

Step Motor Driver

LECPA Series



How to Order

⚠ Caution

[CE-compliant products]

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

② For the LECPA series (step motor driver), EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 568 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 - LEFS16B-100

Driver type

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

I/O cable length [m]

Nil	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

Nil	Screw mounting
D (Note)	DIN rail mounting

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

Actuator part number

Part number except cable specifications and actuator options
Example: Enter "LEFS16B-100" for the LEFS16B-100B-R1AN1D.

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

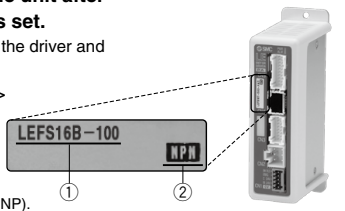
* When controller equipped type is selected when ordering the LE series, you do not need to order this driver.
* When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) separately.

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

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

<Check the following before use.>

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



Precautions on blank controller (LECPA□□-BC)

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

- Please download the dedicated software (LEC-BCW) via our website.
- Order the communication cable for controller setting (LEC-W2A-C) separately to use this software.

SMC website
<https://www.smcworld.com>

* Refer to the operation manual for using the products. Please download it via our website, <http://www.smcworld.com>

Specifications

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

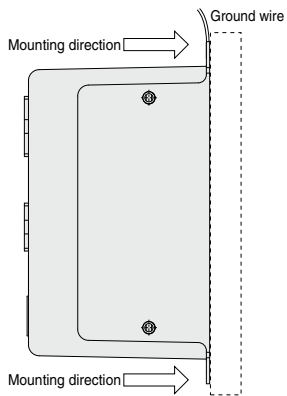
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply. When conformity to UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

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

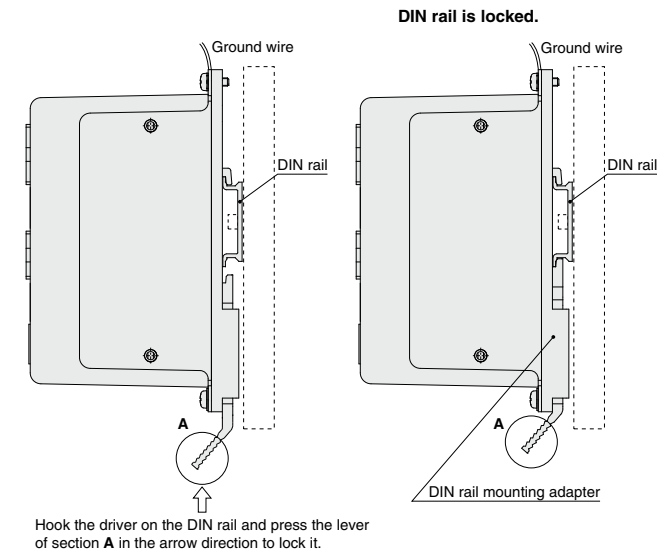
Note 3) Applicable to non-magnetizing lock.

How to Mount

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



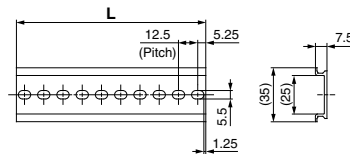
b) DIN rail mounting (LECPA□□D-□) (Installation with the DIN rail)



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 592 for the mounting dimensions.



L Dimension [mm]

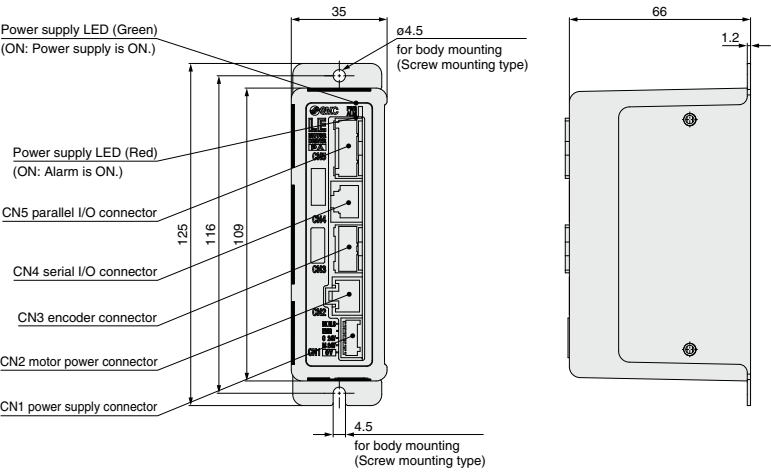
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5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

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

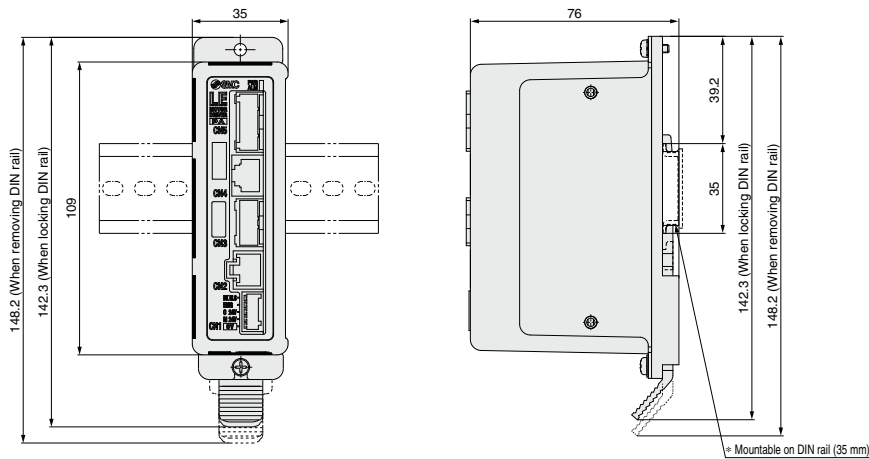
This should be used when the DIN rail mounting adapter is mounted onto the screw mounting type driver afterwards.

Dimensions

a) Screw mounting (LECPA□□-□)



b) DIN rail mounting (LECPA□□D-□)



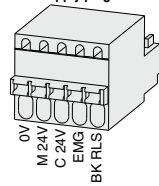
Wiring Example 1

Power Supply Connector: CN1 * Power supply plug is an accessory.
<Applicable cable size> AWG20 (0.5 mm²), cover diameter 2.0 mm or less

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

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

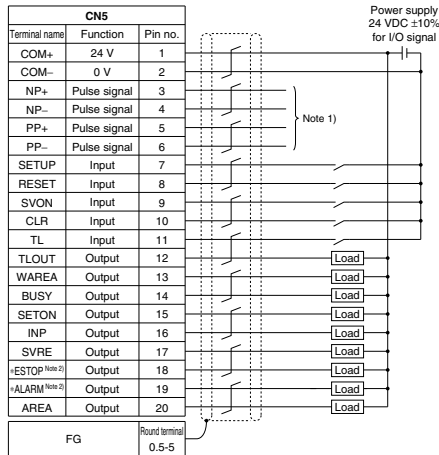
Power supply plug for LECPA: LEC-D-1-1 * Accessory



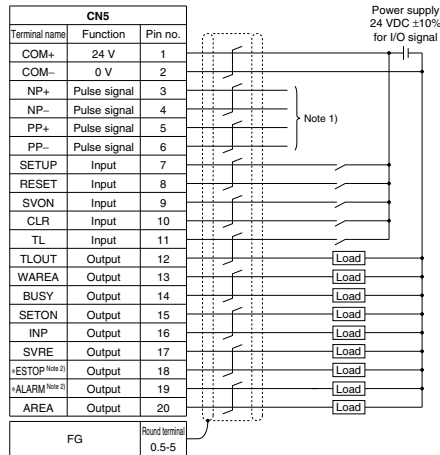
Wiring Example 2

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)



LECPAP□□□□ (PNP)



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

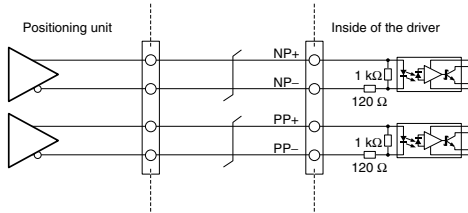
Output Signal

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

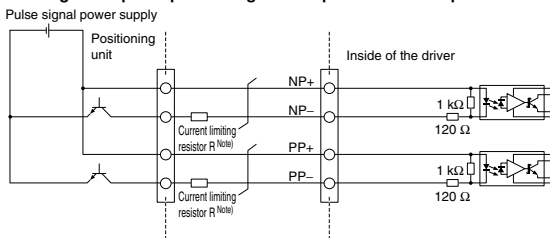
Note 3) Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

• Pulse signal output of positioning unit is differential output



• Pulse signal output of positioning unit is open collector output

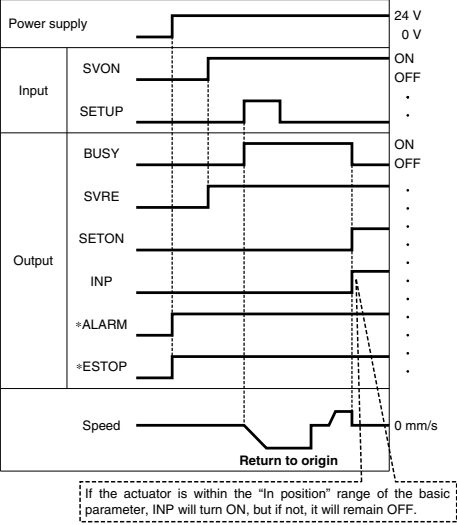


Note) Connect the current limiting resistor R in series to correspond to the pulse signal voltage.

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

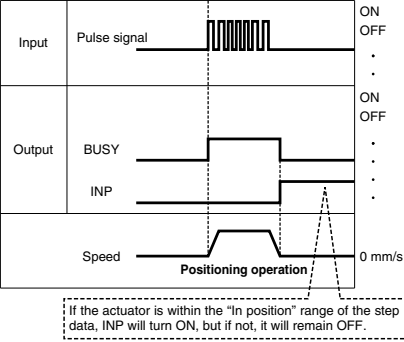
Signal Timing

Return to Origin

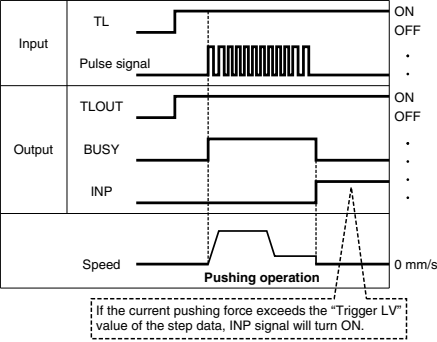


* *ALARM" and "ESTOP" are expressed as negative-logic circuit.

Positioning Operation

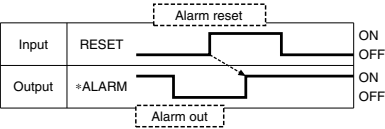


Pushing Operation



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

Alarm Reset



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

Options: Actuator Cable

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

LE-CP-1

Cable length (L) [m]

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

* Produced upon receipt of order (Robotic cable only)

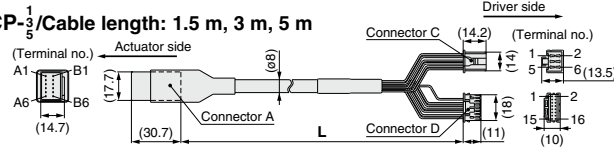
Cable type

Nil	Robotic cable (Flexible cable)
S	Standard cable

Weight

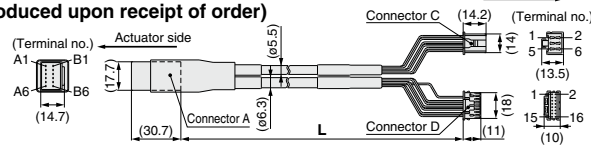
Product no.	Weight [g]	Note
LE-CP-1-S	190	Standard cable
LE-CP-3-S	280	
LE-CP-5-S	460	Robotic cable
LE-CP-1	140	
LE-CP-3	260	
LE-CP-5	420	
LE-CP-8	790	
LE-CP-A	980	
LE-CP-B	1460	
LE-CP-C	1940	

LE-CP-1/3/Cable length: 1.5 m, 3 m, 5 m



LE-CP-8/15/Cable length: 8 m, 10 m, 15 m, 20 m

(* Produced upon receipt of order)



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

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

LE-CP-1-B

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)

With lock and sensor

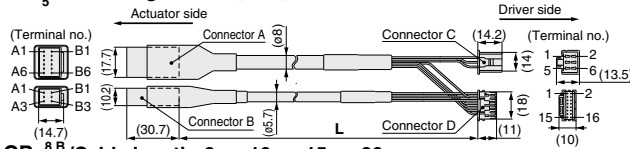
Cable type

Nil	Robotic cable (Flexible cable)
S	Standard cable

Weight

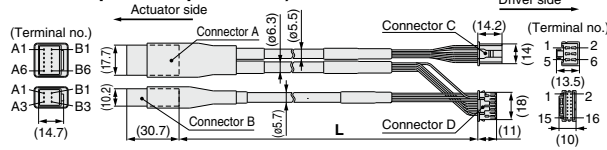
Product no.	Weight [g]	Note
LE-CP-1-B-S	240	Standard cable
LE-CP-3-B-S	380	
LE-CP-5-B-S	630	Robotic cable
LE-CP-1-B	190	
LE-CP-3-B	360	
LE-CP-5-B	590	
LE-CP-8-B	1060	
LE-CP-A-B	1320	
LE-CP-B-B	1920	
LE-CP-C-B	2620	

LE-CP-1/3/Cable length: 1.5 m, 3 m, 5 m



LE-CP-8/15/Cable length: 8 m, 10 m, 15 m, 20 m

(* Produced upon receipt of order)



Signal	Connector A terminal no.	Cable color	Connector C terminal no.
A	B-1	Brown	2
A	A-1	Red	1
B	B-2	Orange	6
B	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/-	A-3	Blue	4
Shield			
Vcc	B-4	Brown	12
GND	A-4	Black	13
A	B-5	Red	7
A	A-5	Black	6
B	B-6	Orange	9
B	A-6	Black	8
			3
Signal			
Lock (+)	B-1	Red	4
Lock (-)	A-1	Black	5
Sensor (+)	B-3	Brown	1
Sensor (-)	A-3	Blue	2



Options

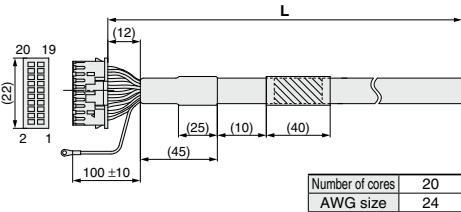
[I/O cable]

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.



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

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

Round terminal 0.5-5	Green
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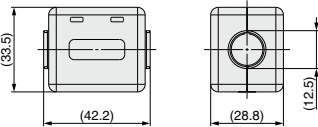
Weight

Product no.	Weight [g]
LEC-CL5-1	190
LEC-CL5-3	370
LEC-CL5-5	610

[Noise filter set]
Step Motor Driver (Pulse Input Type)

LEC-NFA

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



* Refer to the LECPA series Operation Manual for installation.

[Current limiting resistor]

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

LEC-PA-R-□

Current limiting resistor

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

- * Select a current limiting resistor that corresponds to the pulse signal power supply voltage.
- * For the LEC-PA-R-□, two pieces are shipped as a set.
- * For pulse signal wiring details, refer to page 593.