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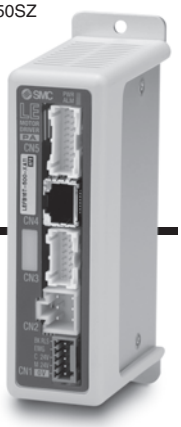
**11-E573**
D-SZ Printing QR 7850SZ

# SMC Information

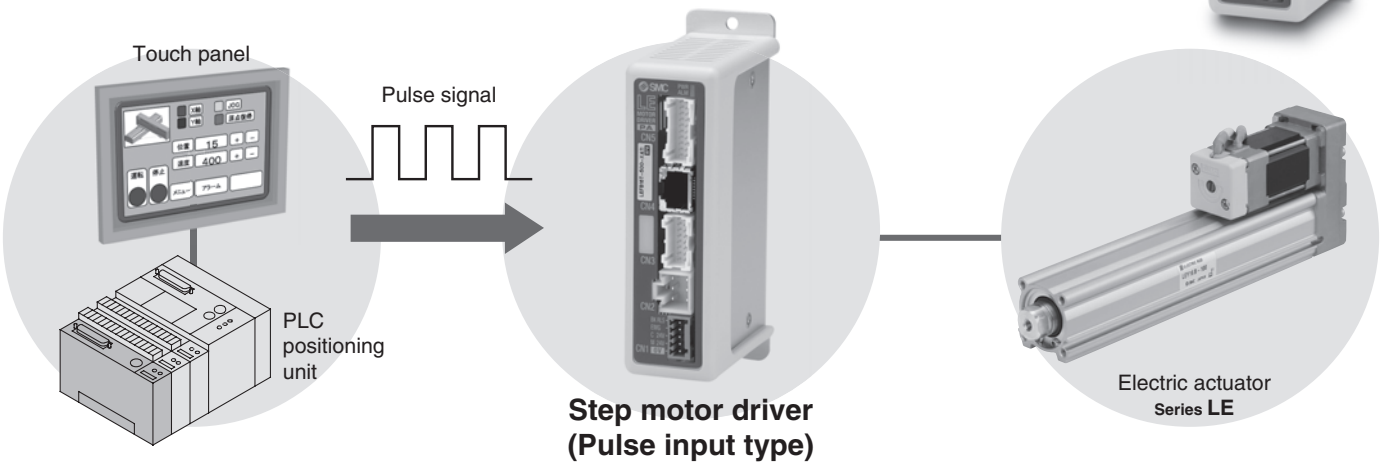
# Step Motor Driver (Pulse Input Type) For Step Motor

## *Series LECPA*

RoHS



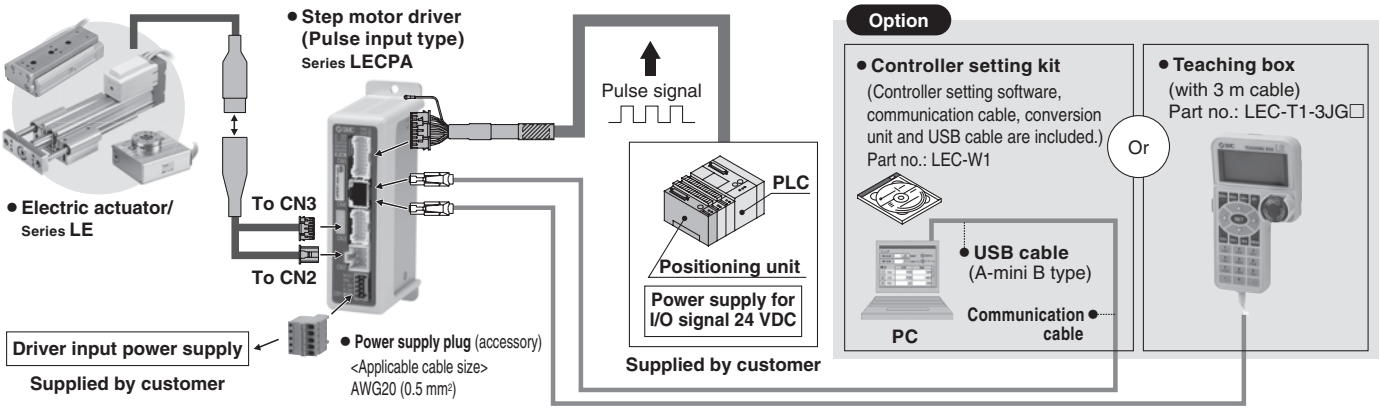
## ● A driver that uses pulse signals to allow positioning at any position. The actuator can be controlled from the customers' positioning unit.




## ● Return-to-origin command signal

Enables automatic return-to-origin action.

### System Construction




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

## How to Order

RoHS

### Driver with actuator

**LEFS16B-100 – S1 AN 1 ☐**

**Actuator type**
Refer to "How to Order" in the actuator catalog.
For compatible actuators, refer to the table below. Example: LEFS16B-100B-S1AN1

| Compatible actuators | Catalog 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 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** | DIN rail mounting |

### Driver

**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** | DIN rail mounting |

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

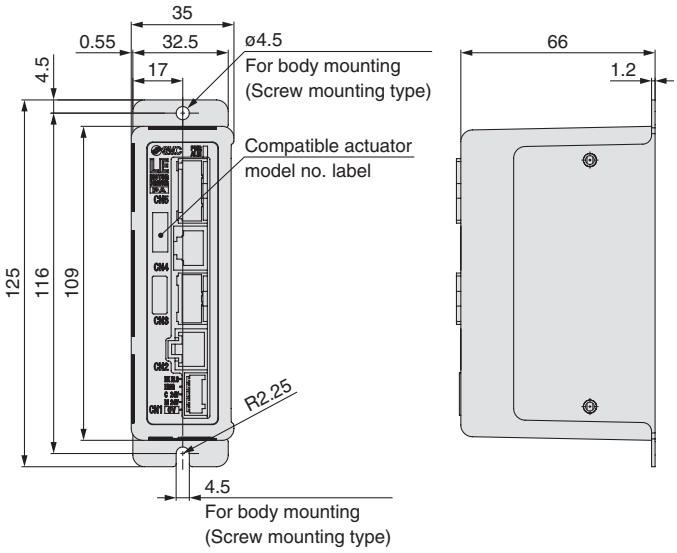
## Specifications

| Item | LECPA |
|---|---|
| **Compatible motor** | Step motor (Servo/24 VDC) |
| **Power supply** Note 1) | Power voltage: 24 VDC ±10%<br>Maximum current consumption: 3 A (Peak 5 A) Note 2)<br>[Including motor drive power, control power, stop, lock release] |
| **Parallel input** | 4 inputs (Except photo-coupler isolation, pulse input terminal, COM terminal) |
| **Parallel output** | 8 outputs (Photo-coupler isolation) |
| **Pulse signal input** | Maximum frequency: 60 kpps (Open collector), 200 kpps (Differential)<br>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)<br>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<br>50 (500 VDC) |
| **Weight [g]** | 120 (Screw mounting)<br>140 (DIN rail mounting) |

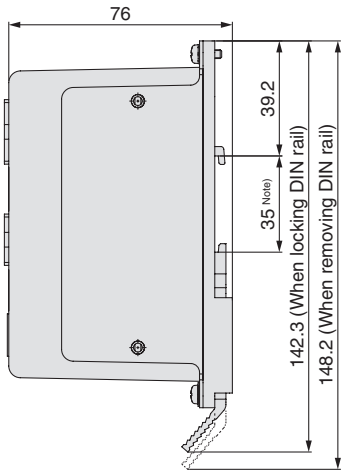
Note 1) Do not use the power supply of "inrush current prevention type" for the driver power supply.
Note 2) The power consumption changes depending on the actuator model. Refer to the specifications of actuator for more details.
Note 3) Applicable to non-magnetizing lock.

## Dimensions

### a) Screw mounting (LECPA□□-□)




### b) DIN rail mounting (LECPA□□D-□)




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 catalog)].

## 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)

**Motor option**

| | |
|---|---|
| **Nil** | Without lock |
| **B** | With lock |

**Cable type**

| | |
|---|---|
| **Nil** | Robotic cable |
| **S** | Standard cable |

### [I/O cable]

**LEC-C L5-[1]**

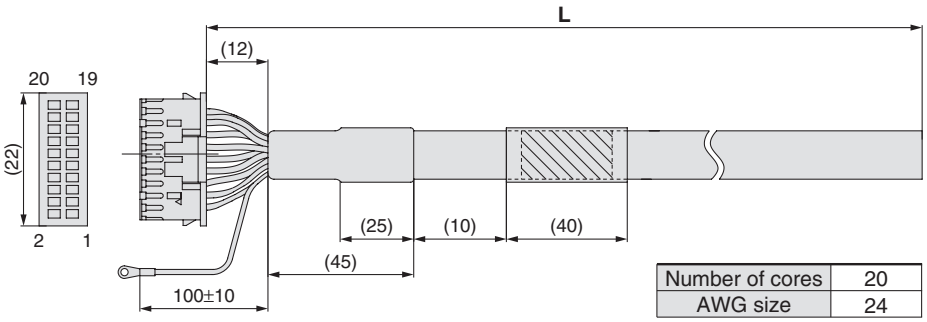
**I/O cable type**

| | |
|---|---|
| **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.




| Number of cores | 20 |
|---|---|
| AWG size | 24 |

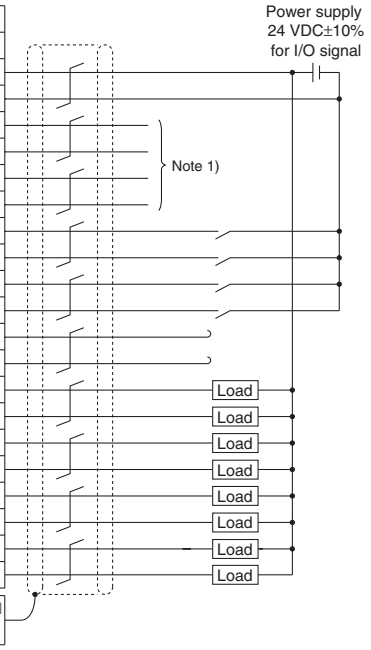
| Pin no. | Insulation color | Dot mark | Dot color |
|---|---|---|---|
| 1 | Light brown | ■ | Black |
| 2 | Light brown | ■ | Red |
| 3 | Yellow | ■ | Black |
| 4 | Yellow | ■ | Red |
| 5 | Light green | ■ | Black |
| 6 | Light green | ■ | Red |
| 7 | Gray | ■ | Black |
| 8 | Gray | ■ | Red |
| 9 |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

## Wiring Diagram

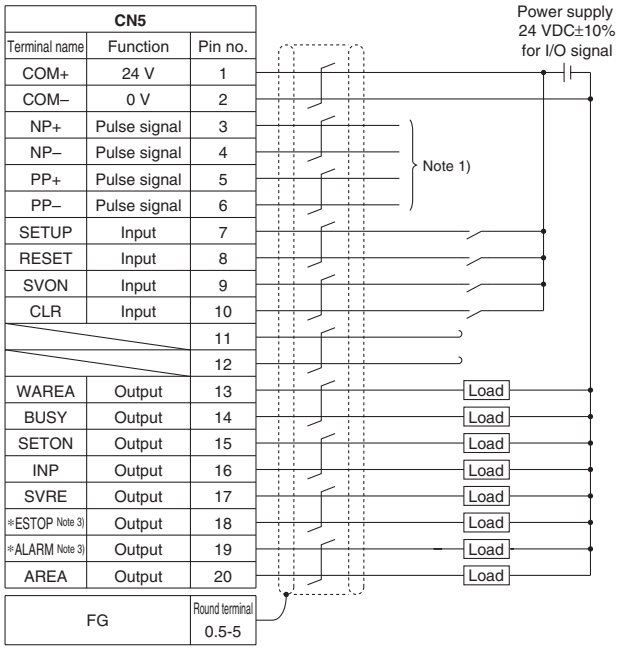
### LECPAN□□-□(NPN)

| 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 |
| | | 11 |
| | | 12 |
| WAREA | Output | 13 |
| BUSY | Output | 14 |
| SETON | Output | 15 |
| INP | Output | 16 |
| SVRE | Output | 17 |
| *ESTOP Note 3) | Output | 18 |
| *ALARM Note 3) | 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 |
| | | 11 |
| | | 12 |
| WAREA | Output | 13 |
| BUSY | Output | 14 |
| SETON | Output | 15 |
| INP | Output | 16 |
| SVRE | Output | 17 |
| *ESTOP Note 3) | Output | 18 |
| *ALARM Note 3) | Output | 19 |
| AREA | Output | 20 |
| FG | Round terminal 0.5-5 | |




Note 1) For pulse signal wiring method, refer to “Detailed Pulse Signal Wiring”.
Note 2) Do not form connection to pins indicated with ▨.
Note 3) Signal of negative-logic circuit ON (N.C.)

### Input Signal

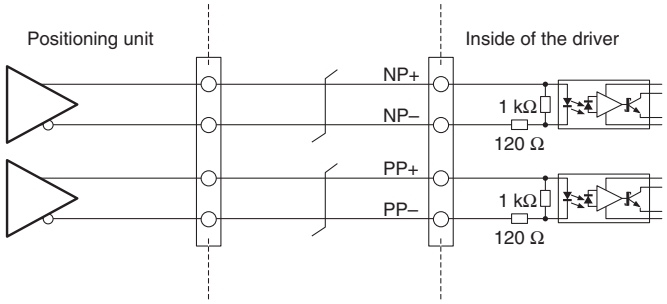
| Name | Details |
|---|---|
| COM+ | Connects the power supply 24 V for input/output signal |
| COM– | Connects the power supply 0 V for input/output signal |
| SETUP | Instruction to return to the original position |
| RESET | Alarm reset |
| SVON | Servo ON instruction |
| CLR | Deviation reset |

### Output Signal

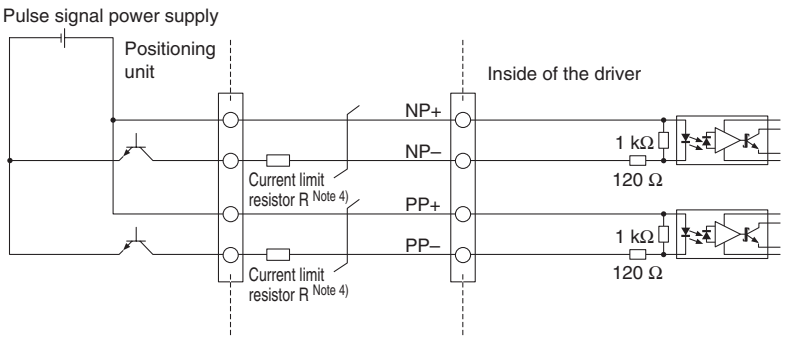
| Name | Details |
|---|---|
| BUSY | Outputs when the actuator is operating |
| SETON | Outputs when returning to the original position |
| INP | Outputs when target position is reached |
| SVRE | Outputs when servo is on |
| *ESTOP Note 3) | Not output when EMG stop is instructed |
| *ALARM Note 3)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

## Detailed Pulse Signal Wiring

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




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




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) |