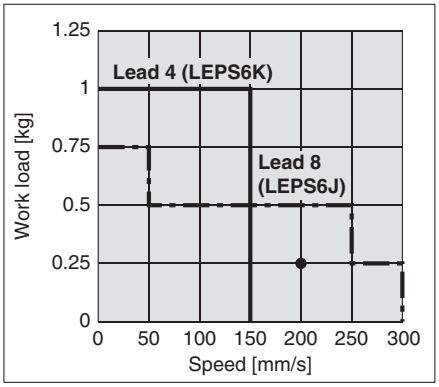
Selection Example

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.

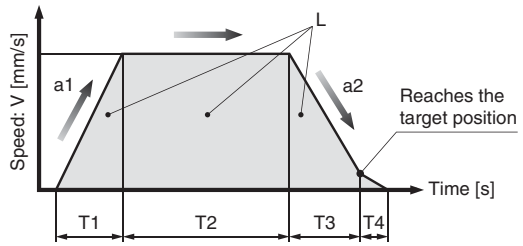
$$T1 = V/a1 \text{ [s]} \qquad T3 = V/a2 \text{ [s]}$$

- 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.

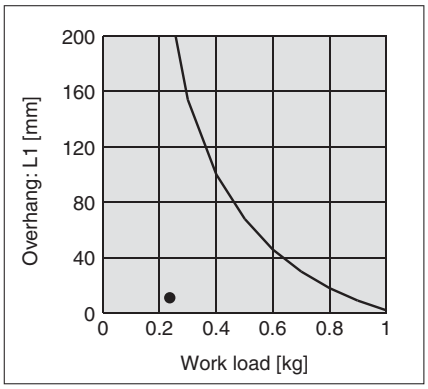
$T1 = V/a1 = 200/3000 = 0.067$ [s], $T3 = V/a2 = 200/3000 = 0.067$ [s]

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

$T4 = 0.2$ [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

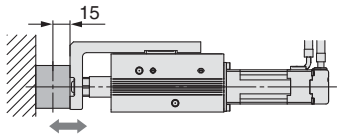
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the guide allowable moment.

∗ 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>.

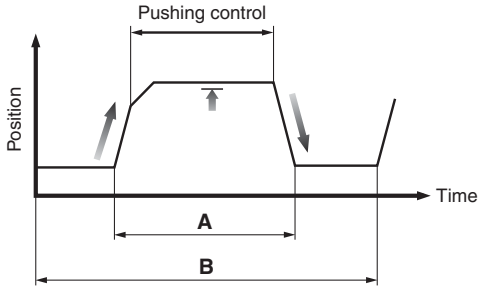
Selection example)
Based on the table below,
- Duty ratio: 70 [%]

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.



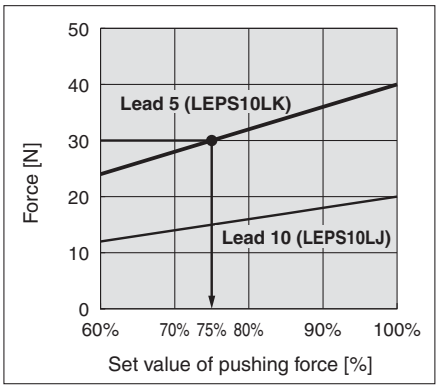
Duty ratio = A/B x 100 [%]

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>.

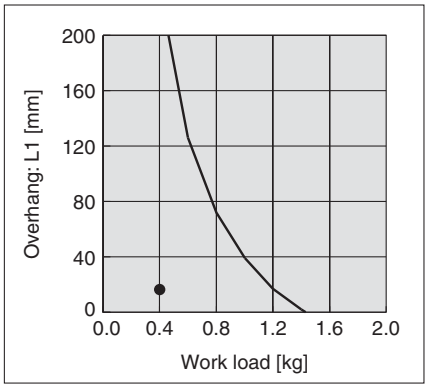
Selection example)
Based on the graph shown on the right side,
- Set value of pushing force: 75 [%]
- Pushing force: 30 [N]

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



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

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

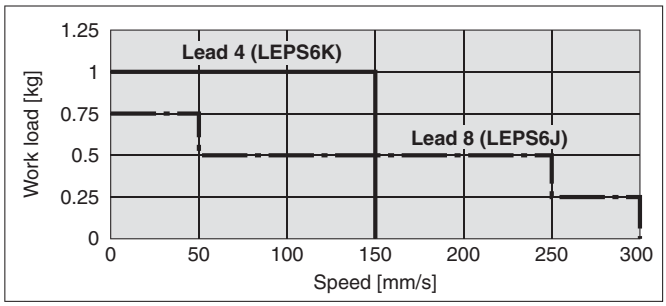


Based on the above calculation result, the LEPS10LK-50 is selected.

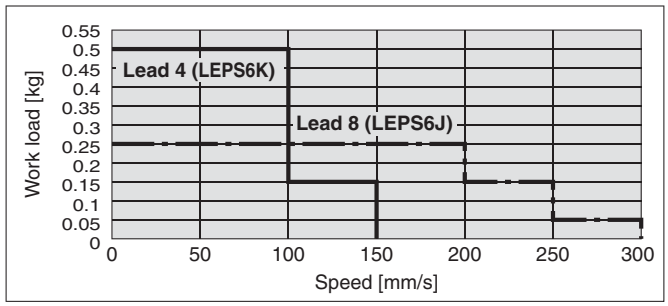
Speed–Work Load Graph (Guide)

LEPS6 (Basic)

Horizontal

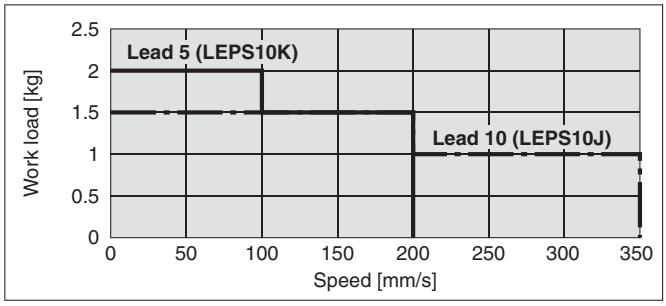


Vertical

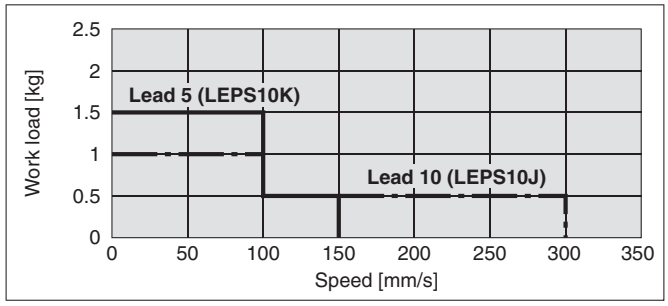


LEPS10(L) (Basic/Compact)

Horizontal

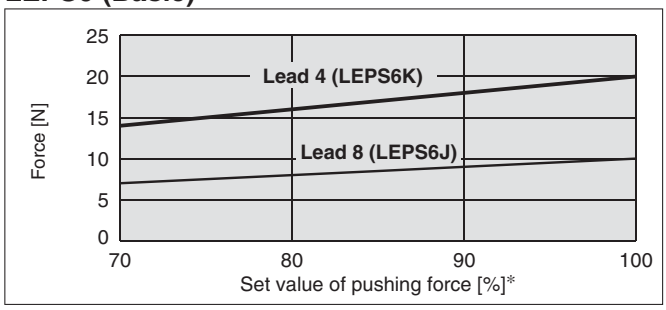


Vertical



Set Value of Pushing Force–Force Graph (Guide)

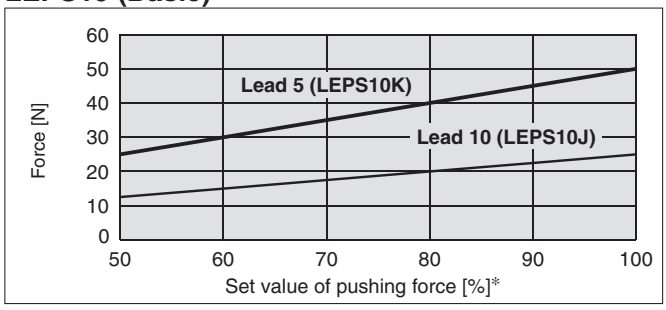
LEPS6 (Basic)



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

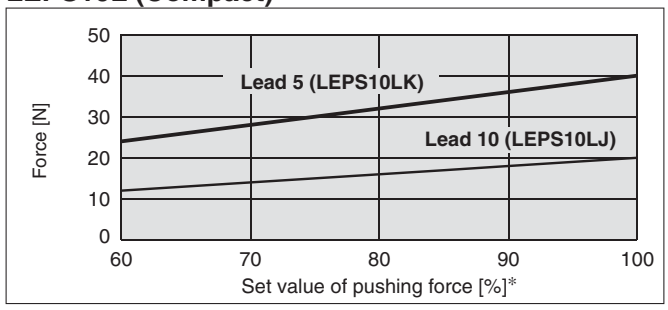
∗ Set values for the controller.

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)

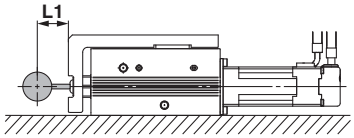
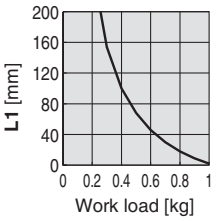
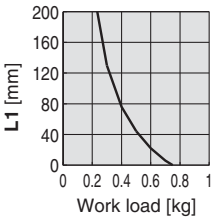
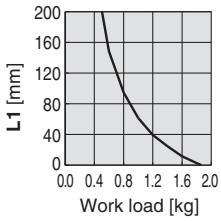
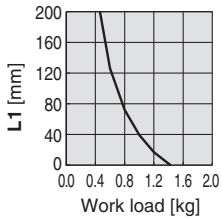
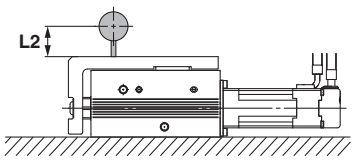
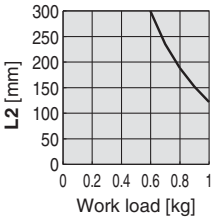
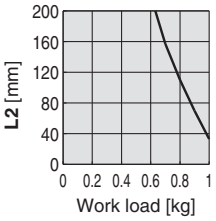
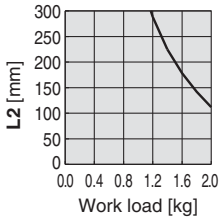
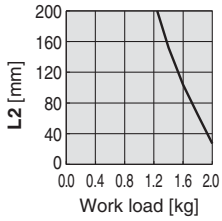
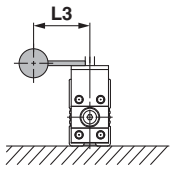
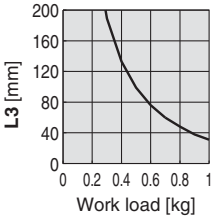
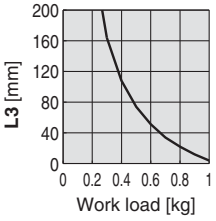
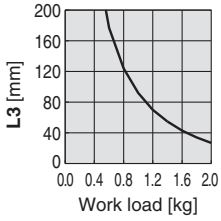
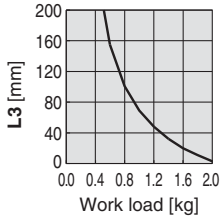
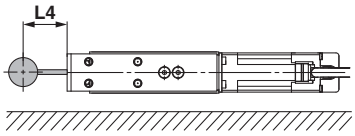
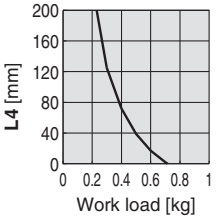
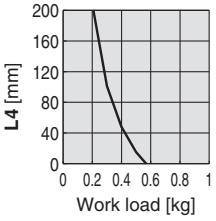
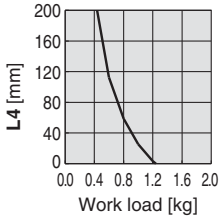
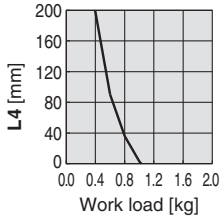
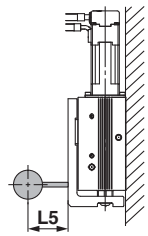
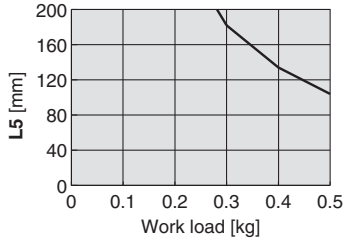
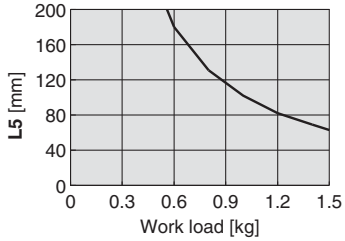
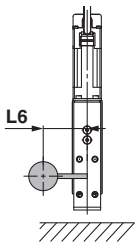
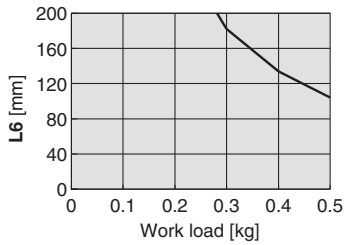
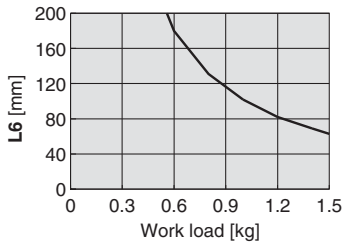


Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
70 or less	100	—
80	70	10
100	50	5

Dynamic Allowable Moment

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

Acceleration/Deceleration —— 3,000 mm/s²

Mounting orientation	Load overhanging direction **m**: Work load **L**: Overhang to the work load centre of gravity [mm]	Model			
		LEPS6		LEPS10	
		LEPS6□-25	LEPS6□-50	LEPS10□-25	LEPS10□-50
Horizontal mounting					
					
					
					
Wall mounting					
					

Note) This graph shows the amount of allowable overhang when the centre of gravity of the workpiece overhangs in one direction.

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)

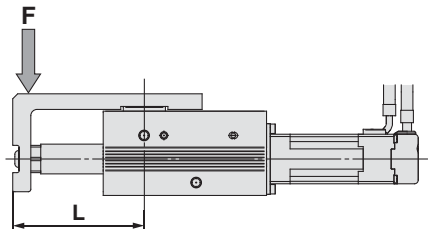


Table displacement due to yaw moment load (marked with the arrow)

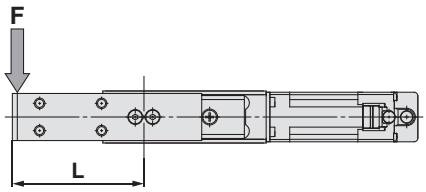
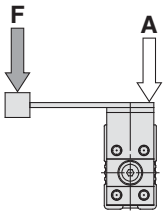


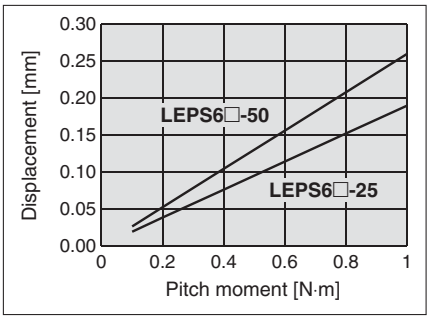
Table displacement due to roll moment load (marked with A)



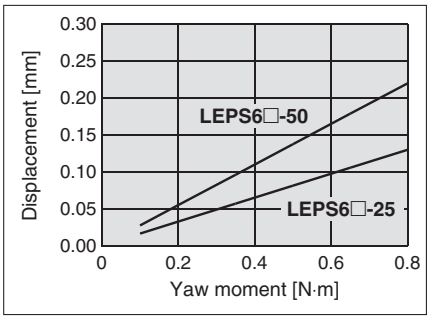
Distance L [mm]

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

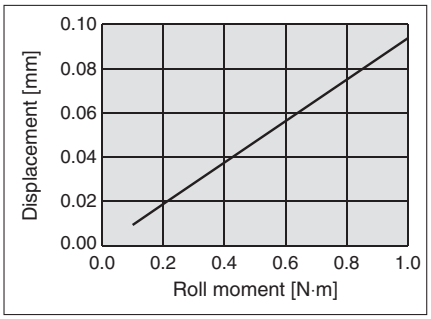
LEPS6



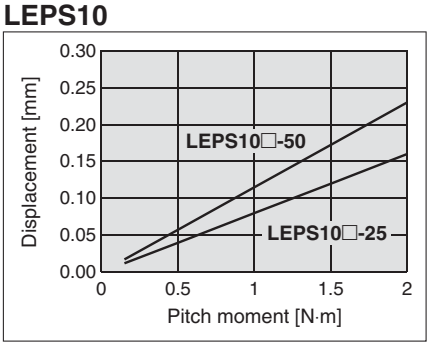
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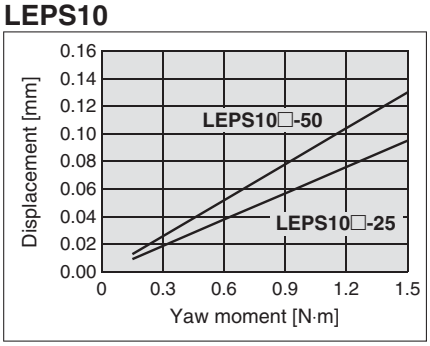
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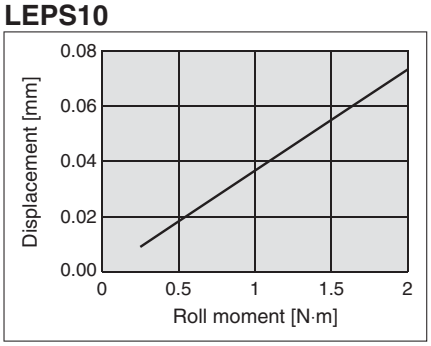
LEPS10



LEPS10



LEPS10



Electric Actuator
Miniature Slide Table Type
Series LEPS
LEPS6, 10

Step Motor (Servo/24 VDC)

RoHS

How to Order

LEPS 10 ❶ | ❷ | K ❸ – 50 ❹ | ❺ – R ❻ | 1 ❼ | 6N ❽ | 1 ❾ | ❿

❶ Size

6
10

❷ Motor size

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

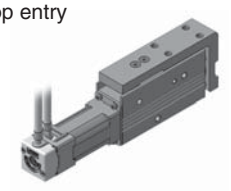
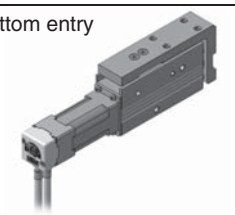
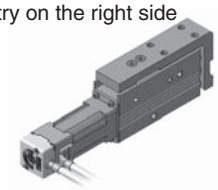
❸ Lead screw type [mm]

Symbol	Screw lead	
	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.

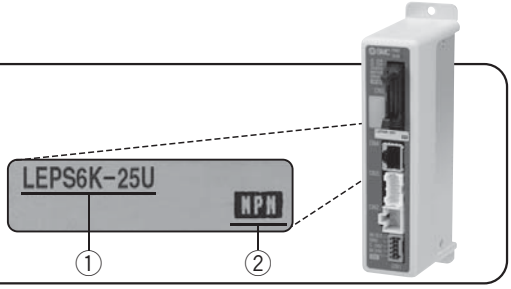
[UL-compliant products]
When conformity to UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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	
6N	**LECP6** (Step data input type)	NPN
6P		PNP
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 31 (For LECP6), page 43 (For LECP1) or page 50 (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. (Refer to page 26.)

Compatible Controllers/Driver

Type	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECP6**	**LECP1**	**LECPA**
Features	Value (Step data) input Standard controller	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)	Step motor (Servo/24 VDC)	
Maximum number of step data	64 points	14 points	—
Power supply voltage	24 VDC		
Reference page	Page 25	Page 38	Page 44



Specifications

Model			LEPS6		LEPS10	
Actuator specifications	Stroke [mm]		25, 50			
	Screw lead [mm]		4	8	5	10
	Pushing force [N] Note 1)	Basic	14 to 20	7 to 10	25 to 50	12.5 to 25
		Compact	—	—	24 to 40	12 to 20
	Work load [kg] Note 2) Note 3)	Horizontal Basic	1.0	0.75	2.0	1.5
		Horizontal Compact	—	—	2.0	1.5
		Vertical Basic	0.5	0.25	1.5	1.0
		Vertical Compact	—	—	1.5	1.0
	Speed [mm/s] Note 3) Note 6)	Horizontal Basic	10 to 150	20 to 300 Note 4)	10 to 200	20 to 350 Note 4)
		Horizontal Compact	—	—	10 to 200	20 to 350 Note 4)
		Vertical Basic	10 to 150	20 to 300 Note 4)	10 to 150	20 to 300 Note 4)
		Vertical Compact	—	—	10 to 150	20 to 300 Note 4)
	Pushing speed [mm/s] Note 5) Note 6)		10	20	10	20
	Acceleration/Deceleration [mm/s²]		3,000			
	Positioning repeatability [mm]		±0.05			
	Backlash [mm]		±0.1			
	Impact/Vibration resistance [m/s²] Note 7)		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 A/B phase (800 pulse/rotation)			
	Rated voltage [V]		24 VDC ±10%			
	Power consumption [W] Note 8)	Basic	12		28	
		Compact	—		22	
	Standby power consumption when operating [W] Note 9)	Basic	11		22	
		Compact	—		16	
	Max. instantaneous power consumption [W] Note 10)	Basic	22		55	
		Compact	—		45	

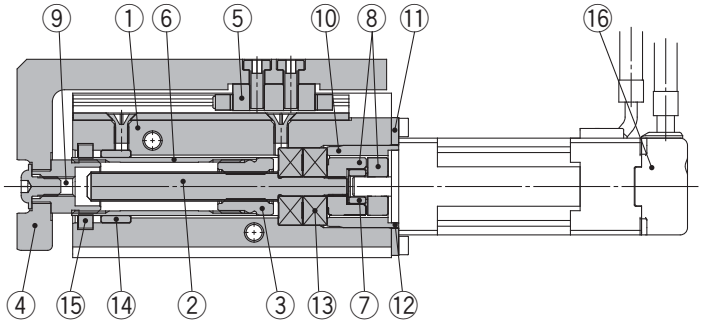
Note 1) Pushing force accuracy is LEPS6: ±30% (F.S.), LEPS10: ±25%(F.S.).
Refer to page 22 for the detailed setting range and precautions. The pushing force and the duty ratio change according to the set value. Check "Set Value of Pushing Force–Force Graph (Gulde)" on page 12 and [14] on page 22.
Note 2) The maximum value of the work load for the positioning operation. Chcek "Dynamic Allowable Moment" graph for the allowable moment of the guide on page 13.
Note 3) Speed changes according to the work load. Check "Speed–Work Load Graph (Guide)" on page 12.
Note 4) When the stroke is 25 mm, the maximum speed will be 250 mm/sec.
Note 5) Set to the pushing force when pushing.
Note 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%)
Note 7) 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. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) The power consumption (including the controller) is for when the actuator is operating.
Note 9) The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during operation. Except during the pushing operation.
Note 10) The maximum instantaneous power consumption (including the controller) is for when the actuator is operating. 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

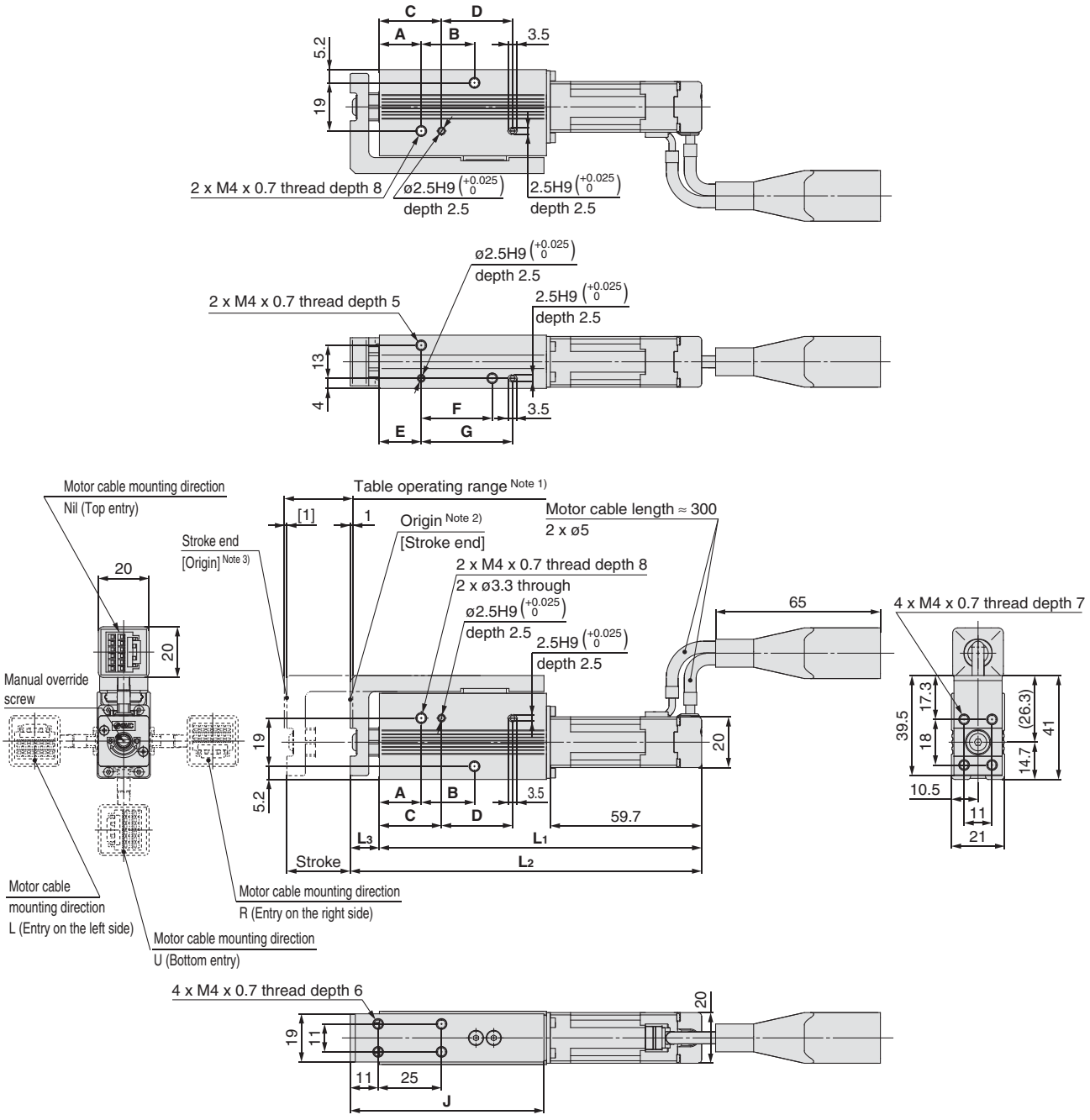


Component Parts

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.

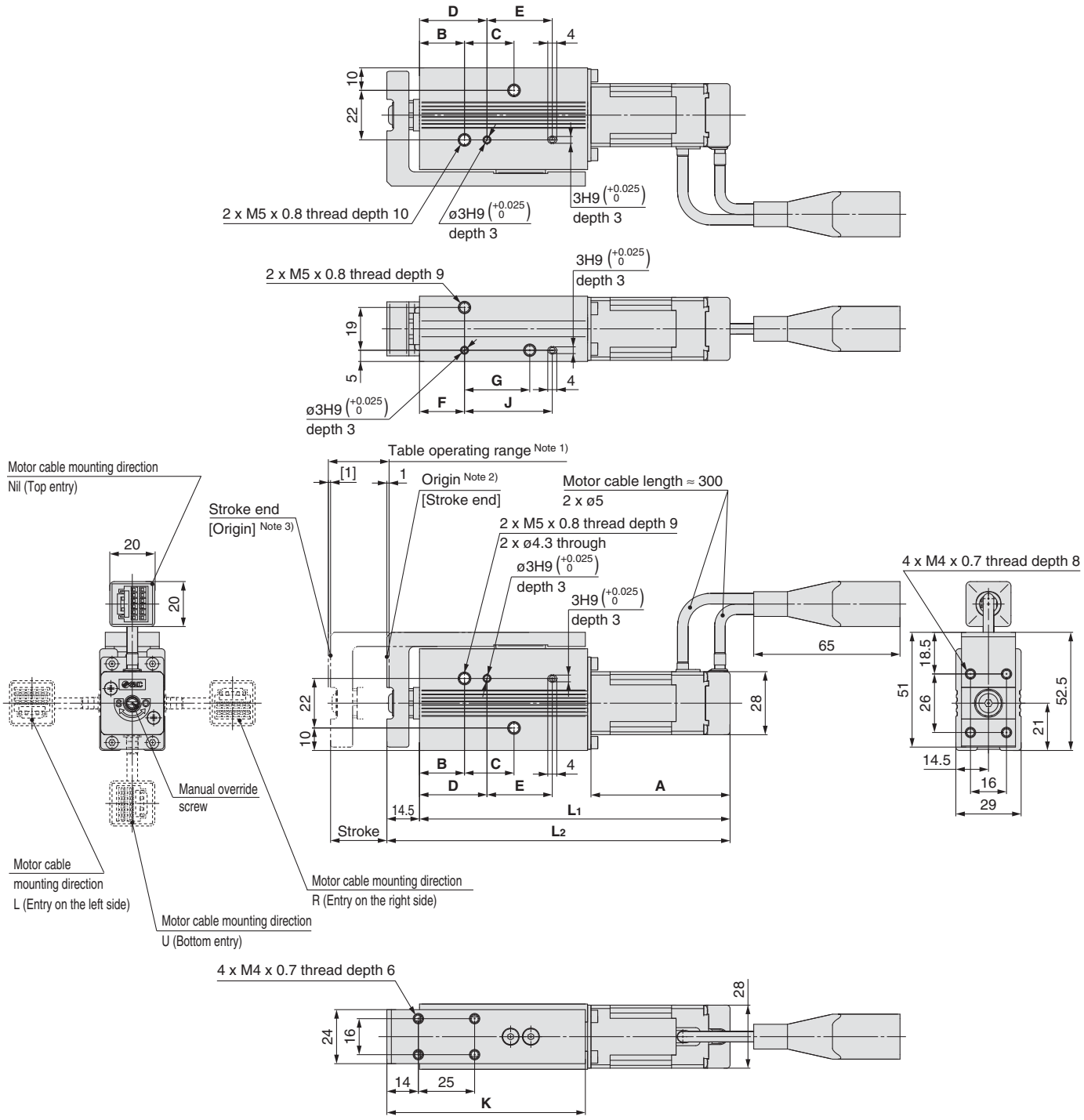
Dimensions

[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	L_1	L_2	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

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

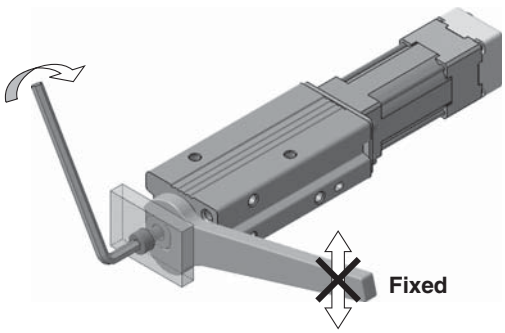
⚠Warning

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 jigs 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).

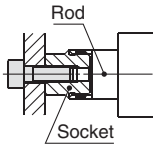


Mounting

⚠Warning

3. When mounting a bolt, workpiece or jig 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

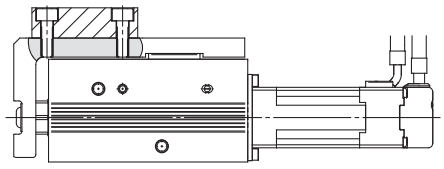
4. The angular position of the rod end flats cannot be changed because the rod has a non-rotating mechanism inside (Rod type only).

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).

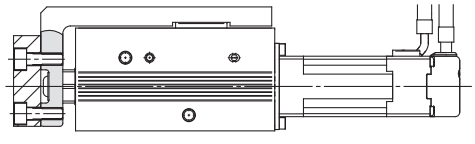
The table is supported by a linear guide, do not apply impact or moment when mounting the work load.
If the bolts are screwed to more than the maximum screw-in depth, it may lead to a malfunction due to damage of the linear guide or body.

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

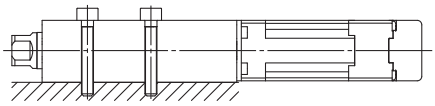
Mounting

⚠Warning

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

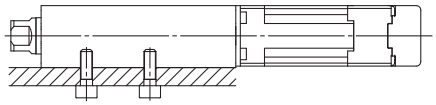
Tightening with higher torque than the specified range may cause malfunction while the tightening with lower torque can cause the displacement of gripping position or dropping a workpiece.

Side mounting (Body mounting through-hole)



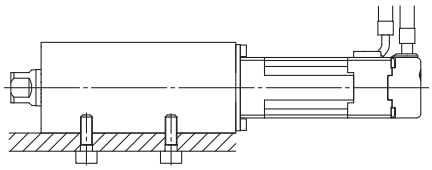
Model	Bolt	Max. tightening torque [N·m]
LEPY6	M3 x 0.5	0.9
LEPS6		
LEPY10	M4 x 0.7	1.4
LEPS10		

Side mounting (Body tapped)



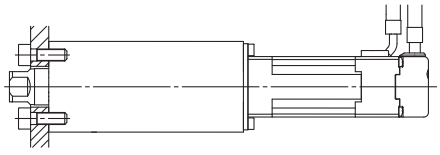
Model	Bolt	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEPY6	M4 x 0.7	1.4	7
LEPS6			
LEPY10	M5 x 0.8	3.0	9
LEPS10			

Bottom mounting (Body tapped)



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

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	±0.1
LEPS6	±0.1
LEPY10	±0.1
LEPS10	±0.1

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 LEPS10	Basic	50 to 100
	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

Step Data Input Type ····· **Page 25**



Step Motor (Servo/24 VDC)

Series LECP6

Gateway Unit ····· **Page 35**



Series LEC-G

Programless Type ····· **Page 38**



Step Motor (Servo/24 VDC)

Series LECP1

Pulse Input Type ····· **Page 44**



Step Motor (Servo/24 VDC)

Series LECPA

Controller (Step Data Input Type)
Step Motor (Servo/24 VDC)
Series LECP6



How to Order

⚠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 should be used with a UL1310 Class 2 power supply.

LE C P 6 N □ □ – □

- Electric equipment
- Controller
- Compatible motor

P	Step motor (Servo/24 VDC)

- Number of step data (Points)

6	64

- Parallel I/O type

N	NPN
P	PNP

- I/O cable length [m]

—	Without cable
1	1.5
3	3
5	5

- Actuator part number

(Except cable specifications and actuator options)
Example: Enter "LEPY10K-50" for the LEPY10K-50U-R16N1.

- Option

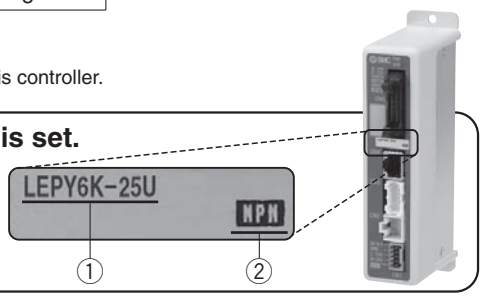
—	Screw mounting
D Note)	DIN rail mounting

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

∗ When controller equipped type is selected when ordering the LE series, you do not need to order this controller.

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.

<Check the following before use.>
① Check the actuator label for model number. This matches the controller.
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

Specifications

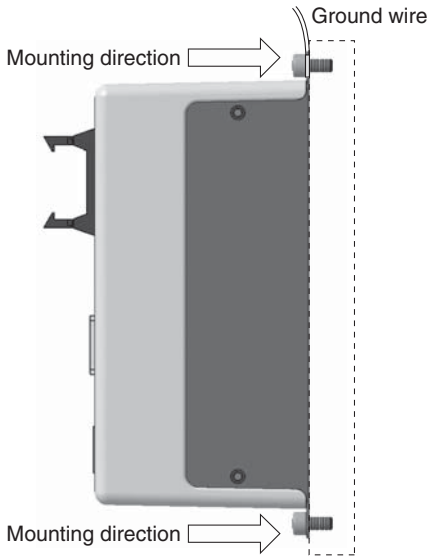
Basic Specifications

Item	Specifications
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10% Current consumption: 3 A (Peak 5 A) Note 2) [Including motor drive power, control power, stop, lock release]
Parallel input	11 inputs (Photo-coupler isolation)
Parallel output	13 outputs (Photo-coupler isolation)
Compatible encoder	Incremental A/B phase (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: 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]	150 (Screw mounting) 170 (DIN rail mounting)

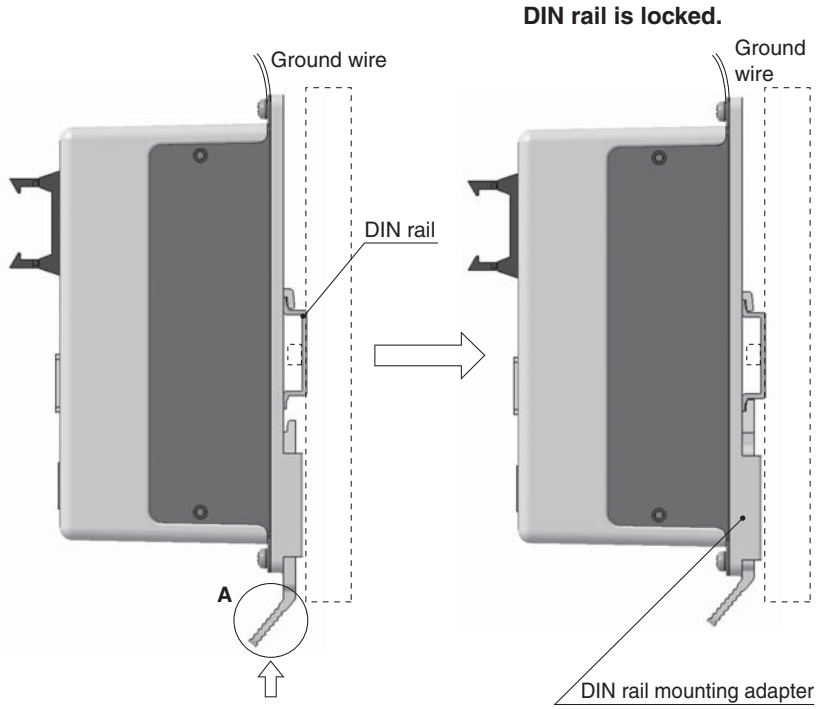
Note 1) Do not use the power supply of "inrush current prevention type" for the controller power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.
Note 3) Applicable to non-magnetizing lock.

How to Mount

a) Screw mounting (LECP6□□-□)
(Installation with two M4 screws)



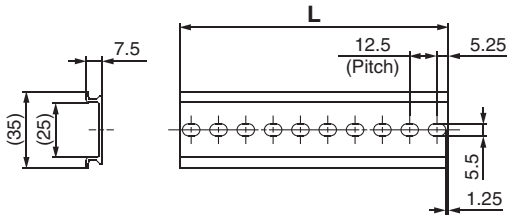
b) DIN rail mounting (LECP6□□D-□)
(Installation with the DIN rail)



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

DIN rail
AXT100-DR-□

∗ For □, enter a number from the "No." line in the table below.
Refer to the dimensions on page 27 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

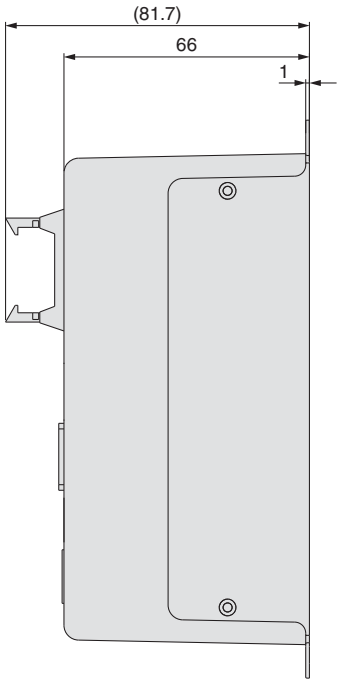
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

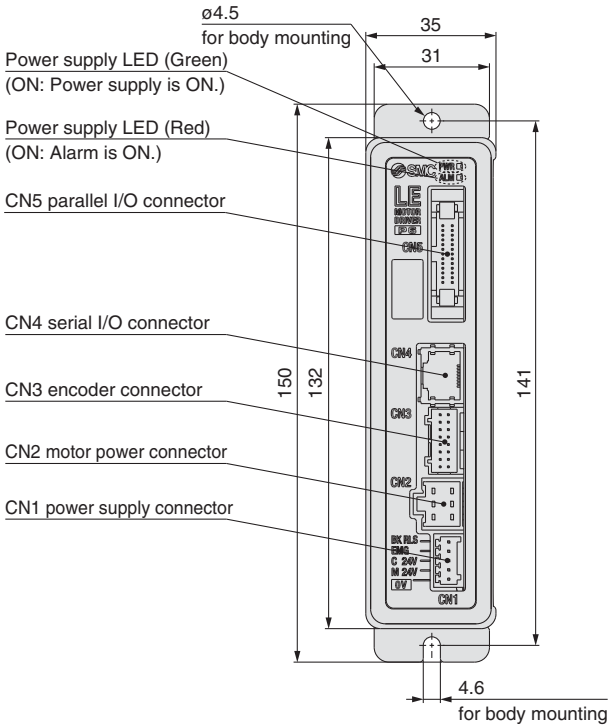
DIN rail mounting adapter
LEC-D0 (with 2 mounting screws)

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

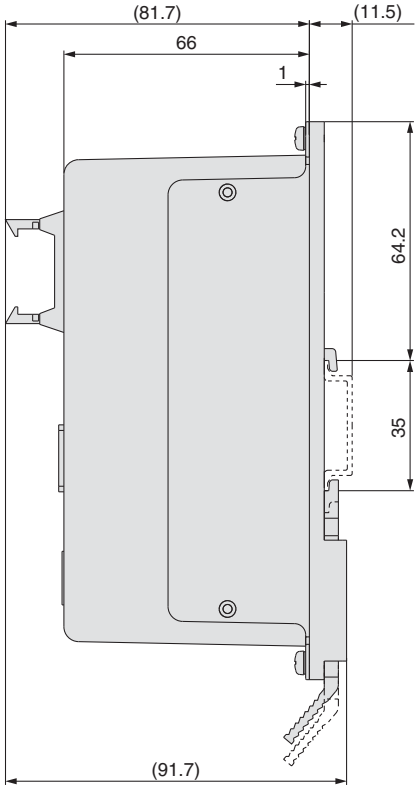
Dimensions

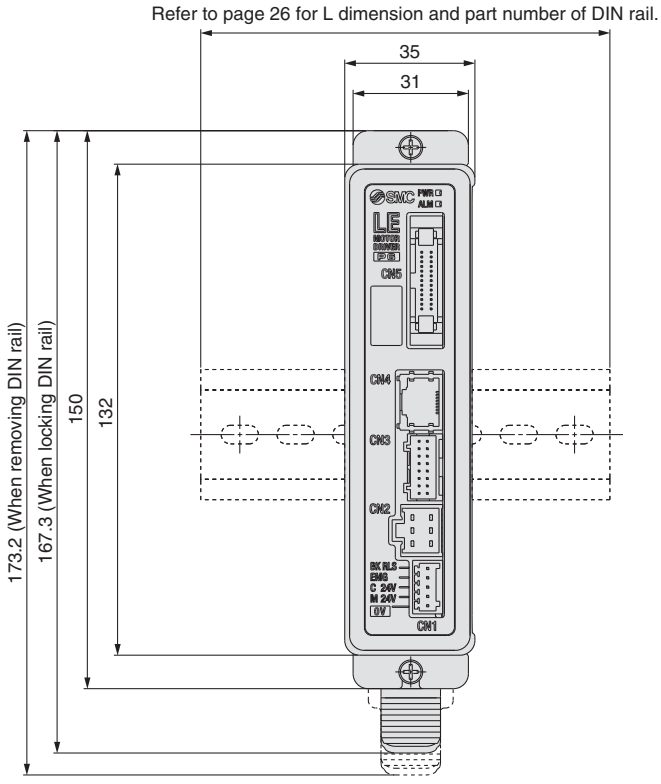
a) Screw mounting (LECP6□□-□)





b) DIN rail mounting (LECP6□□D-□)



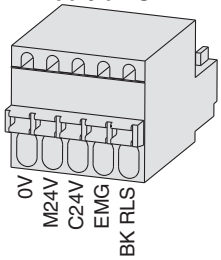


Wiring Example 1

Power Supply Connector: CN1

∗ Power supply plug is an accessory.

Power supply plug for LECP6



CN1 Power Supply Connector Terminal for LECP6 (PHOENIX CONTACT FK-MC0.5/5-ST-2.5)

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/BK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) supplied to the controller
C24V	Control power supply (+)	Control power supply (+) supplied to the controller
EMG	Stop (+)	Input (+) for releasing the stop
BK RLS	Lock release (+)	Input (+) for releasing the lock

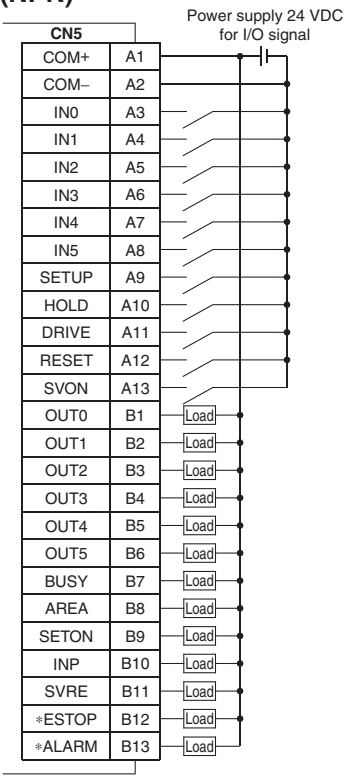
Wiring Example 2

Parallel I/O Connector: CN5

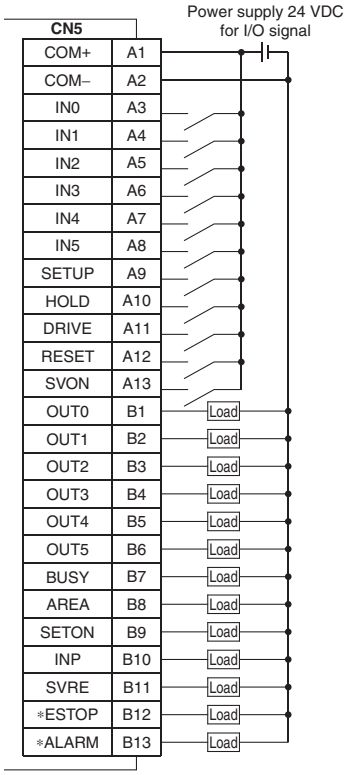
∗ When you connect a PLC, etc., to the CN5 parallel I/O connector, please use the I/O cable (LEC-CN5-□).
∗ The wiring should be changed depending on the type of the parallel I/O (NPN or PNP).

Wiring diagram

LECP6N□□-□ (NPN)



LECP6P□□-□ (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 IN5	Step data specified Bit No. (Input is instructed in the combination of IN0 to 5.)
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

Output Signal

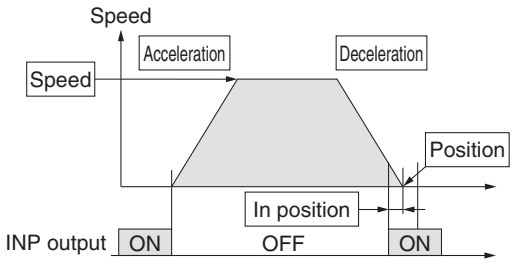
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or pushing is completed.)
SVRE	Outputs when servo is on
∗ESTOP Note)	Not output when EMG stop is instructed
∗ALARM Note)	Not output when alarm is generated

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

Step Data Setting

1. Step data setting for positioning

In this setting, the actuator moves toward and stops at the target position.
The following diagram shows the setting items and operation.
The setting items and set values for this operation are stated below.



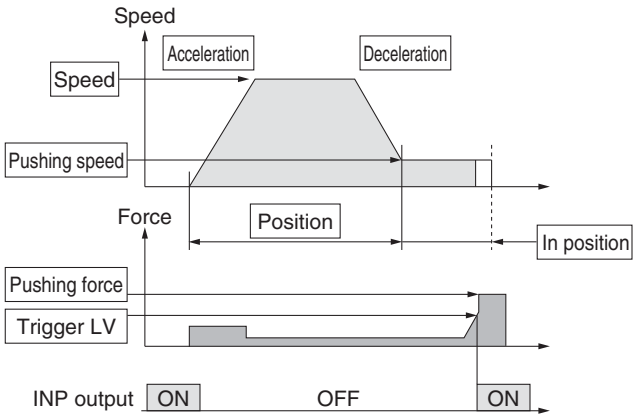
◎: Need to be set.
○: Need to be adjusted as required.
—: Setting is not required.

Step Data (Positioning)

Necessity	Item	Details
◎	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
◎	Speed	Transfer speed to the target position
◎	Position	Target position
◎	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
◎	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
◎	Pushing force	Set 0. (If values 1 to 100 are set, the operation will be changed to the pushing operation.)
—	Trigger LV	Setting is not required.
—	Pushing speed	Setting is not required.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
○	In position	Condition that turns on the INP output signal. When the actuator enters the range of [in position], the INP output signal turns on. (It is unnecessary to change this from the initial value.) When it is necessary to output the arrival signal before the operation is completed, make the value larger.

2. Step data setting for pushing

The actuator moves toward the pushing start position, and when it reaches that position, it starts pushing with the set force or less.
The following diagram shows the setting items and operation.
The setting items and set values for this operation are stated below.



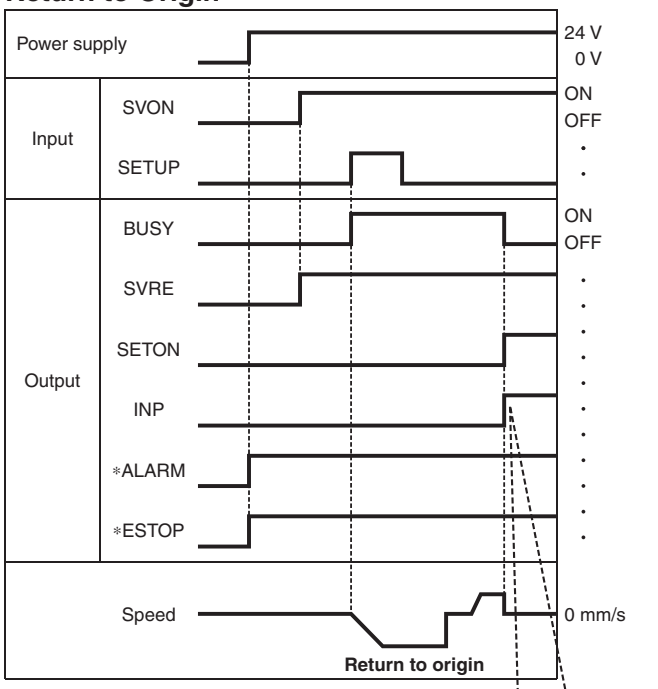
◎: Need to be set.
○: Need to be adjusted as required.

Step Data (Pushing)

Necessity	Item	Details
◎	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
◎	Speed	Transfer speed to the pushing start position
◎	Position	Pushing start position
◎	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
◎	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
◎	Pushing force	Pushing force ratio is defined. The setting range differs depending on the electric actuator type. Refer to the operation manual for the electric actuator.
◎	Trigger LV	Condition that turns on the INP output signal. The INP output signal turns on when the generated force exceeds the value. Trigger level should be the pushing force or less.
○	Pushing speed	Pushing speed during pushing. When the speed is set fast, the electric actuator and workpieces might be damaged due to the impact when they hit the end, so this set value should be smaller. Refer to the operation manual for the electric actuator.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
◎	In position	Transfer distance during pushing. If the transferred distance exceeds the setting, it stops even if it is not pushing. If the transfer distance is exceeded, the INP output signal will not turn on.

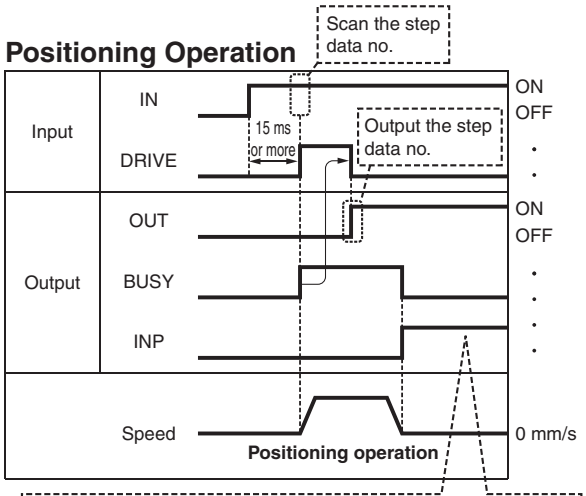
Signal Timing

Return to Origin



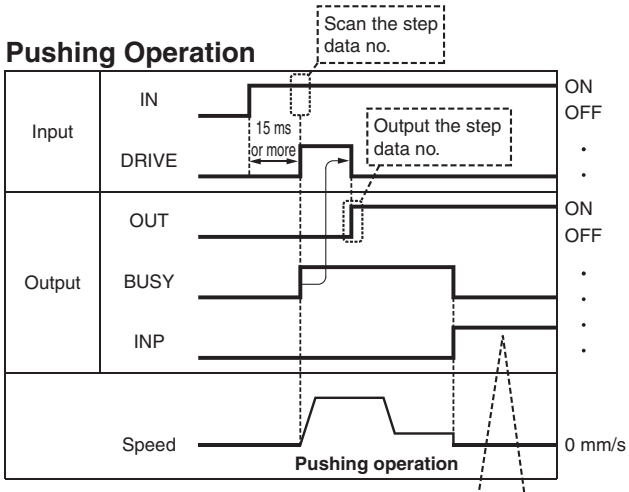
∗ "∗ALARM" and "∗ESTOP" are expressed as negative-logic circuit.

Positioning Operation

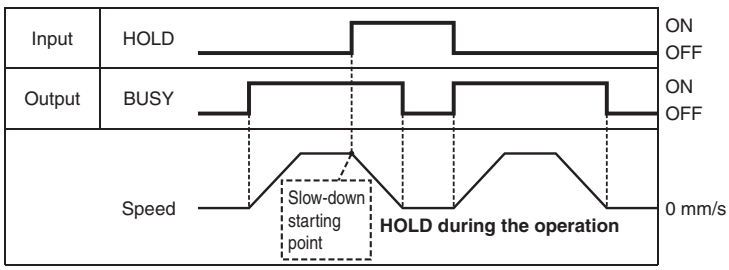


∗ "OUT" is output when "DRIVE" is changed from ON to OFF.
(When power supply is applied, "DRIVE" or "RESET" is turned ON or "∗ESTOP" is turned OFF, all of the "OUT" outputs are OFF.)

Pushing Operation

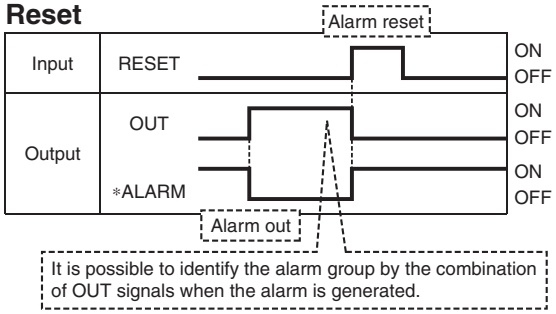


HOLD



∗ When the actuator is in the positioning range in the pushing operation, it does not stop even if HOLD signal is input.

Reset



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

Options: Actuator Cable, I/O Cable

Actuator cable

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

LE − CP − 1 − ☐

Cable length(L)[m]

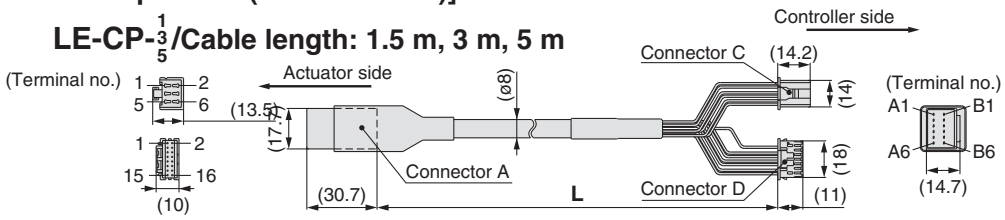
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

Cable type

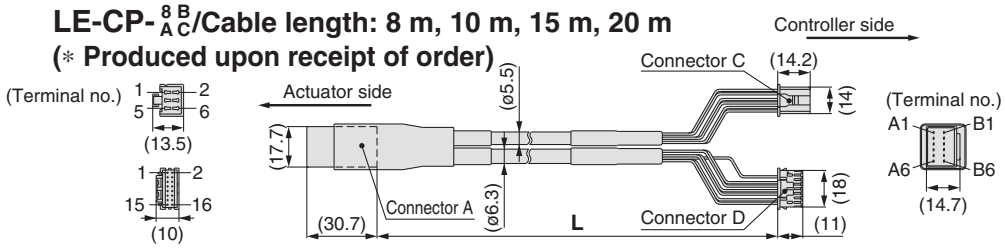
—	Robotic cable (Flexible cable)
S	Standard cable

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)



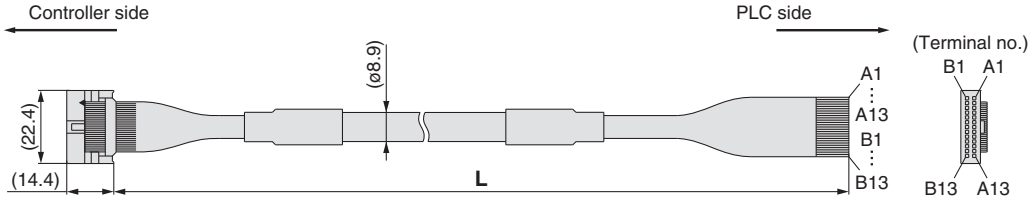
Signal	Connector A terminal no.	Cable colour	Connector C terminal no.
A	B-1	Brown	2
$\overline{A}$	A-1	Red	1
B	B-2	Orange	6
$\overline{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/—	A-3	Blue	4
		Shield	
		Cable colour	Connector D terminal no.
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7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

I/O cable

LEC − CN5 − 1

Cable length(L)[m]

1	1.5
3	3
5	5



* Conductor size: AWG28

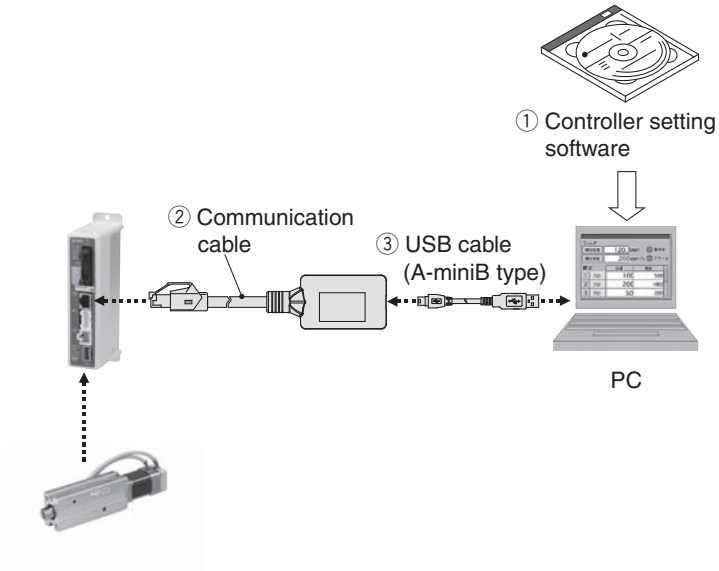
Connector pin no.	Insulation colour	Dot mark	Dot colour
A1	Light brown	■	Black
A2	Light brown	■	Red
A3	Yellow	■	Black
A4	Yellow	■	Red
A5	Light green	■	Black
A6	Light green	■	Red
A7	Grey	■	Black
A8	Grey	■	Red
A9	White	■	Black
A10	White	■	Red
A11	Light brown	■ ■	Black
A12	Light brown	■ ■	Red
A13	Yellow	■ ■	Black

Connector pin no.	Insulation colour	Dot mark	Dot colour
B1	Yellow	■ ■	Red
B2	Light green	■ ■	Black
B3	Light green	■ ■	Red
B4	Grey	■ ■	Black
B5	Grey	■ ■	Red
B6	White	■ ■	Black
B7	White	■ ■	Red
B8	Light brown	■ ■ ■	Black
B9	Light brown	■ ■ ■	Red
B10	Yellow	■ ■ ■	Black
B11	Yellow	■ ■ ■	Red
B12	Light green	■ ■ ■	Black
B13	Light green	■ ■ ■	Red
—	Shield		

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

① **Controller setting software (CD-ROM)**
② **Communication cable**
③ **USB cable**
(Cable between the PC and the conversion unit)

Compatible Controller/Driver

Step motor controller (Servo/24 VDC) **Series LECP6**
Step motor driver (Pulse input type) **Series LECPA**

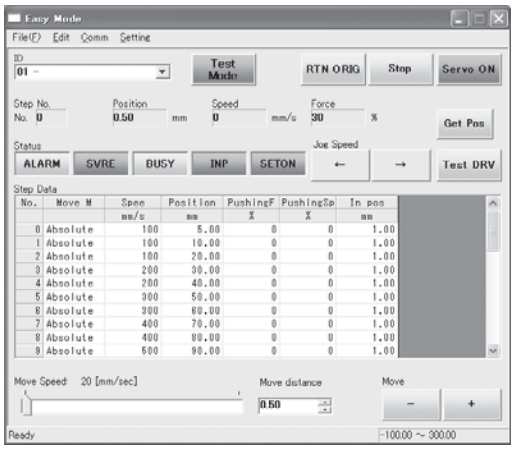
Hardware Requirements

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

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

Screen Example

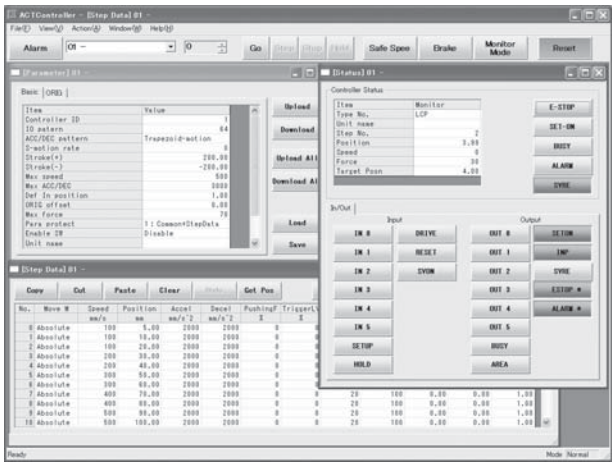
Easy mode screen example



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 – 3 E G □

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 the LECP6 series step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When conformity to UL is required, the electric actuator and controller 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 • 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 • 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
(Position, Speed, Force, Acceleration, Deceleration)

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

Jog
Return to origin
Jog operation

Test
1 step operation

ALM
Active alarm display
Alarm reset

TB setting
Reconnection of axis
Easy/Normal
Set item

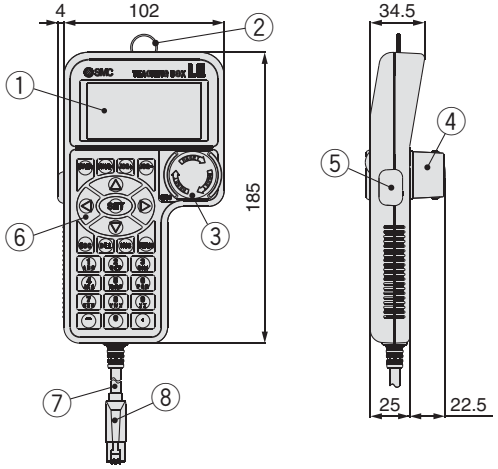
Normal Mode

Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output)
Monitor	• Drive monitor • Output signal monitor • Input signal monitor • 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 controller 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 controller Loads the data which is saved in the teaching box to the controller which is being used for communication. • Delete the saved data.
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
  - Input signal
  - 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
  - Forced output
- **ALM**
  - Status
  - ALM Log record
  - **Status**
    - Active alarm display
    - Alarm reset
  - **ALM Log record display**
    - Log entry display
- **File**
  - Data saving
  - Load to controller
  - File deletion
- **TB setting**
  - Easy/Normal
  - Language
  - Backlight
  - LCD contrast
  - Beep
  - Max. connection axis
  - Password
  - Distance unit
- **Reconnect**

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 controller

Gateway Unit
Series LEC-G

How to Order

⚠ 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 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

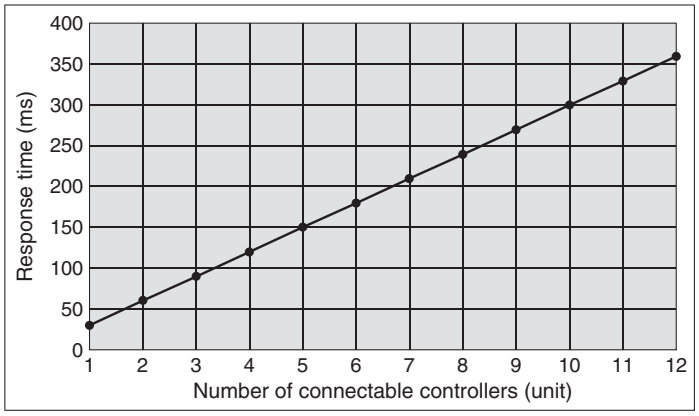
Specifications

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 LECP6, 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.

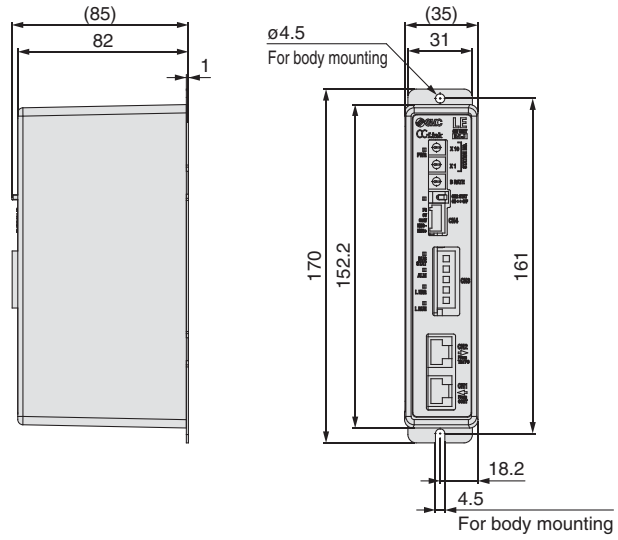


∗ This graph shows delay times between gateway unit and controllers. Fieldbus network delay time is not included.

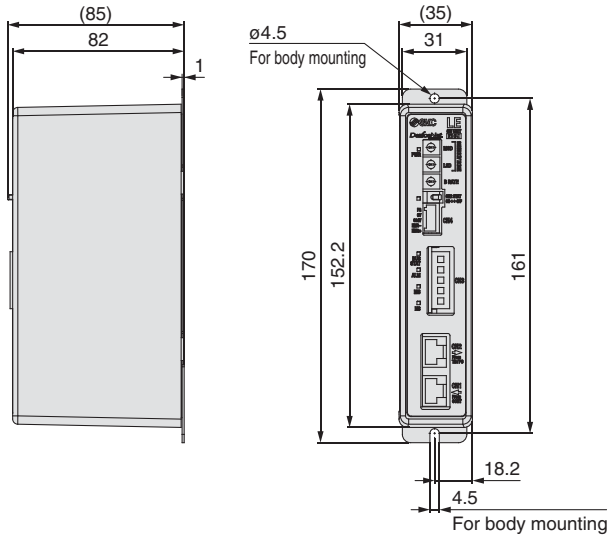
Dimensions

Screw mounting (LEC-G□□□)

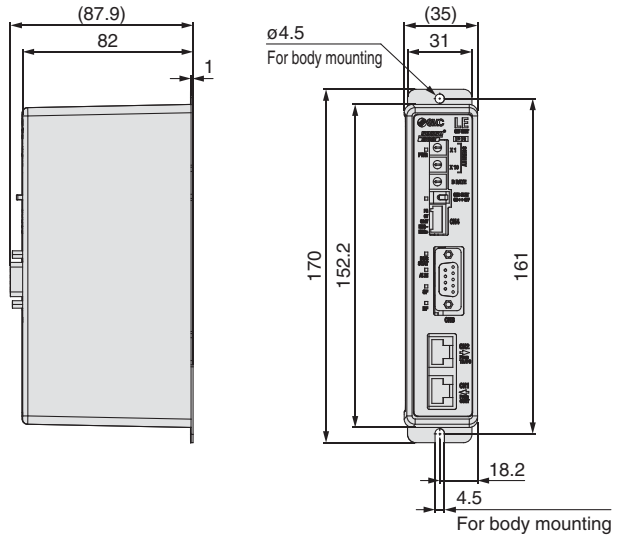
Applicable Fieldbus protocol: CC-Link Ver. 2.0



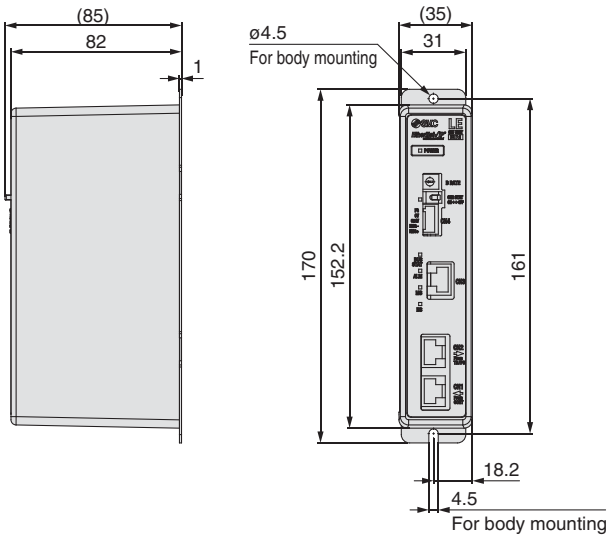
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP



Applicable Fieldbus protocol: EtherNet/IP™

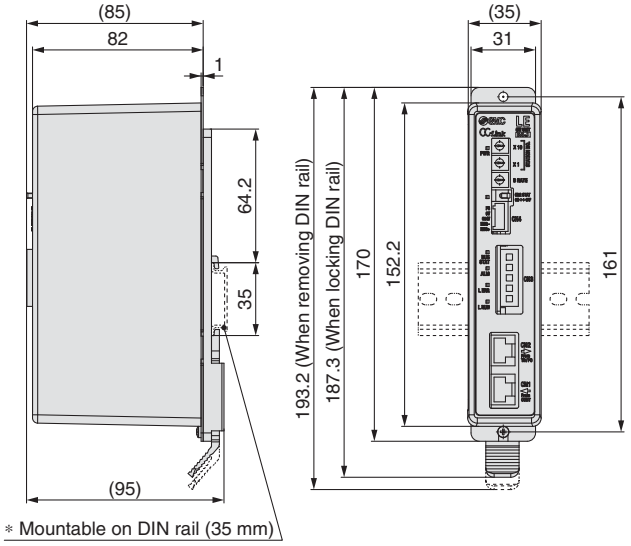


■**Trademark** DeviceNet™ is a trademark of ODVA. EtherNet/IP™ is a trademark of ODVA.

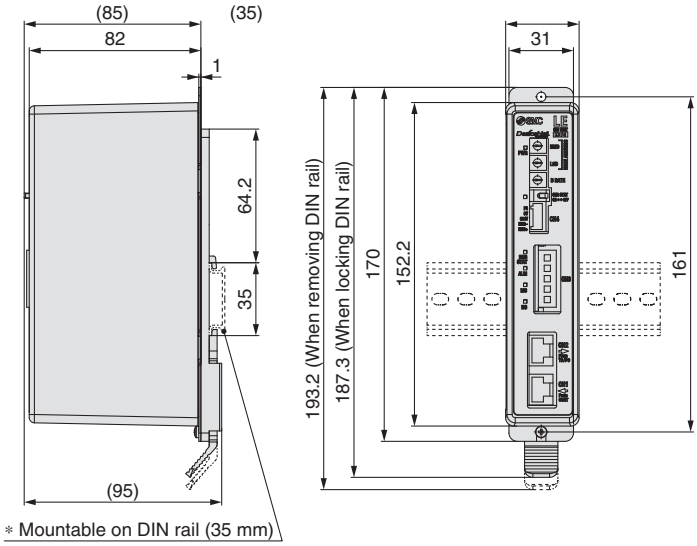
Dimensions

DIN rail mounting (LEC-G□□□D)

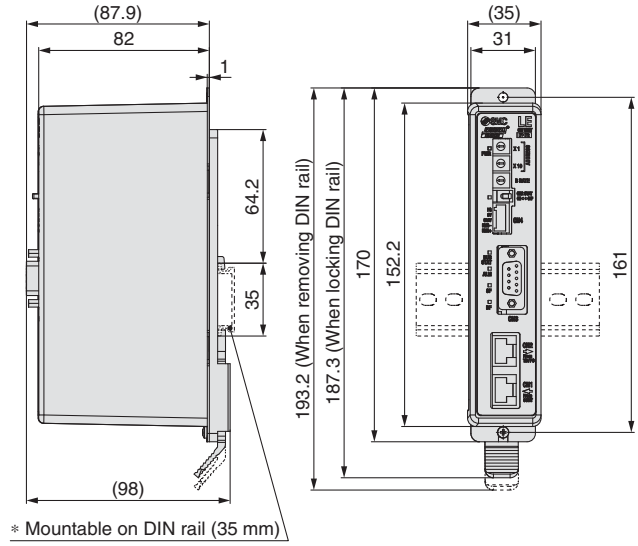
Applicable Fieldbus protocol: CC-Link Ver. 2.0



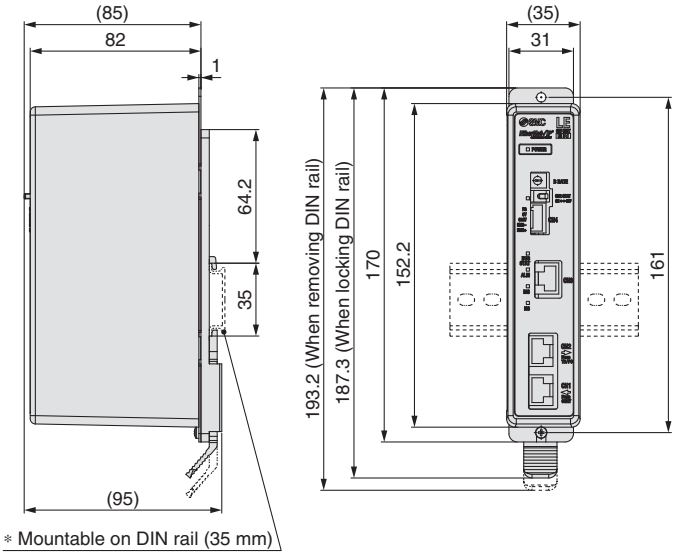
Applicable Fieldbus protocol: DeviceNet™



Applicable Fieldbus protocol: PROFIBUS DP

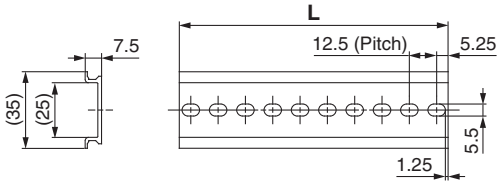


Applicable Fieldbus protocol: EtherNet/IP™



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

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

Programless Controller
Series LECP1



How to Order

LE C P 1 N 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]

Nil	Without cable
1	1.5
3	3
5	5

Option

Nil	Screw mounting
D Note)	DIN rail mounting

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

Actuator part number

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

* **When controller equipped type 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 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 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.

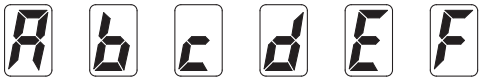
* Refer to the operation manual for using the products. Please download it via our website, http://www.smc.eu

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: 3 A (Peak 5 A) 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)
Serial communication	RS485 (Modbus protocol compliant)
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)

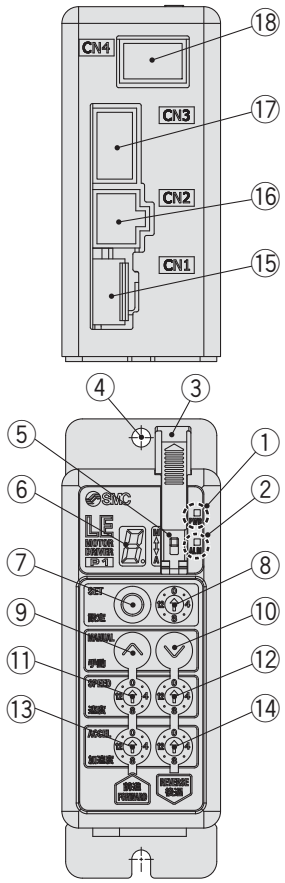
Note 1) Do not use the power supply of "inrush current prevention type" for the controller input power supply. When conformity to UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model. 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



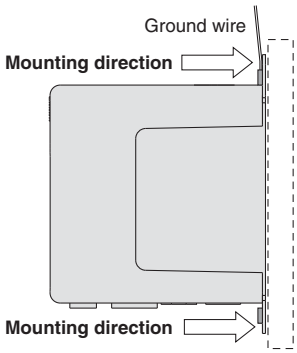
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF : Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing 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□□-□)

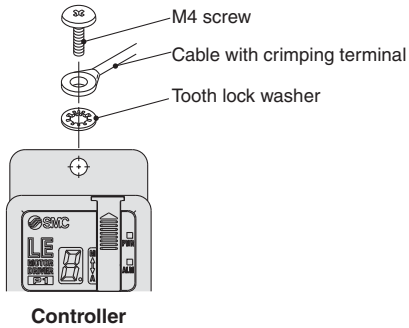
(Installation with two M4 screws)



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

2. Grounding

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

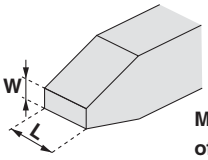


Controller

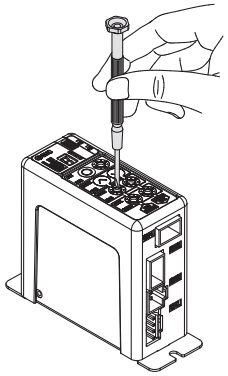
⚠Caution

- 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]

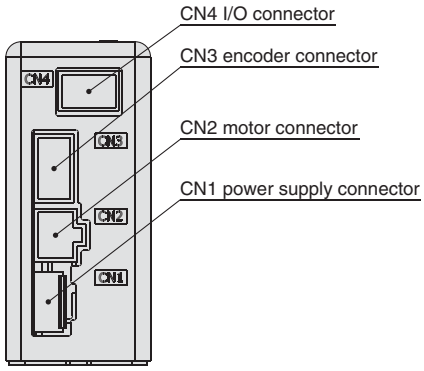


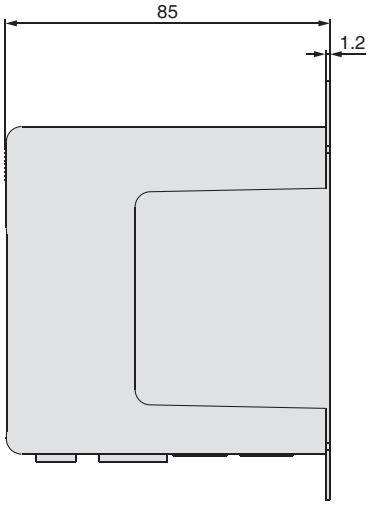
Magnified view of the end of the screwdriver

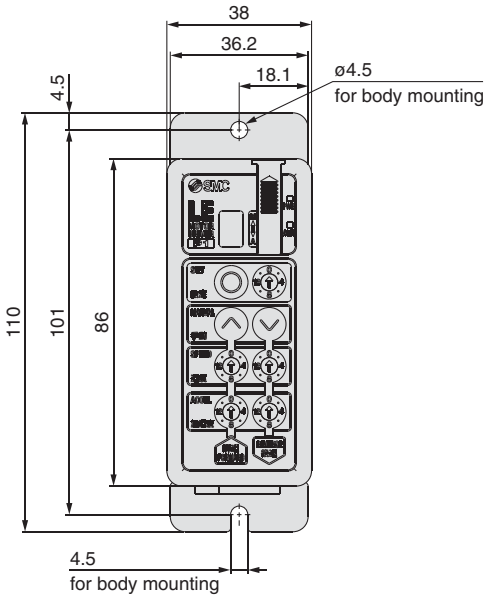


Dimensions

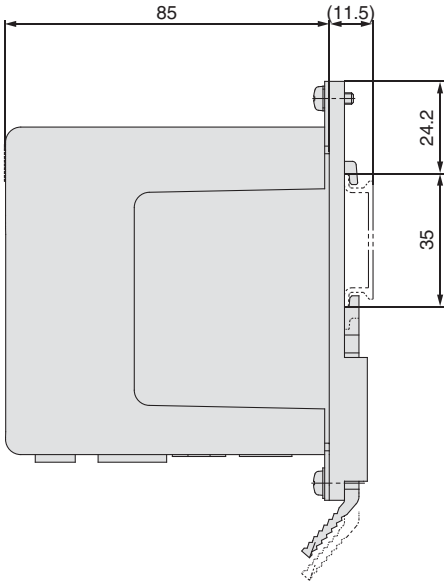
Screw mounting (LEC□1□□-□)

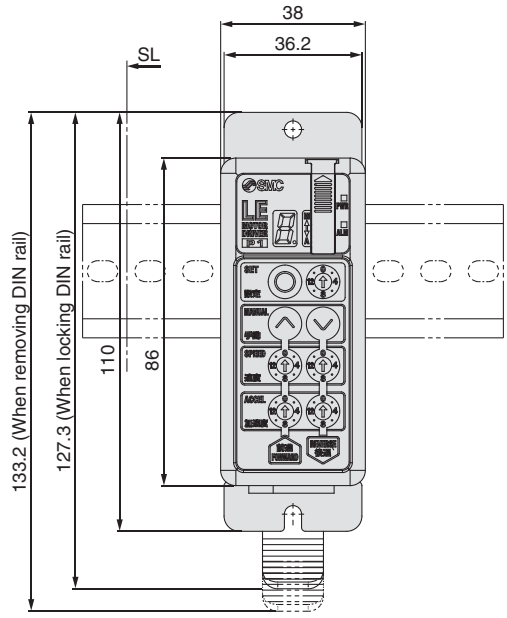






DIN rail mounting (LEC□1□□D-□)





Wiring Example 1

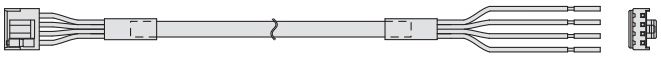
Power Supply Connector: CN1

* When you connect a CN1 power supply connector, please 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 (–)	M24V terminal/C24V terminal/BK RLS terminal are common (–).
M24V	White	Motor power supply (+)	Motor power supply (+) supplied to the controller
C24V	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)

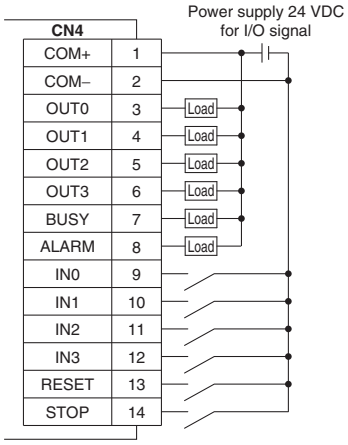


Wiring Example 2

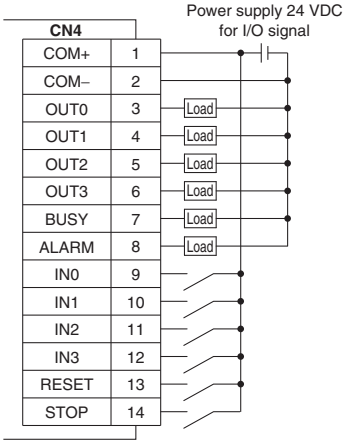
Parallel I/O Connector: CN4

* When you connect a PLC, etc., to the CN4 parallel I/O connector, please 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

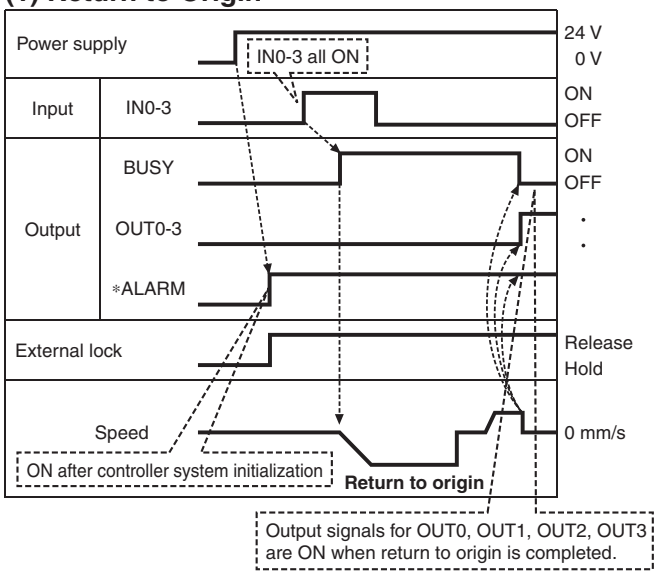
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Retun to origin	●	●	●	●

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)	●	●	●	○
Retun to origin	●	●	●	●

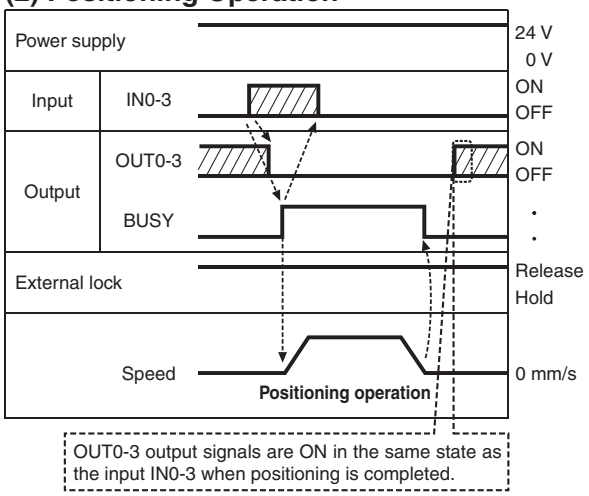
Signal Timing

(1) Return to Origin

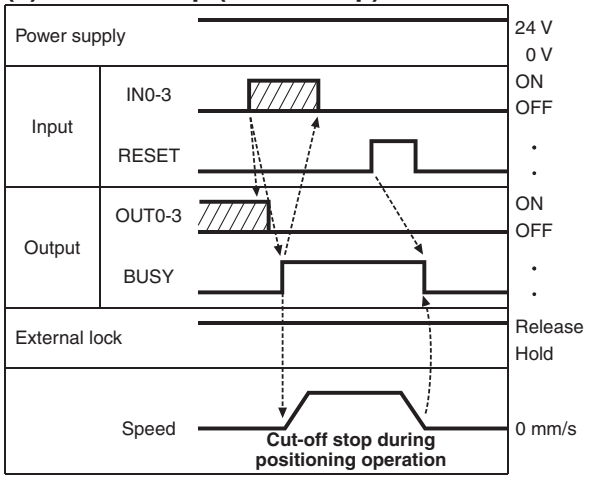


∗ "∗ALARM" is expressed as negative-logic circuit.

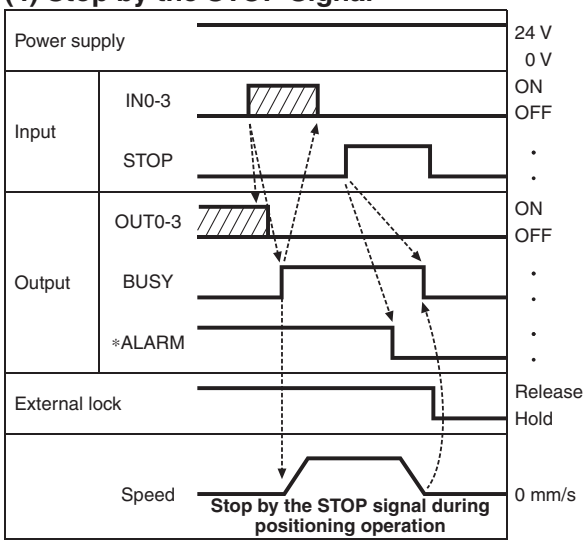
(2) Positioning Operation



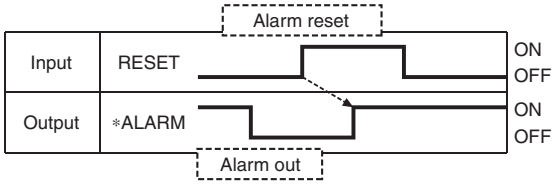
(3) Cut-off Stop (Reset Stop)



(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]

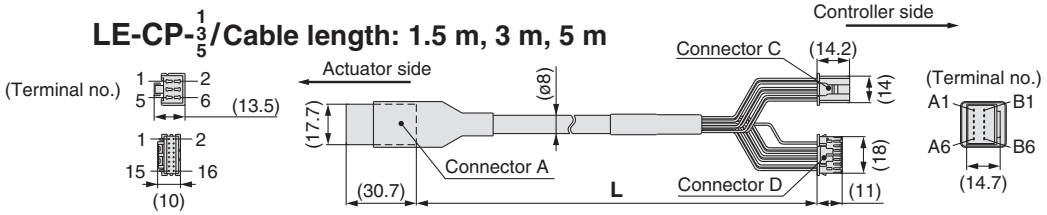
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

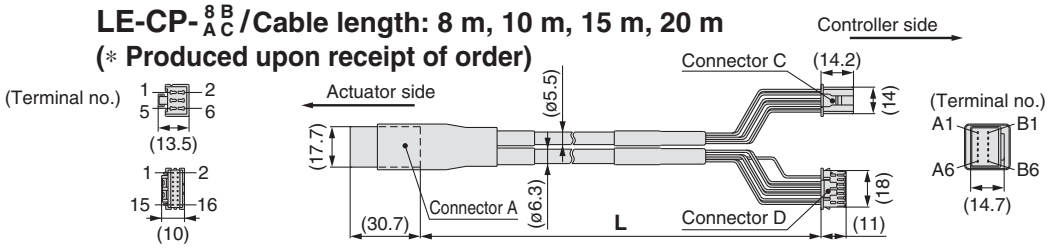
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-$\frac{1}{5}$/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
(* 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

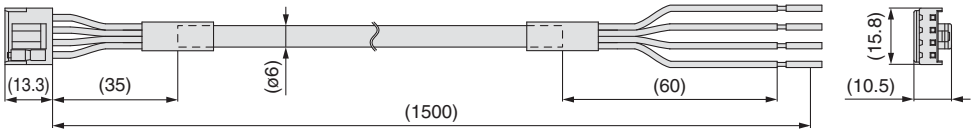
Signal	Connector A terminal no.	Cable colour	Connector D terminal no.
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

Options

[Power supply cable]

LEC − CK1 − 1

Terminal name	Covered colour	Function
0V	Blue	Common supply (–)
M24V	White	Motor power supply (+)
C24V	Brown	Control power supply (+)
BK RLS	Black	Lock release (+)



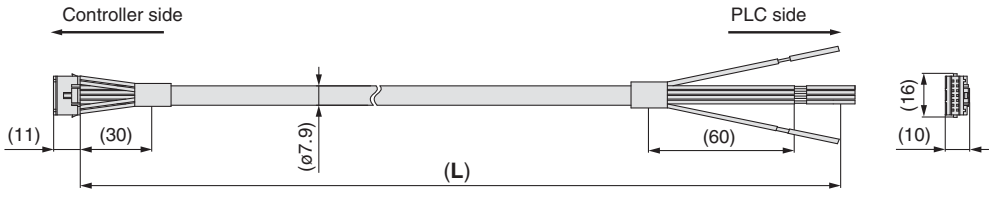
* Conductor size: AWG20

[I/O cable]

LEC − CK4 − □

Cable length(L)[m]

1	1.5
3	3
5	5



* Conductor size: AWG26

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

Terminal no.	Insulation colour	Dot mark	Dot colour	Function
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

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

Step Motor Driver
Series LECPA

How to Order

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEP 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 66 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 AN 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

(Except cable specifications and actuator options)
Example: Enter "LEPY10K-50" for the LEPY10K-50U-R1AN1.

* When controller equipped type is selected when ordering the LE series, you do not need to order this driver.

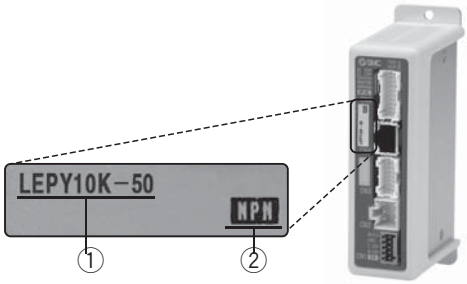
The driver is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

① Check the actuator labell 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

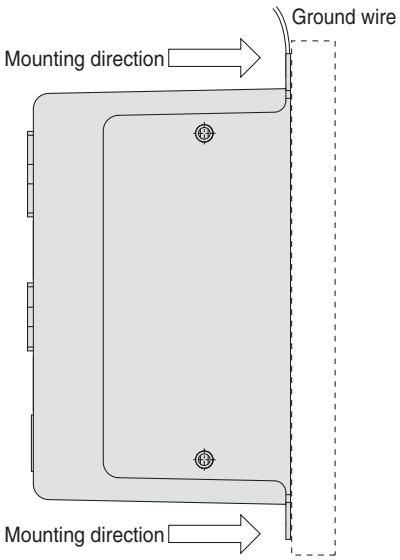
Specifications

Item	LECPA
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10% Maximum current consumption: 3 A (Peak 5 A) 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)

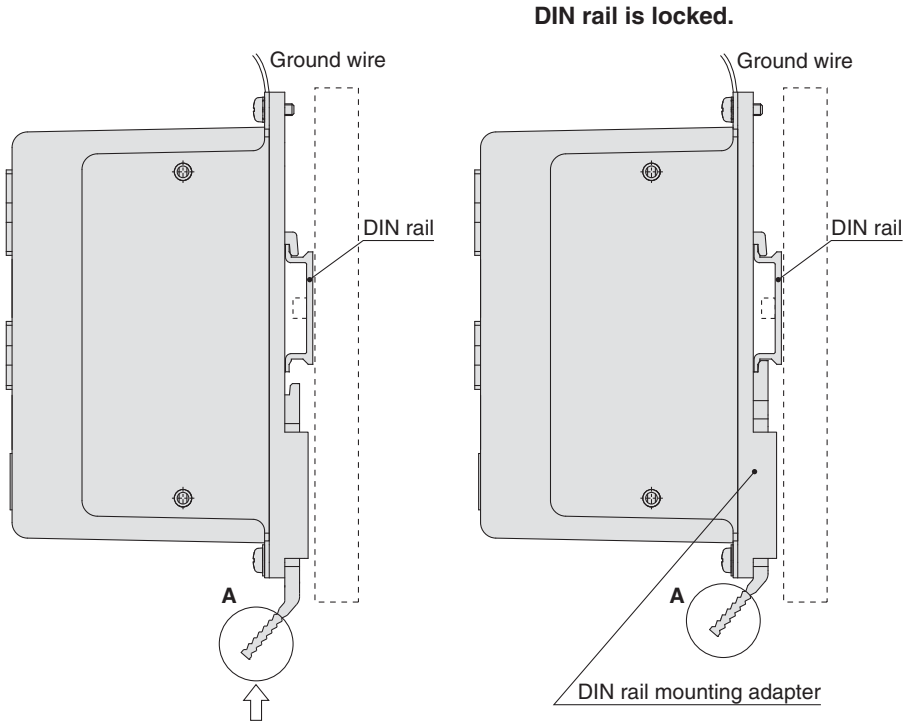
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply. When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.
Note 2) The power consumption changes depending on the actuator model. Refer to the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

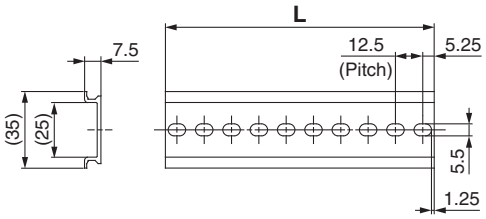


Hook the driver on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

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 46 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

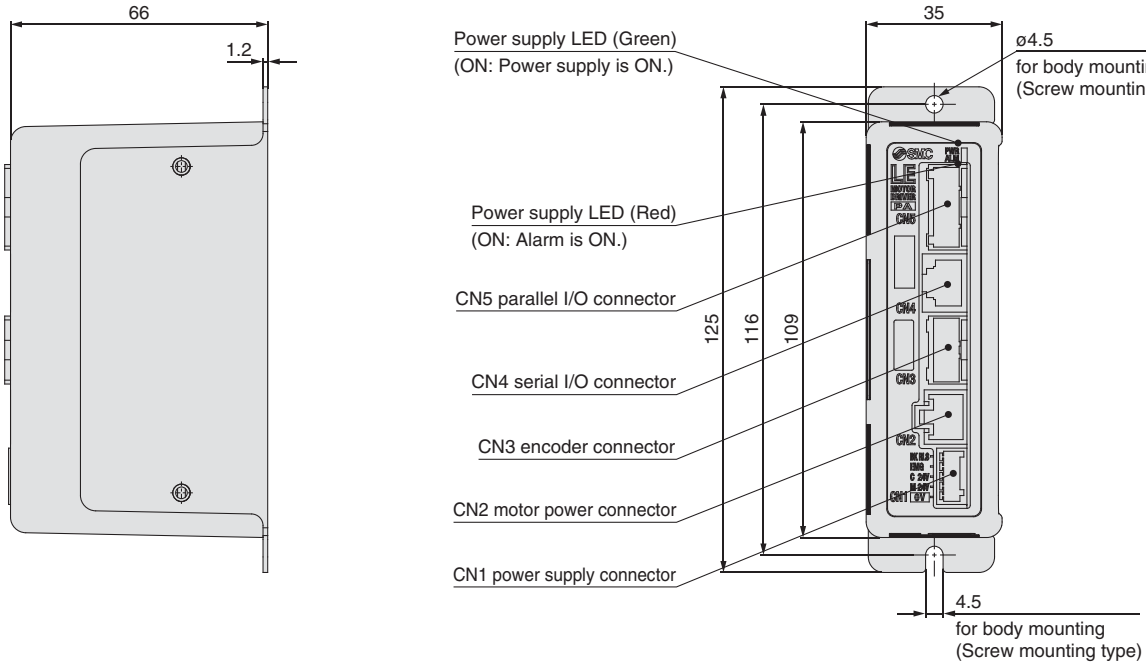
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

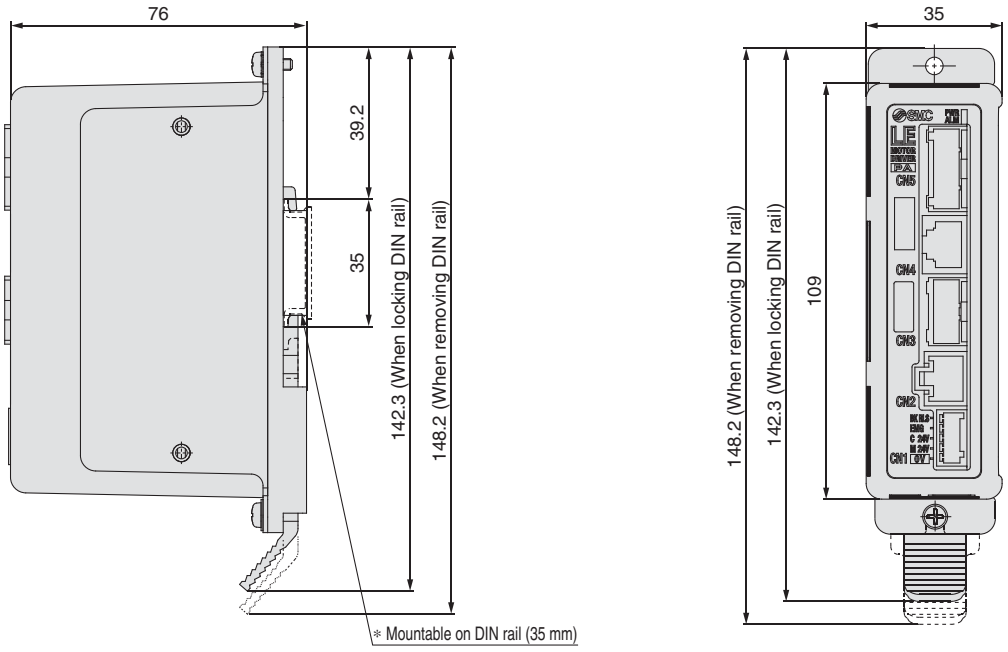
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterwards.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



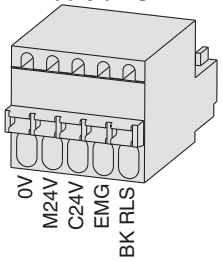
Wiring Example 1

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 (–)	M24V terminal/C24V terminal/EMG terminal/BK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) supplied to the driver
C24V	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



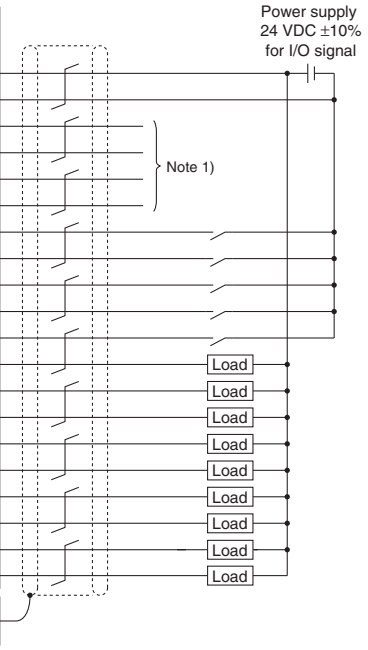
Wiring Example 2

Parallel I/O Connector: CN5

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

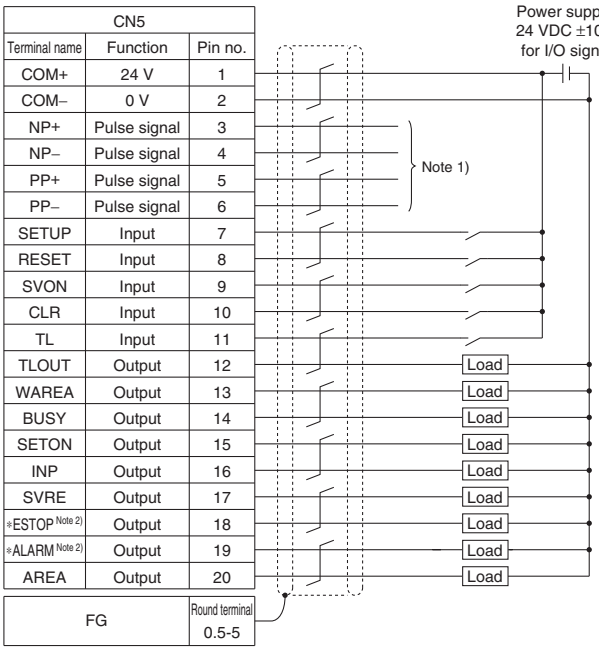
LECPAN□□-□ (NPN)

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

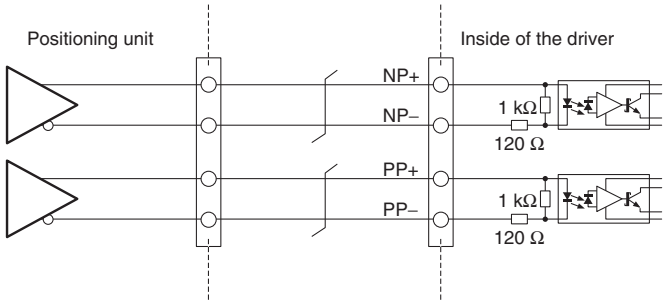
Output Signal

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

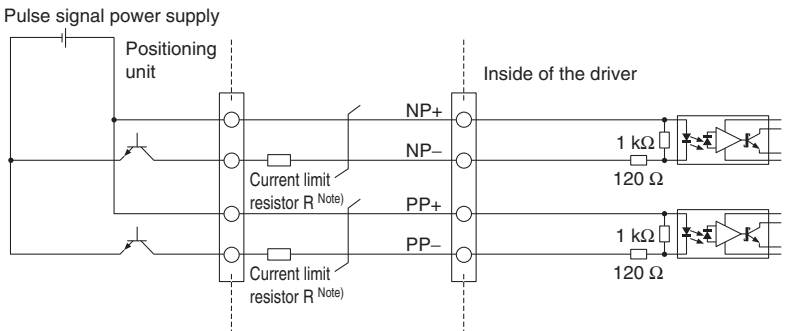
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

•Pulse signal output of positioning unit is differential output



•Pulse signal output of positioning unit is open collector output

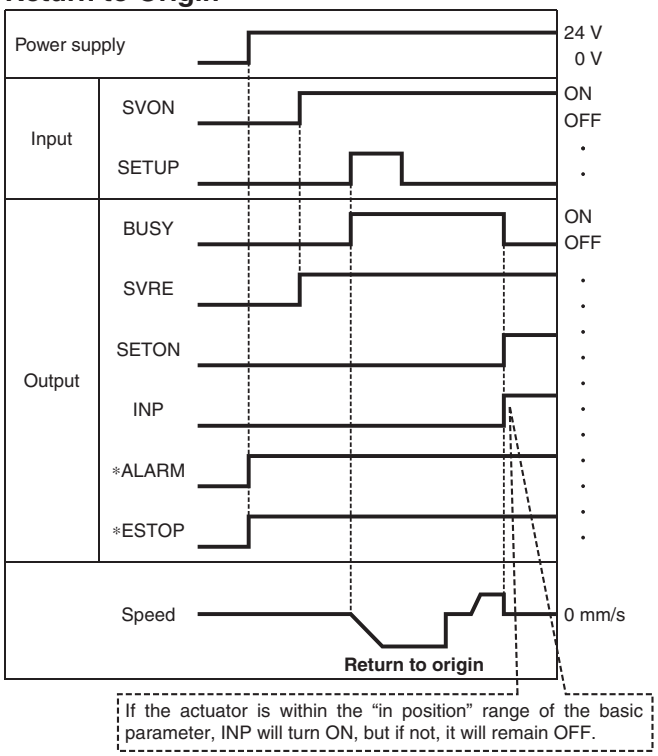


Note) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

Pulse signal power supply voltage	Current limit resistor R specifications
24 VDC ±10%	3.3 kΩ ±5% (0.5 W or more)
5 VDC ±5%	390 Ω ±5% (0.1 W or more)

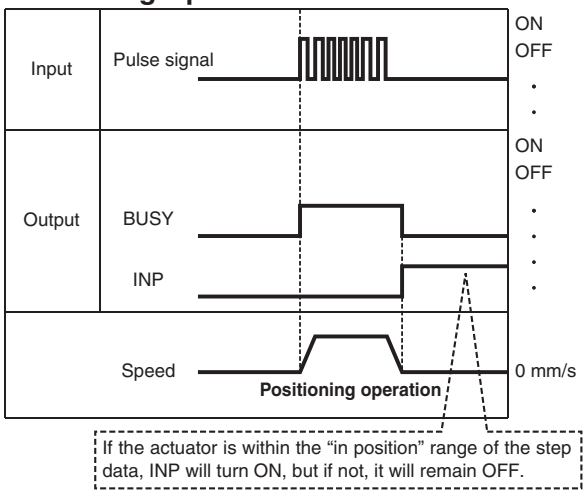
Signal Timing

Return to Origin

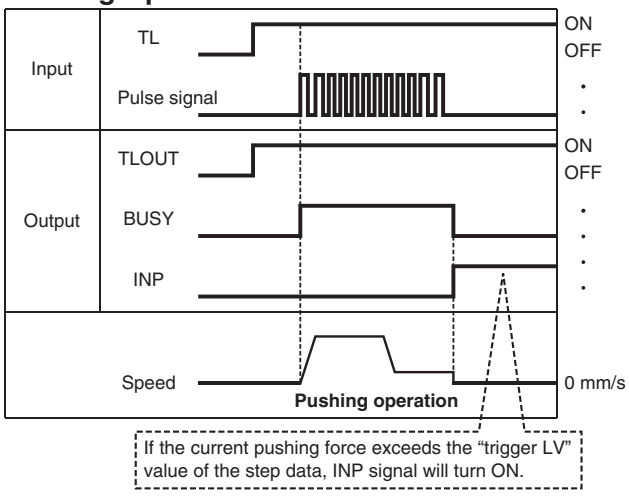


∗ "∗ALARM" and "∗ESTOP" are expressed as negative-logic circuit.

Positioning Operation

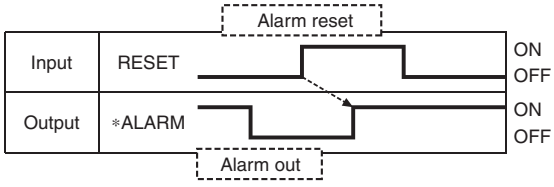


Pushing Operation



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

LE – CP – 1 – ☐

Cable length (L) [m]

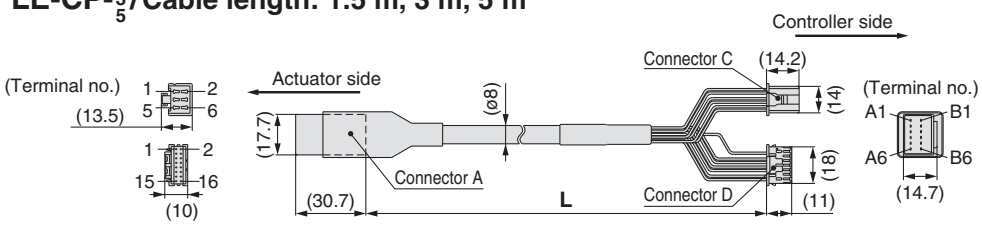
1	1.5
3	3
5	5
8	8*
A	10*
B	15*
C	20*

* Produced upon receipt of order (Robotic cable only)

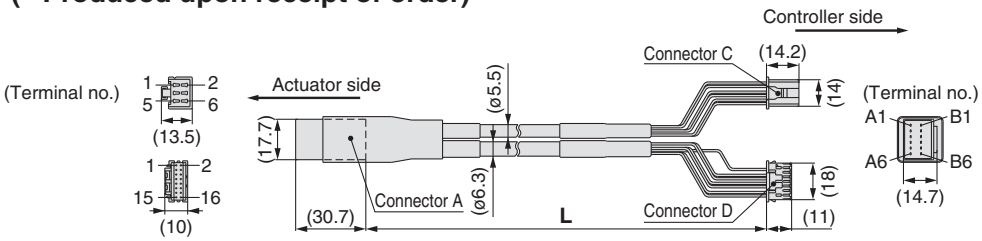
Cable type

—	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)



Circuit	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

Options

[I/O cable]

LEC-C L5-1

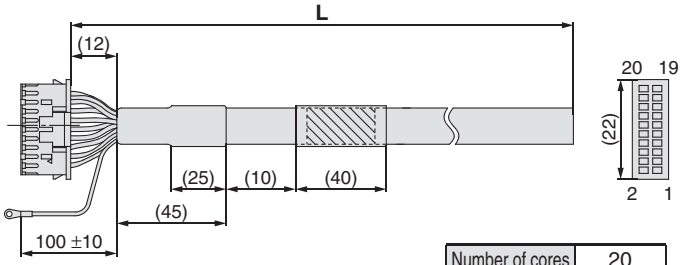
I/O cable type

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

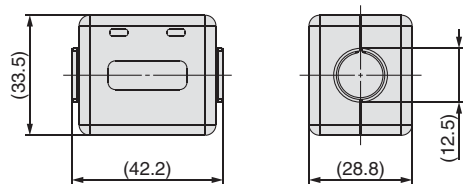
Pin no.	Insulation colour	Dot mark	Dot colour
12	Light brown	■■	Red
13	Yellow	■■	Black
14	Yellow	■■	Red
15	Light green	■■	Black
16	Light green	■■	Red
17	Grey	■■	Black
18	Grey	■■	Red
19	White	■■	Black
20	White	■■	Red

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)

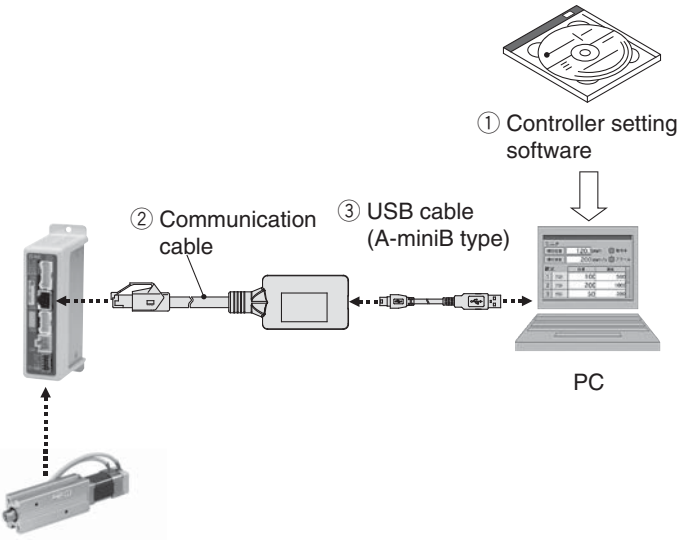


* Refer to the LECPA series Operation Manual for installation.

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

① **Controller setting software (CD-ROM)**
② **Communication cable**
③ **USB cable**
(Cable between the PC and the conversion unit)

Compatible Controllers/Driver

Step motor controller (Servo/24 VDC)	**Series LECP6**
Servo motor controller (24 VDC)	**Series LECA6**
Step motor driver (Pulse input type)	**Series LECPA**

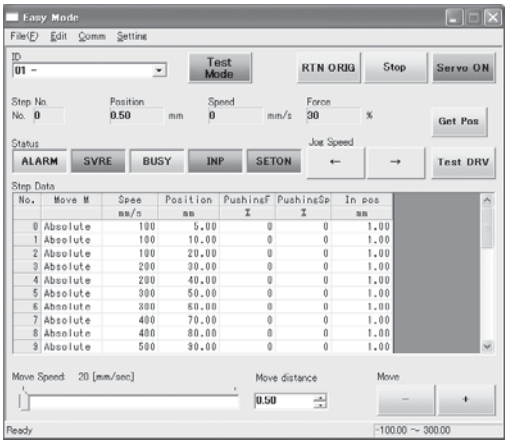
Hardware Requirements

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

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

Screen Example

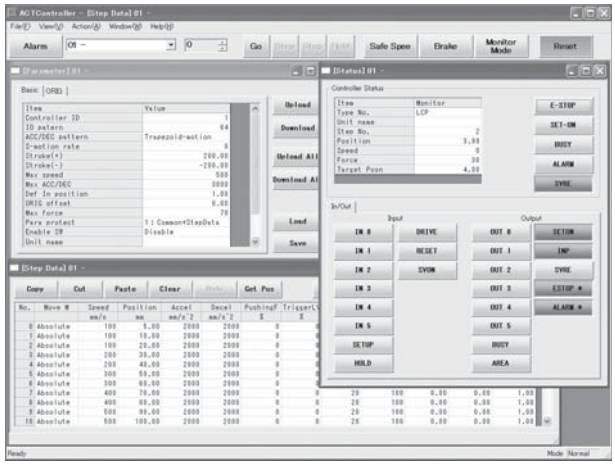
Easy mode screen example



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.

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 the LECP6 series 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
Reconnection of axis (Ver. 1.∗∗)
Japanese/English (Ver. 2.∗∗)
Easy/Normal
Set item

Note 1) Not compatible with the LECPA.

Normal Mode

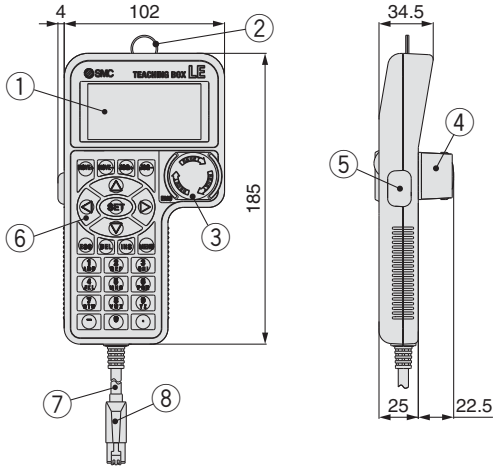
Function	Details
Step data	• Step data setting
Parameter	• Parameters setting
Test	• Jog operation/Constant rate movement • Return to origin • Test drive Note 1) (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output) Note 2)
Monitor	• Drive monitor • 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 not compatible with the LECPA.
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 controller

⚠ 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, wichever 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.

⚠ Safety Instructions Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

SMC Corporation (Europe)

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