⊗SMC® Information

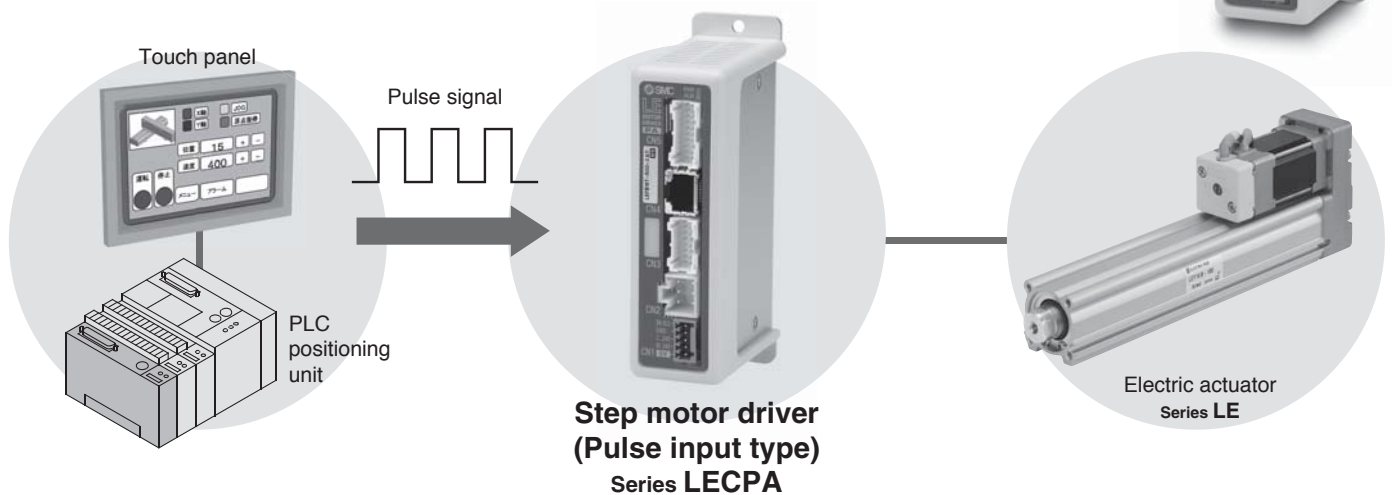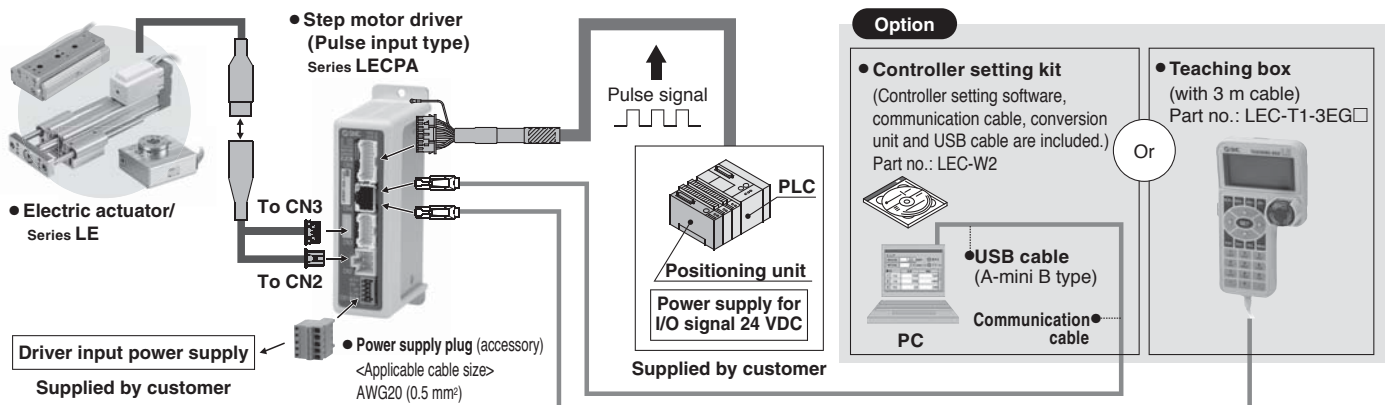# Step Motor Driver (Pulse Input Type) For Step Motor
Series *LECPA*   RoHS

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

Touch panel

Pulse signal

PLC positioning unit

Step motor driver (Pulse input type)
Series **LECPA**

Electric actuator
Series **LE**

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

System Construction

● **Step motor driver (Pulse input type)**
Series **LECPA**

Pulse signal

● **Electric actuator/** Series **LE**

To CN3

To CN2

Driver input power supply
Supplied by customer

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

PLC

Positioning unit

Power supply for I/O signal 24 VDC

Supplied by customer

Option

● **Controller setting kit**
(Controller setting software, communication cable, conversion unit and USB cable are included.)
Part no.: LEC-W2

● **Teaching box**
(with 3 m cable)
Part no.: LEC-T1-3EG□

Or

●**USB cable**
(A-mini B type)

PC

Communication●
cable

Note) Do not use the power supply of "inrush current prevention type" for the driver power supply.
    The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.

Compatible actuators		Catalogue no.
Electric Actuator/ Rod Type Series **LEY**		ES100-83
Electric Actuator/ Guide Rod Type Series **LEYG**		
Electric Actuator/ Slider Type Series **LEF**		ES100-87

Compatible actuators		Catalogue no.
Electric Slide Table Series **LES**		ES100-78
Electric Rotary Table Series **LER**		ES100-94
Electric Actuator/ Miniature Type Series **LEPY/LEPS**		ES100-92

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1

Series *LECPA*

Driver with actuator

LEFS16B-100 – **S1** **AP** **1** ☐

● **Actuator type**
Refer to "How to Order" in the actuator catalogue.
For compatible actuators, refer to the table below. Example: LEFS16B-100B-S1AP1

Compatible actuators	Catalogue no.
Electric Actuator/Rod Type Series LEY*	ES100-83
Electric Actuator/Guide Rod Type Series LEYG*	ES100-83
Electric Actuator/Slider Type Series LEF	ES100-87
Electric Slide Table Series LES*	ES100-78
Electric Rotary Table Series LER*	ES100-94
Electric Actuator/Miniature Type Series LEPY/LEPS*	ES100-92

∗ Pushing operation is not possible when using this driver.

Actuator cable ●

● **Driver mounting**

—	Screw mounting
D	DIN rail mounting

● **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 type**

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

Driver

LECP **AP** **1** ☐ – **LEFS16B-100**

● **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	DIN rail mounting

● **Actuator type**

(Except cable specifications and actuator options)
Example: Enter "LEFS16B-100" for the
LEFS16B-100B-R1AN1D.

Specifications

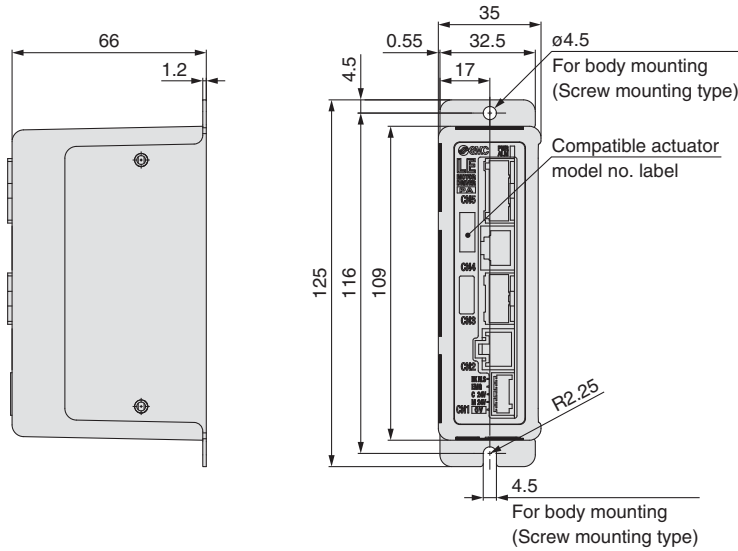| Item	LECPA
Compatible motor	Step motor (Servo/24 VDC)
Power supply Note 1)	Power voltage: 24 VDC ±10% Maximum current consumption: 3 A (Peak 5 A) Note 2) [Including motor drive power, control power, stop, lock release]
Parallel input	5 inputs (Except photo-coupler isolation, pulse input terminal, COM 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 (radiation fin) and FG 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.
Note 2) The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.
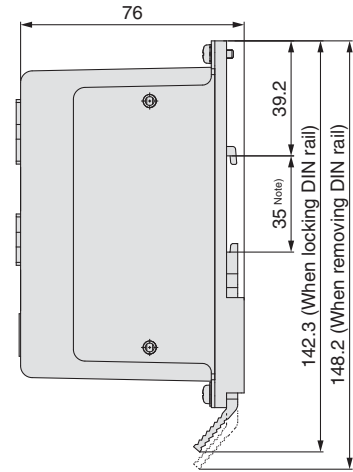Note 3) Applicable to non-magnetizing lock.

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Dimensions

a) Screw mounting (LECPA□□-□)

```
66
1.2
```

```
0.55  32.5  ø4.5
35
4.5
17
```

For body mounting
(Screw mounting type)

Compatible actuator
model no. label

```
125
116
109
```

R2.25

4.5

For body mounting
(Screw mounting type)

b) DIN rail mounting (LECPA□□D-□)

```
76
```

```
39.2
35 Note)
142.3 (When locking DIN rail)
148.2 (When removing DIN rail)
```

Note) DIN rail is not included. The DIN rail should be
prepared by the customer or ordered separately
[Part no.: AXT100-DR-□ (refer to the catalogue)].

Option

[Actuator cable]

LE‑CP‑1‑B‑S

Cable length

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

* Produced upon receipt of
order (Robotic cable only)

Cable type

—	Robotic cable
S	Standard cable

Motor option

—	Without lock
B	With lock

[I/O cable]

LEC‑C L5‑1

I/O cable type

L5	For Series 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 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
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		

```
L
(12)
20  19
(22)
(25) (10) (40)
(45)
2   1
100±10
```
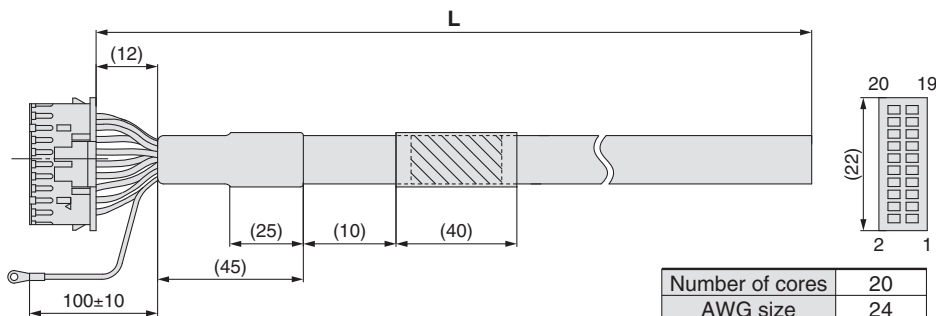
Number of cores	20
AWG size	24

Series *LECPA*

Wiring Diagram

LECPAN□□-□(NPN)

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

LECPAP□□-□(PNP)

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

Note 1) For pulse signal wiring method, refer to "Detailed Pulse Signal Wiring".
Note 2) Signal of negative-logic circuit ON (N.C.)
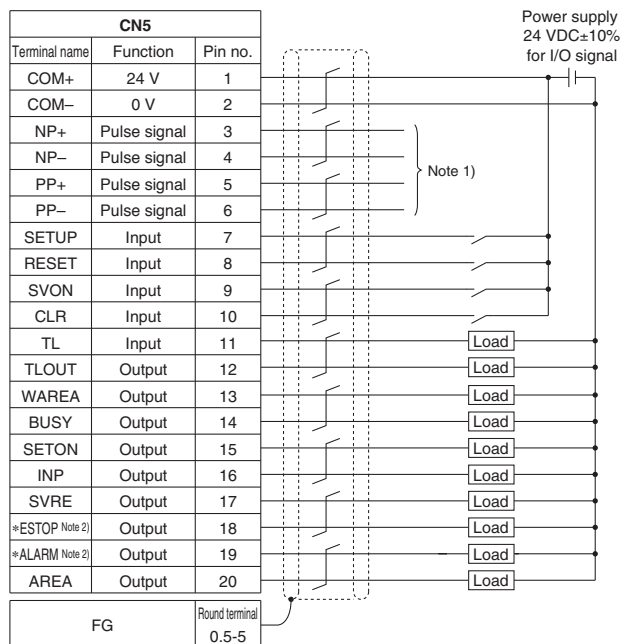
Input Signal

| 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 the original position
RESET	Alarm reset
SVON	Servo ON instruction
CLR	Deviation reset
TL	Pushing operation (thrust limiting function)

Output Signal

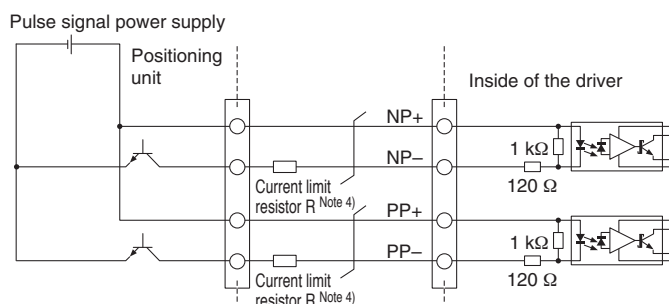| Name	Details
BUSY	Outputs when the actuator is operating
SETON	Outputs when returning to the original position
INP	Outputs when target position is reached
SVRE	Outputs when servo is on
+ESTOP Note 3)	Not output when EMG stop is instructed
+ALARM Note 3)	Not output when alarm is generated
AREA	Outputs within the area output setting range
WAREA	Outputs within W-AREA output setting range
TLOUT	Pushing operation (thrust limiting function)

Detailed Pulse Signal Wiring

- **Pulse signal output of positioning unit is differential output**

Positioning unit ... Inside of the driver

NP+
NP−
1 kΩ
120 Ω
PP+
PP−
1 kΩ
120 Ω
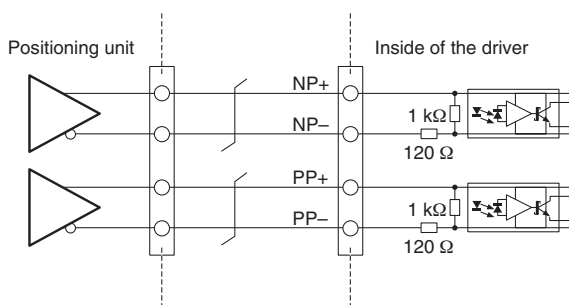
Note 4) Connect the current limit resistor R in series to correspond to the pulse signal voltage.

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

- **Pulse signal output of positioning unit is open collector output**

Pulse signal power supply

Positioning unit ... Inside of the driver

NP+
NP−
1 kΩ
120 Ω
Current limit resistor R Note 4)
PP+
PP−
1 kΩ
120 Ω
Current limit resistor R Note 4)