Electric Actuator

Rod Type **Guide Rod Type**

NEW
- Intermediate strokes have been added to the LEY63.
- Normally-closed solid state auto switches have been added.
- The JXC series step motor controller has been added.

RoHS

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

Rod Type *LEY Series*

Size: 16, 25, 32, 40 ▸p. 35

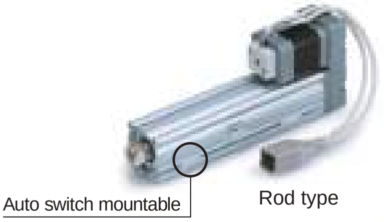
Dust-tight/Water-jet-proof (IP65 Equivalent): -X5 ▸p. 151

＊ Size: 25, 32
＊ The X5 is not CE/UL compliant.

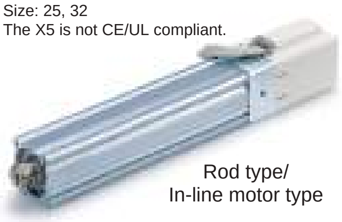
Long stroke:

Max. 500 mm (LEY32, 40)

Mounting variations
- Direct mounting: 3 directions, Bracket mounting: 3 types
- Either positioning or pushing control can be selected.
  It is possible to hold the actuator with the rod pushing a workpiece, etc.



Rod type



Rod type/
In-line motor type

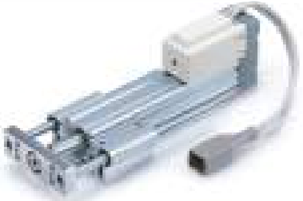
Guide Rod Type *LEYG Series*

Size: 16, 25, 32, 40 ▸p. 105

Lateral end load: 5 times more[＊1]

＊1 Compared with the rod type, size 25, and 100 mm stroke

Compatible with sliding bearings and ball bushing bearings
Compatible with moment loads and stoppers (sliding bearings)
- Either positioning or pushing control can be selected.
  It is possible to hold the actuator with the rod pushing a workpiece, etc.



Guide rod type

Guide rod type/
In-line motor type

AC Servo Motor **Type**

＊ Refer to "How to Order."

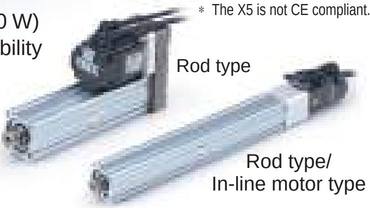
Rod Type *LEY Series*

Size: 25, 32, 63

Dust-tight/Water-jet-proof (IP65 Equivalent): -X5 ▸p. 41, 48

＊ The X5 is not CE compliant.

- High-output motor (100/200/400 W)
- Improved high-speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s^2)
- Pulse input/CC-Link/SSCNETⅢ types
- With internal absolute encoder (For the LECSB/C/S)



Guide Rod Type *LEYG Series*

Size: 25, 32 ▸p. 111, 116

Guide rod type
Guide rod type/
In-line motor type

Step Motor (Servo/24 VDC) **Controller/Driver**
Servo Motor (24 VDC) ▸p. 190

▶ **Step data input type**
LECA6 Series (64 positioning points)

▶ **EtherCAT®/EtherNet/IP™/PROFINET/DeviceNet™/IO-Link direct input type**
JXCE1/91/P1/D1/L1 Series

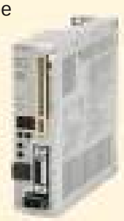
▶ **Programless type**
LECP1 Series (14 positioning points)

▶ **Pulse input type**
LECPA Series

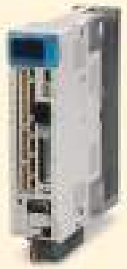
AC Servo Motor **Driver** ▸p. 246

LISTED
＊ LECSS-T only

▶ **For incremental encoder**
- Pulse input type/Positioning type
  LECSA Series



▶ **For absolute encoder**
- Pulse input type
  LECSB Series
- CC-Link direct input type
  LECSC Series
- SSCNETⅢ type
  LECSS Series
- SSCNETⅢ/H type
  LECSS-T Series
- MECHATROLINK type
  LECY□ Series



LEY Series

SMC

CAT.EUS100-83E-UK

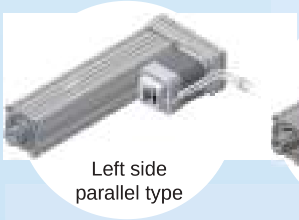
Step Motor (Servo/24 VDC) **Servo Motor** (24 VDC) **Type**

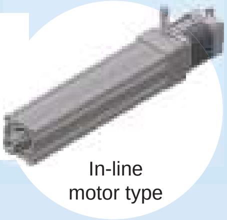
Rod Type ***LEY* Series/Size: 16, 25, 32, 40**

Control of intermediate positioning and pushing is possible.
High precision with ball screws
(Positioning repeatability: ±0.02 mm)

Selectable motor mounting position

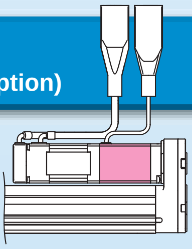
Right side parallel type

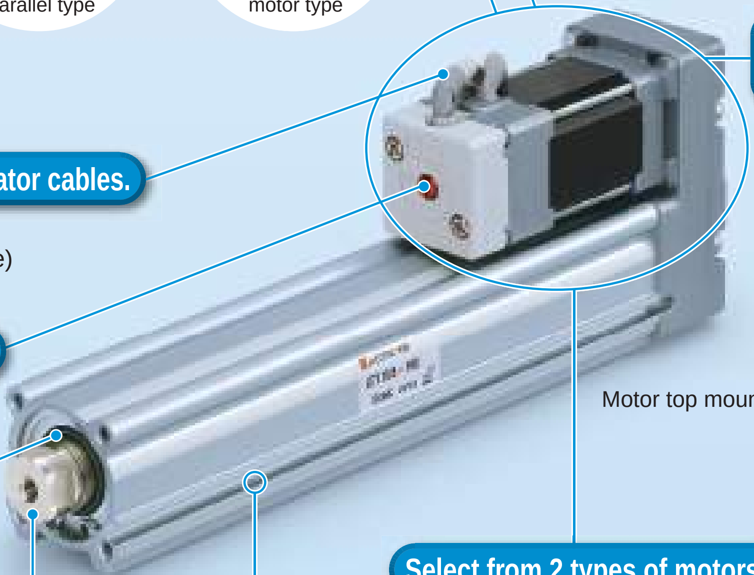

Left side parallel type


In-line motor type

Non-magnetizing lock mechanism (Option)

Prevents workpieces from dropping (Holding)





Motor cover available (Option)

* The cover has an opening.

Motor top mounting type

Select from 2 types of actuator cables.

- Standard cable
- Robotic cable (Flexible cable)

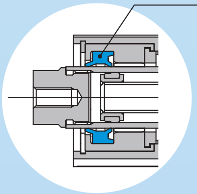
Manual override screw

For manual piston rod operation
Adjustment operation is possible when the power is OFF.

Scraper

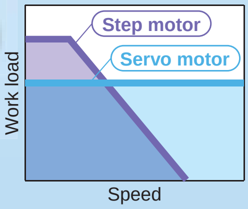
Prevents foreign matter from entering the device

Equipped with scrapers as standard



Select from 2 types of motors.

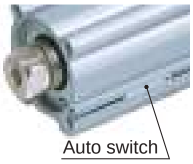
- **Step motor (Servo/24 VDC)**
  Ideal for the low-speed transfer of heavy loads and pushing operations
- **Servo motor (24 VDC)**
  Stable at high speeds
  Silent operation



Mounting groove for auto switches

For checking the limit and the intermediate signal
Applicable to the D-M9☐, D-M9☐E, and D-M9☐W (2-color indicator)

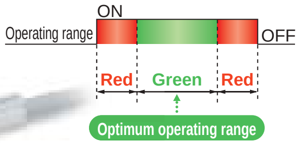
* The auto switches should be ordered separately. Refer to pages 101 to 103 for details.



2-color indicator solid state auto switch

Appropriate setting of the mounting position can be performed without mistakes.

A green light lights up at the optimum operating range.

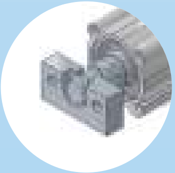


p. 97, 98

Rod end brackets

Single knuckle joint

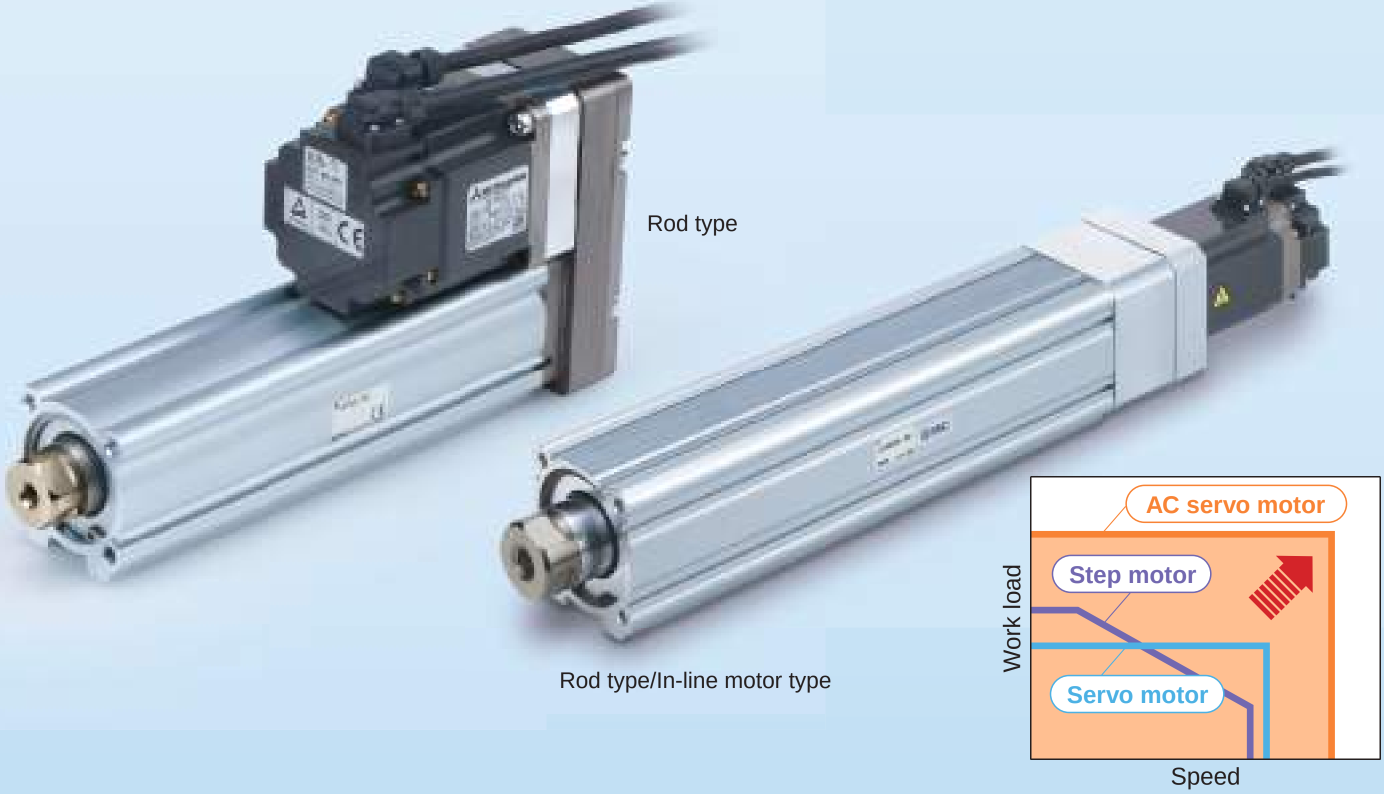
Double knuckle joint


Simple joint

AC Servo Motor Type

Rod Type *LEY Series*/Size: 25, 32, 63

- High-output motor (100/200/400 W)
- Improved high-speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s^2)
- Pulse input/CC-Link direct input/SSCNET Ⅲ types
- With internal absolute encoder
  ⁎ An incremental encoder can also be selected.
- Positioning repeatability: ±0.01 mm (High-precision type)


Rod type

Rod type/In-line motor type

Large bore size 63

Selectable motor mounting position (4 directions)

Top mounting

Right side parallel

Left side parallel

In-line

- Max. work load [kg]

	Top/Parallel	In-line
Horizontal	**200**	80
Vertical	**115**	72

- Max. force [N]

Top/Parallel	3343
In-line	1910

- High-output motor: **400 w**
- Max. speed: **1000 mm/s**
  ⁎ 500 mm stroke
- Dust-tight/Water-jet-proof specification (IP65 equivalent)
  ⁎ Option

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

Guide Rod Type *LEYG* Series/Size: 16, 25, 32, 40

Compact, integrated guide rods
Lateral load resistance and high non-rotating accuracy

In-line motor type

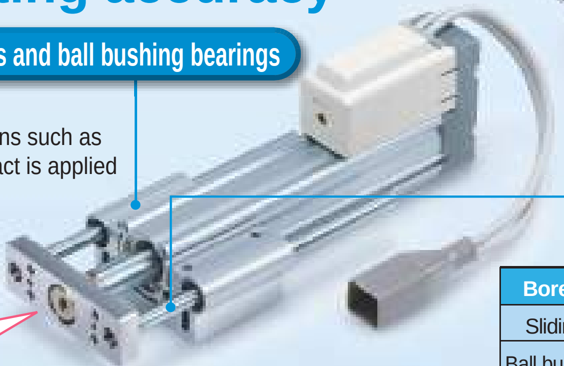
Compatible with sliding bearings and ball bushing bearings

- **Sliding bearings**
  Suitable for lateral load applications such as when using a stopper where impact is applied
- **Ball bushing bearings**
  Smooth operation suitable for pushers and lifters

Improved rigidity

Lateral end load: 5 times more[*1]

[*1] Compared with the rod type, size 25, and 100 mm stroke



Motor top mounting type

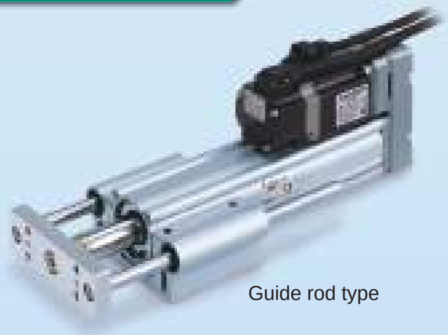
Non-rotating accuracy improved by using two guide rods

Bore size [mm]	16	25	32	40
Sliding bearings	±0.06°		±0.05°	
Ball bushing bearings	±0.05°	±0.04°		

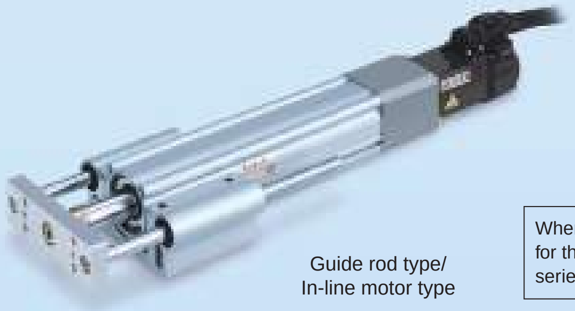
When the cylinder is retracted (initial value), the non-rotating accuracy without a load and without deflection of the guide rods will be below the values shown in the table above.

AC Servo Motor **Type**

Guide Rod Type *LEYG* Series/Size: 25, 32



Guide rod type

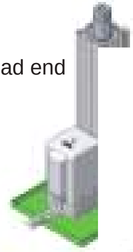


Guide rod type/
In-line motor type

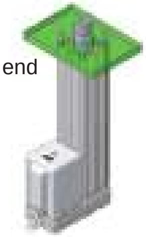
When using auto switches for the guide rod type LEYG series, refer to page 187.

Mounting Variations

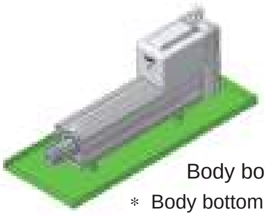
Direct Mounting



Head end



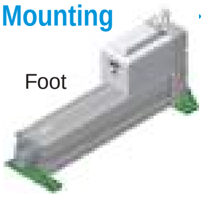
Rod end



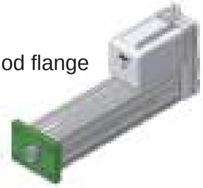
Body bottom

* Body bottom tapped

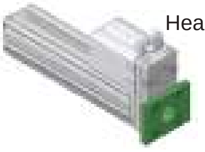
Bracket Mounting



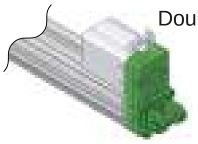
Foot



Rod flange

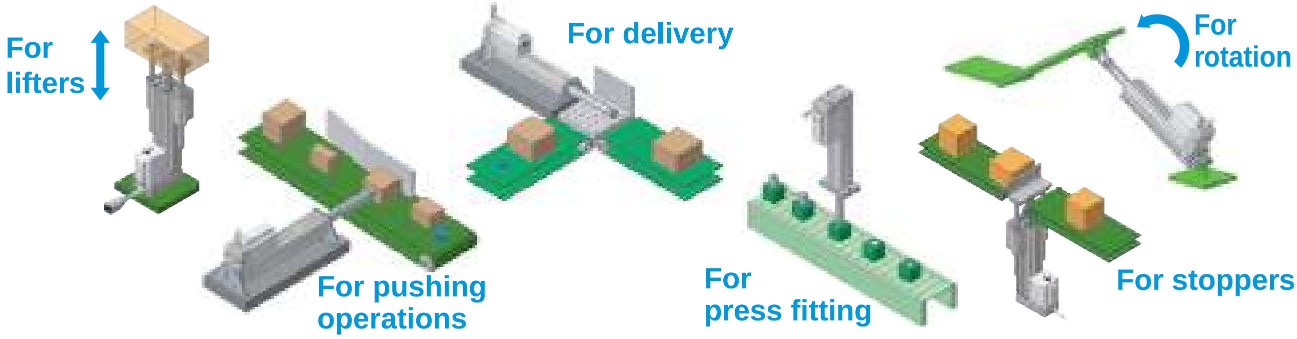


Head flange



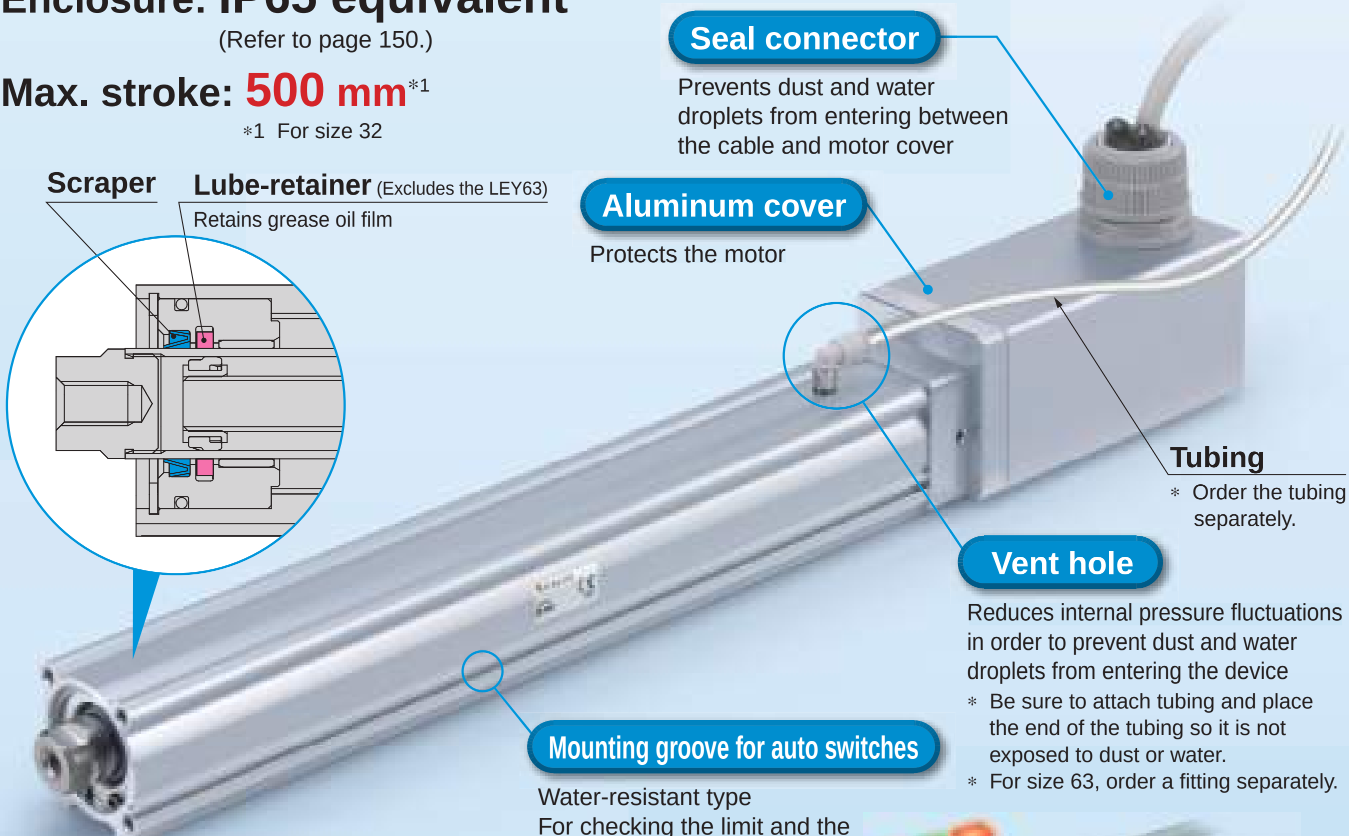
Double clevis

Application Examples



Dust-tight/Water-jet-proof (IP65 Equivalent)

- **Enclosure: IP65 equivalent**
  (Refer to page 150.)
- **Max. stroke: 500 mm**[*1]
  *1 For size 32



Scraper

Lube-retainer (Excludes the LEY63)
Retains grease oil film

Seal connector
Prevents dust and water droplets from entering between the cable and motor cover

Aluminum cover
Protects the motor

Tubing
* Order the tubing separately.

Vent hole
Reduces internal pressure fluctuations in order to prevent dust and water droplets from entering the device
* Be sure to attach tubing and place the end of the tubing so it is not exposed to dust or water.
* For size 63, order a fitting separately.

Mounting groove for auto switches
Water-resistant type
For checking the limit and the intermediate signal
* Order the water-resistant 2-color indicator solid state auto switch separately. (Refer to page 176.)

LEY-X5 (Refer to page 151.)

Size
25, 32

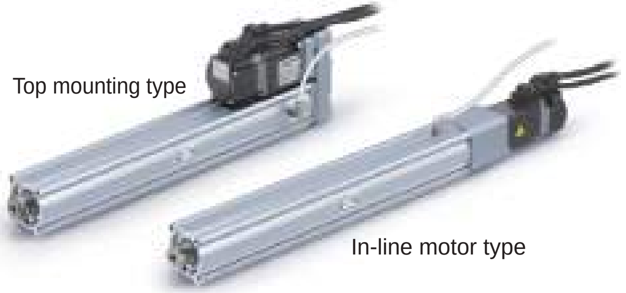
Step Motor (Servo/24 VDC) Type
Servo Motor (24 VDC) Type

Top mounting type

In-line motor type

LEY-X5 (Refer to page 41.)

AC Servo Motor (100/200 W) Type



Top mounting type

In-line motor type

LEY63□□□-□P

(Refer to page 41./Option)

Size
63

AC Servo Motor (400 W) Type

Top mounting

Right side parallel

Left side parallel

In-line

Step Data Input Type *LECA6* Series

▶p. 191

Servo motor
(24 VDC)
LECA6

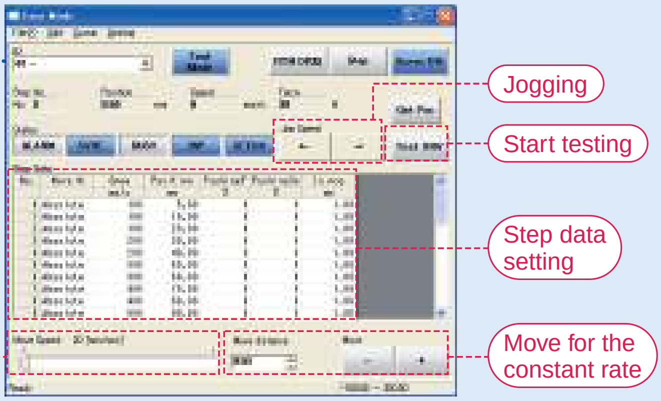
Simple setting allows for immediate use!

◎"Easy Mode" for simple setting

For immediate use, select "Easy Mode."

<When a PC is used>
Controller setting software

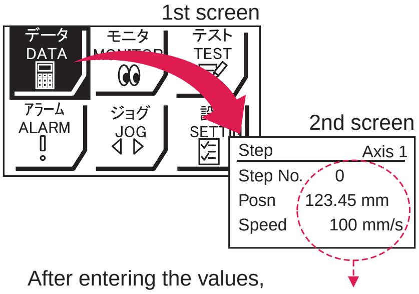
- Step data setting, test drive, jogging, and move for the constant rate can be set and operated on one screen.


Jogging
Start testing
Step data setting
Move for the constant rate
Setting of jog and speed of the constant rate

<When a TB (teaching box) is used>

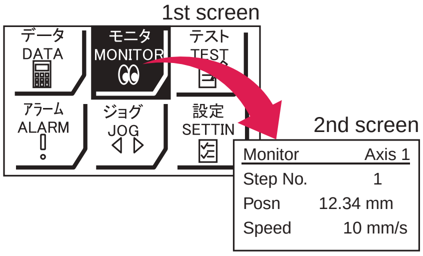
- The simple screen without scrolling promotes ease of setting and operation.
- Choose an icon from the first screen to select a function.
- Set the step data and check the monitor on the second screen.

Example of setting the step data


1st screen
データ DATA
モニタ MONITOR
テスト TEST
アラーム ALARM
ジョグ JOG
設定 SETTIN
2nd screen
Step Axis 1
Step No. 0
Posn 123.45 mm
Speed 100 mm/s

After entering the values, they can be registered by pressing "SET."

Example of checking the operation status


1st screen
データ DATA
モニタ MONITOR
テスト TEST
アラーム ALARM
ジョグ JOG
設定 SETTIN
2nd screen
Monitor Axis 1
Step No. 1
Posn 12.34 mm
Speed 10 mm/s

The operation status can be checked.

Teaching box screen

- **Data can be set by inputting only the position and speed.**
(Other conditions are preset.)

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

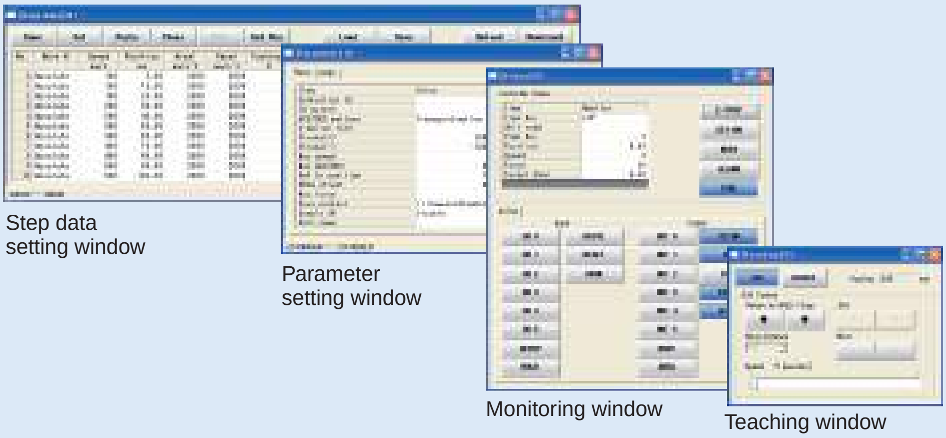
◎"Normal Mode" for detailed setting

Select "Normal Mode" when detailed setting is required.

- 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 drive, and testing of forced output can be performed.

<When a PC is used> Controller setting software

- Step data setting, parameter setting, monitoring, teaching, etc., are displayed in different windows.

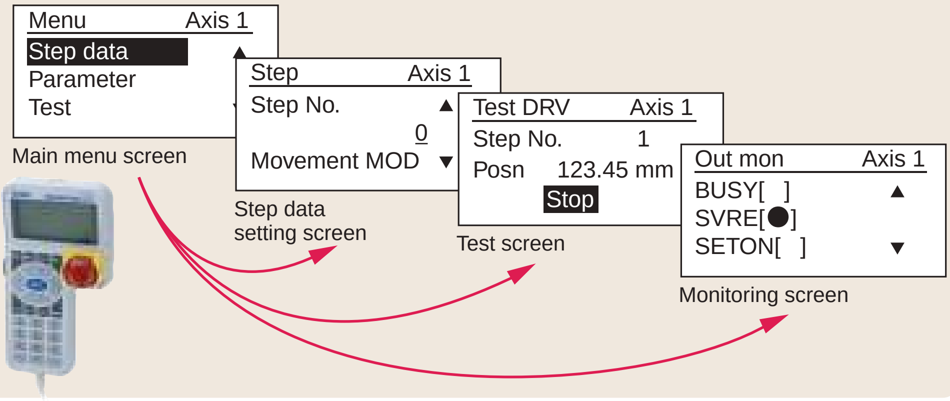

Step data
setting window
Parameter
setting window
Monitoring window
Teaching window

<When a TB (teaching box) is used>

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

Teaching box screen

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



Menu Axis 1
Step data
Parameter
Test

Main menu screen

Step Axis 1
Step No. ▲
0
Movement MOD ▼

Step data setting screen

Test DRV Axis 1
Step No. 1
Posn 123.45 mm
Stop

Test screen

Out mon Axis 1
BUSY[ ] ▲
SVRE[●]
SETON[ ] ▼

Monitoring screen

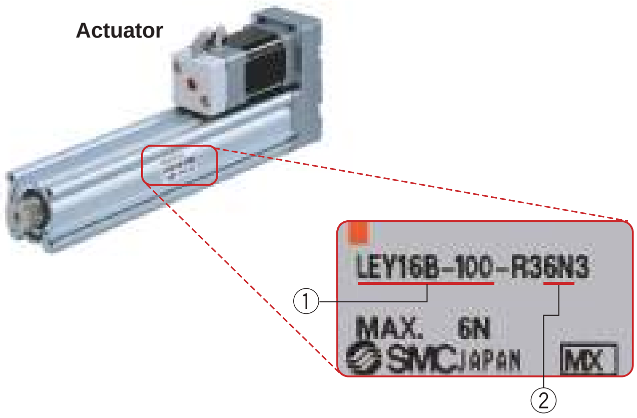
The actuator and controller are provided as a set. (They can be ordered separately as well.)

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

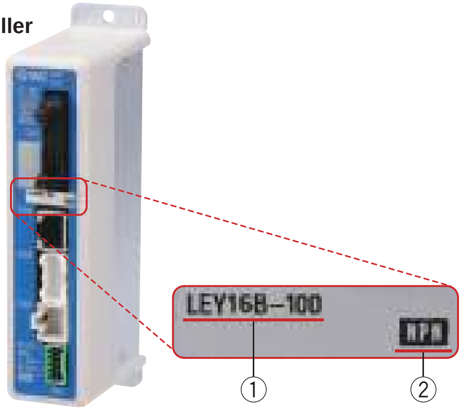
<Check the following before use.>

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

Actuator


LEY16B-100-R36N3
MAX. 6N
SMC JAPAN
MX
①
②

Controller


LEY16B-100
NPN
①
②

Fieldbus Network

Fieldbus-compatible Gateway (GW) Unit

LEC-G Series ▸p. 203

◎**Conversion unit for Fieldbus network and LEC serial communication**

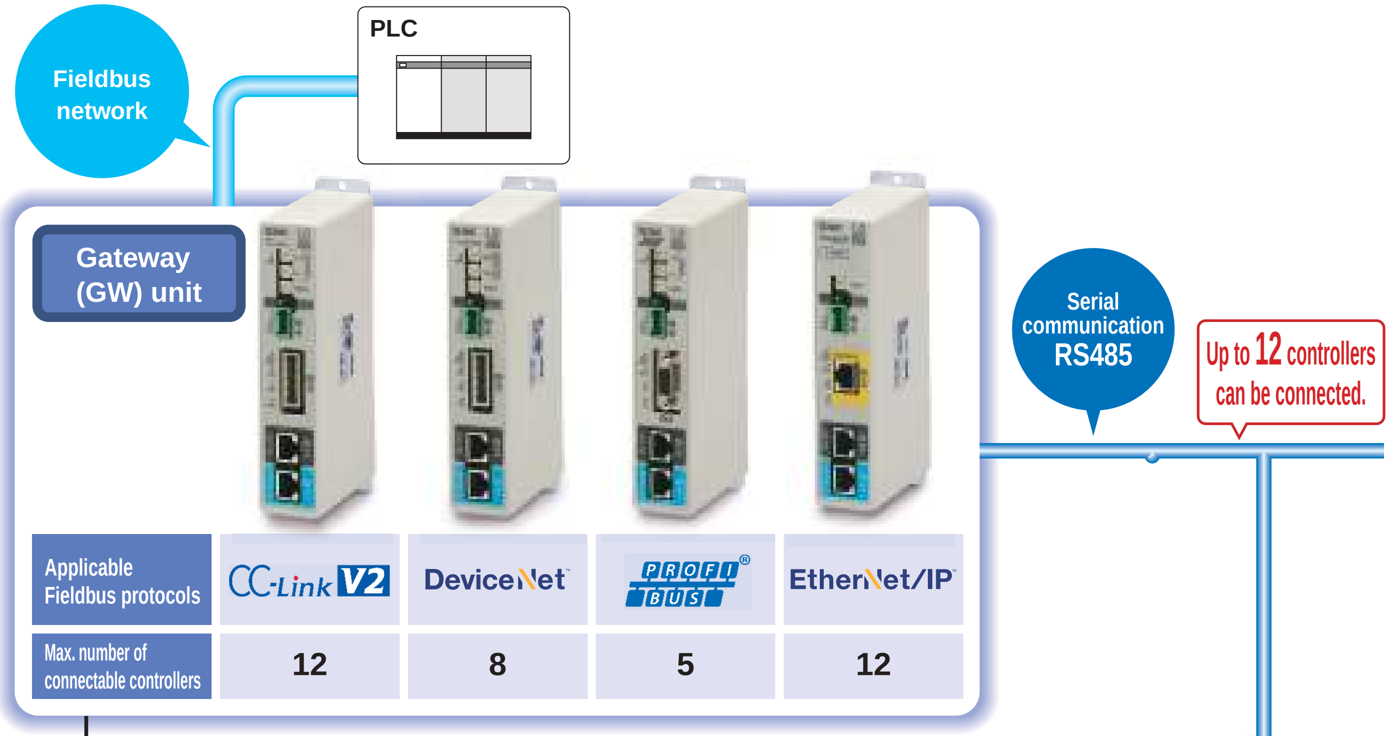
Applicable Fieldbus protocols: CC-Link V2 DeviceNet™ PROFIBUS® EtherNet/IP™

◎**Two methods of operation**

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

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

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


Fieldbus network
PLC
Gateway (GW) unit
Serial communication RS485
Up to 12 controllers can be connected.

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

Power supply

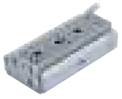
24 VDC for gateway unit

Compatible controllers
LEC Series

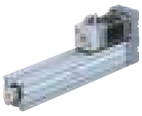
Servo motor controller (24 VDC)
LECA6 Series

Compatible electric actuators

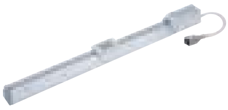
Electric gripper
LEH Series



Electric slide table
LES Series

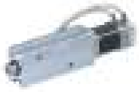


Electric actuator/
Rod type
LEY Series



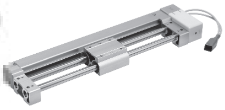
Electric actuator/
Slider type
LEF Series

Electric actuator/
Rotary table
LER Series



Electric actuator/
Miniature type
LEP Series

Electric actuator/
Low profile slider type
LEM Series



Electric actuator/
Guide rod slider
LEL Series

Programless Type *LECP1 Series* ▸p. 207

Step motor
(Servo/24 VDC)
LECP1

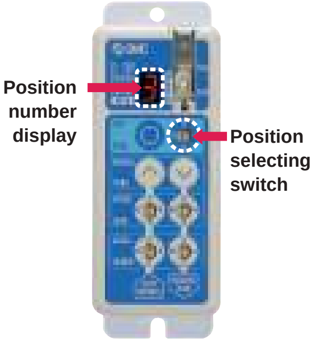
No programming required!

Allows for the setting up of electric actuator operation without using a PC or teaching box

① Setting the position number → ② Setting the stop position → ③ Registration

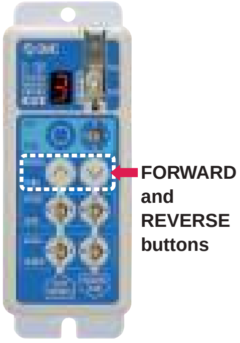
① **Setting the position number**

Set a registered number for the stop position. Max. 14 points


Position number display
Position selecting switch

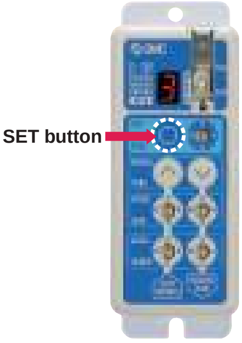
② **Setting the stop position**

Move the actuator to the desired stop position using the FORWARD and REVERSE buttons.

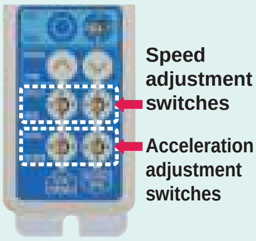

FORWARD and REVERSE buttons

③ **Registration**

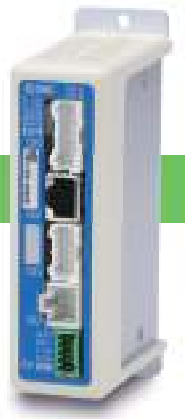
Register the stop position using the SET button.



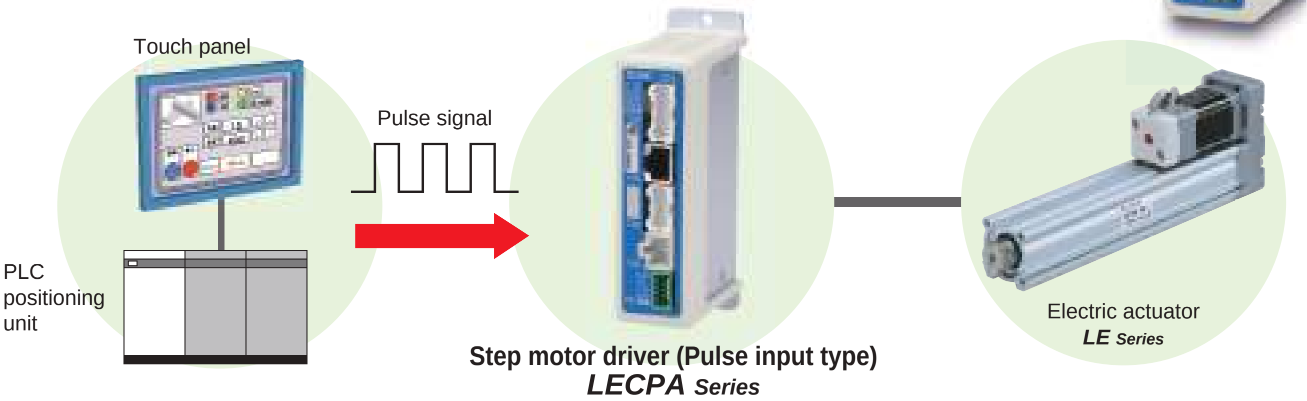
Speed/Acceleration 16-level adjustment


Speed adjustment switches
Acceleration adjustment switches

Pulse Input Type *LECPA Series* ▸p. 214



- **This driver 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
Electric actuator
LE Series
Step motor driver (Pulse input type)
LECPA Series

- **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 is possible by switching signals.

Function

Item	Step data input type LECA6	Programless type LECP1	Pulse input type LECPA
Step data and parameter setting	• Input from controller setting software (PC) • Input from teaching box	• Selected using controller operation buttons	• Input from controller setting software (PC) • Input from teaching box
Step data “position” setting	• Numerical value input from controller setting software (PC) or teaching box • Input 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	Programless type LECP1*1	Pulse input type LECPA
			TB	PC	TB/PC		
Step data setting (Excerpt)	**Movement MOD**	Selection of “absolute position” and “relative position”	△	●	●	Fixed value (ABS)	No setting required
	Speed	**Transfer speed**	●	●	●	Select from 16 levels	
	Position	**[Position]: Target position** **[Pushing]: Pushing start position**	●	●	●	Direct teaching JOG teaching	
	Acceleration/Deceleration	Acceleration/deceleration during movement	●	●	●	Select from 16 levels	
	Pushing force	Rate of force during pushing operation	●	●	●	Select from 3 levels (weak, medium, and strong)	Set in units of 1 %
	Trigger LV	Target force during pushing operation	△	●	●	No setting required (same value as pushing force)	Set in units of 1 %
	Pushing speed	Speed during pushing operation	△	●	●	No setting required	Set in units of 1 mm/s
	Moving force	Force during positioning operation	△	●	●		Set to (Different values for each actuator) %
	Area output	Conditions for area output signal to turn ON	△	●	●		Set in units of 0.01 mm
	In position	[Position]: Width to the target position [Pushing]: How much it moves during pushing	△	●	●		Set to (Different values for each actuator) or more (Units: 0.01 mm)
Parameter setting (Excerpt)	**Stroke (+)**	**+ side position limit**	×	×	●		Set in units of 0.01 mm
	Stroke (−)	**− side position limit**	×	×	●		Set in units of 0.01 mm
	ORIG direction	Direction of the return to origin can be set.	×	×	●	Compatible	Compatible
	ORIG speed	**Speed during return to origin**	×	×	●	No setting required	Set in units of 1 mm/s
	ORIG ACC	**Acceleration during return to origin**	×	×	●		Set in units of 1 mm/s^2
Test	**JOG**		●	●	●	Hold down the MANUAL button (⌃⌄) for uniform sending (speed is a specified value).	Continuous operation at the set speed can be tested while the switch is being pressed.
	MOVE		×	●	●	Press the MANUAL button (⌃⌄) once for sizing operation (speed and sizing amount are specified values).	Operation at the set distance and speed from the current position can be tested.
	Return to ORIG		●	●	●	Compatible	Compatible
	Test drive	**Operation of the specified step data**	●	●	● (Continuous operation)	Compatible	Not compatible
	Forced output	ON/OFF of the output terminal can be tested.	×	×	●	Not compatible	Compatible
Monitor	**DRV mon**	**Current position, speed, force, and the specified step data can be monitored.**	●	●	●		Compatible
	In/Out mon	**Current ON/OFF status of the input and output terminal can be monitored.**	×	×	●		Compatible
ALM	**Status**	Alarm currently being generated can be confirmed.	●	●	●	Compatible (display alarm group)	Compatible
	ALM Log record	Alarms generated in the past can be confirmed.	×	×	●	Not compatible	Compatible
File	**Save/Load**	**Step data and parameters can be saved, forwarded, and deleted.**	×	×	●		Compatible
Other	**Language**	Can be changed to Japanese or English	●	●	●		Compatible

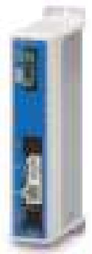
△: Can be set from TB Ver. 2.** (The version information is displayed on the initial screen.)

*1 The LECP1 programless type cannot be used with the teaching box and controller setting kit.

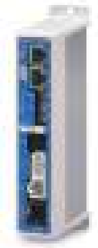
Fieldbus Network

EtherCAT®/EtherNet/IP™/PROFINET/ DeviceNet™/IO-Link Direct Input Type Step Motor Controller/JXC☐ Series ▸p. 224

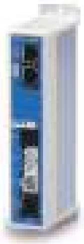
IO-Link



EtherCAT.

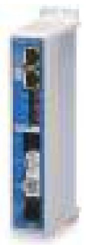


PROFI NET®



DeviceNet™

EtherNet/IP™



◎Two types of operation command

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

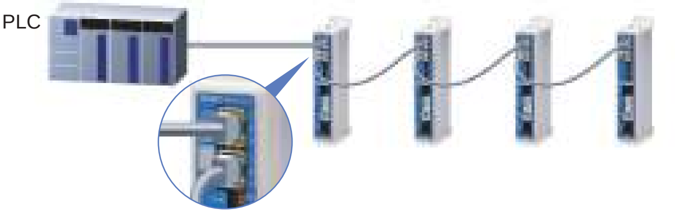
◎Numerical monitoring available

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

◎Transition wiring of communication cables

Two communication ports are provided.

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



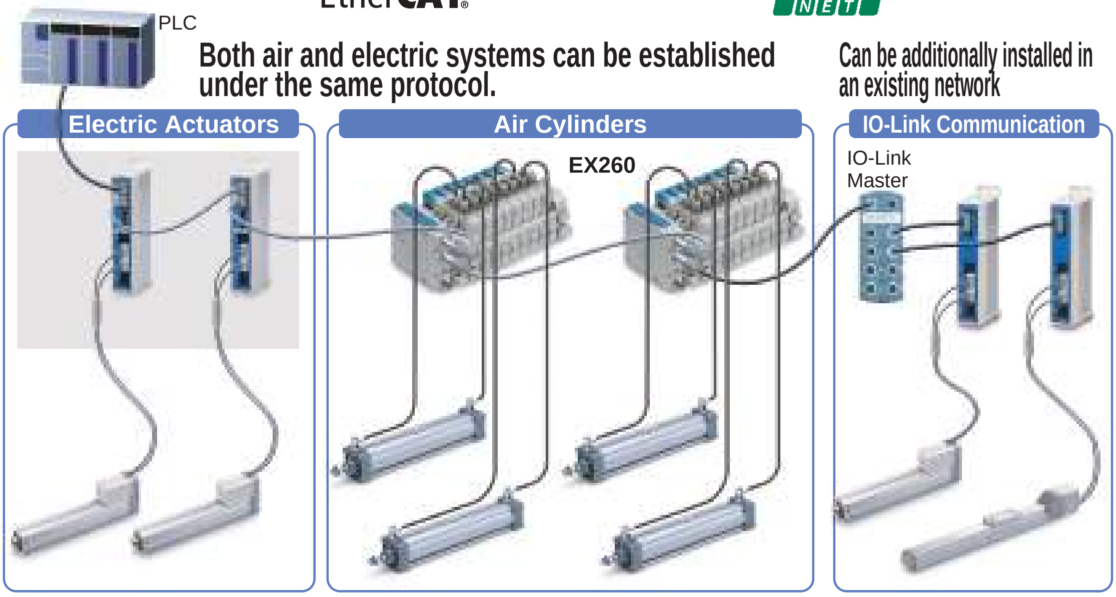
Application

Communication protocols

EtherCAT. EtherNet/IP™ PROFI NET® DeviceNet™ IO-Link

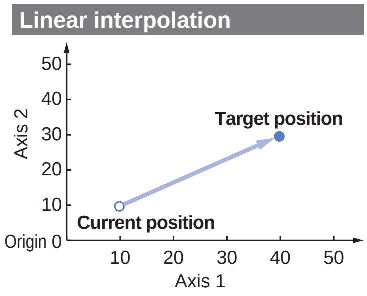
Both air and electric systems can be established under the same protocol.

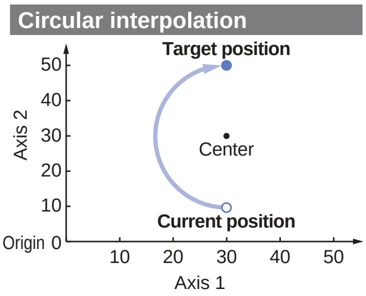
Can be additionally installed in an existing network



Multi-Axis Step Motor Controller

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



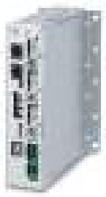


- **Positioning/pushing operation**
- **Step data input**
  (Max. 2048 points)
- **Space saving, reduced wiring**
- **Absolute/relative position coordinate instructions**

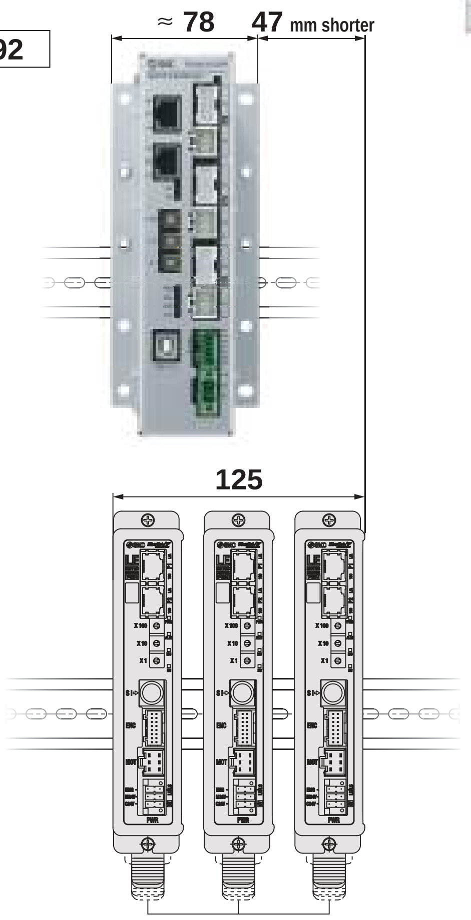
∗1 This controls the speed of the following axis when the speed of the primary axis drops due to the effects of an external force and when a speed difference with the following axis occurs. This control is not for synchronizing the position of the primary axis and following axis.

For 3 Axes *JXC92* Series

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



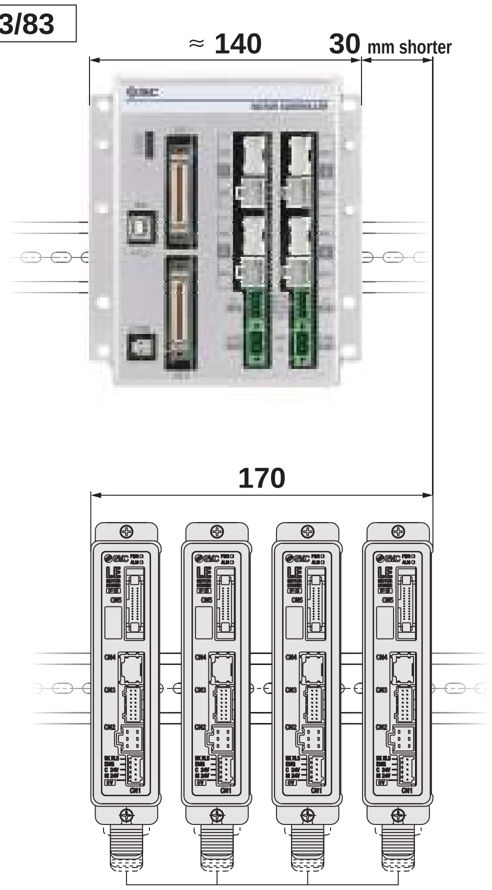
JXC92



For 4 Axes *JXC73/83/93* Series

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

JXC73/83



∗ For LE□, size 25 or larger

Step Data Input: Max. 2048 points

For 3 Axes

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

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

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

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

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

*3 This controls the speed of the following axis when the speed of the primary axis drops due to the effects of an external force and when a speed difference with the following axis occurs. This control is not for synchronizing the position of the primary axis and following axis.

For 4 Axes

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

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

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

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

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

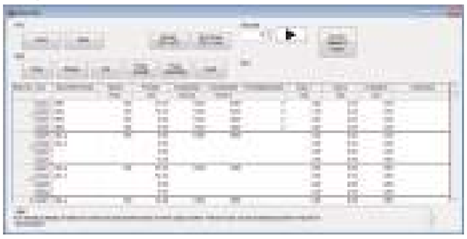
● Controller Setting Software (Connection with a PC)

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

Easy file management

Load	The step data is loaded from the file.
Save	The step data is saved in a file.
Upload	The step data is loaded from the controller.
Download	The step data is written in the controller.

Step data window



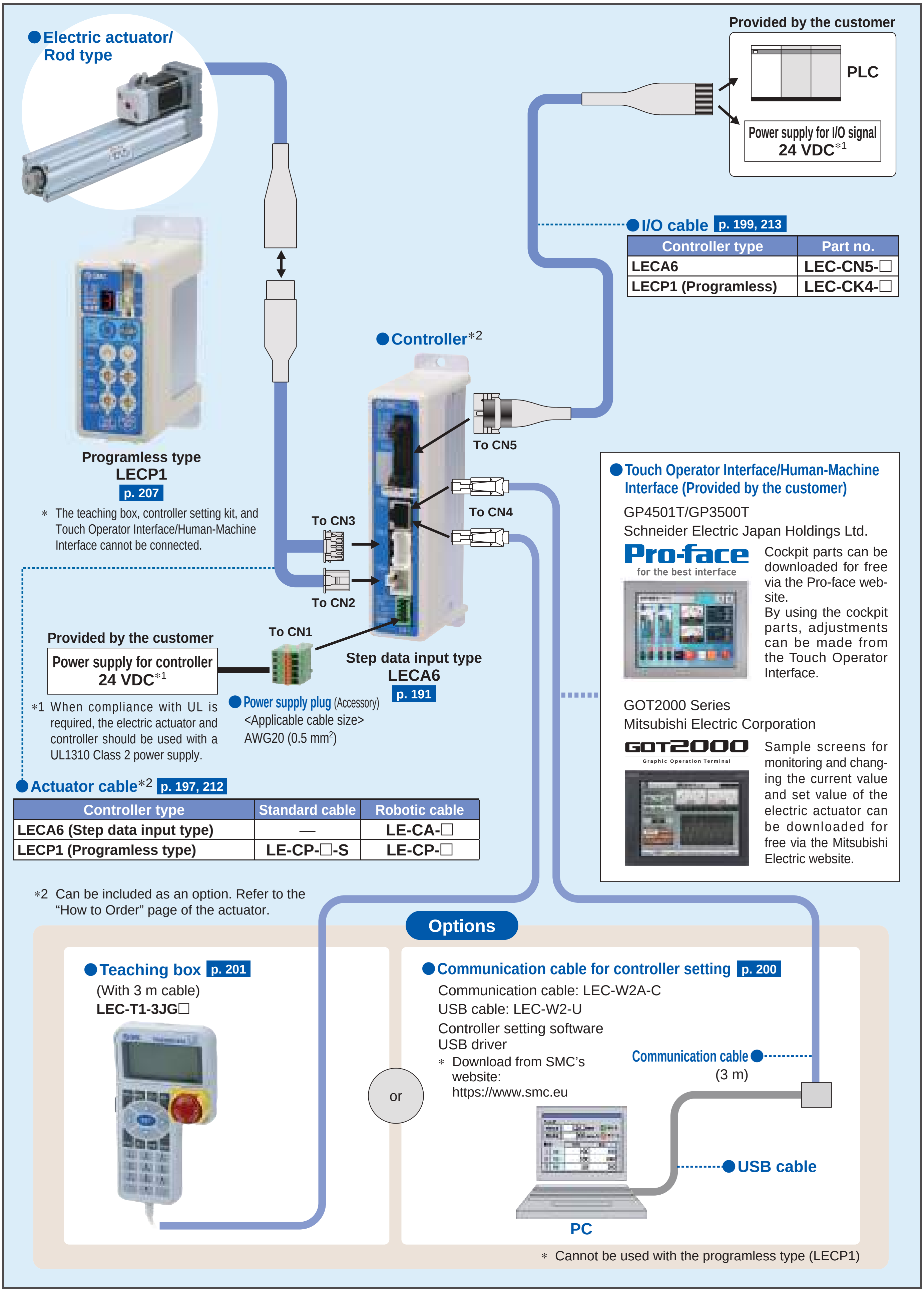
Abundant edit functions

Copy	The selected step data is copied to the clipboard.
Delete	The selected step data is deleted.
Cut	The selected step data is cut.
Paste (Insert)	The step data copied to the clipboard is inserted into the cursor’s position.
Paste (Overwrite)	The step data copied to the clipboard overwrites the data at the cursor position.
Insert	A blank line is inserted in the selected step data line.

Operation confirmation of entered step data

0	Enter the step number to be executed.
▶	Executes the specified step number.
Stop	Displays whether the step number is being executed or stopped.
All axes return to origin	Performs a return to origin of all the valid axes.

System Construction/General Purpose I/O



Electric actuator/Rod type

Programless type
LECP1
p. 207

* The teaching box, controller setting kit, and Touch Operator Interface/Human-Machine Interface cannot be connected.

Controller*2

Step data input type
LECA6
p. 191

Provided by the customer

Power supply for controller
24 VDC*1

Power supply plug (Accessory)
<Applicable cable size>
AWG20 (0.5 mm^2)

*1 When compliance with UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

I/O cable p. 199, 213

Controller type	Part no.
LECA6	LEC-CN5-☐
LECP1 (Programless)	LEC-CK4-☐

Actuator cable*2 p. 197, 212

Controller type	Standard cable	Robotic cable
LECA6 (Step data input type)	—	LE-CA-☐
LECP1 (Programless type)	LE-CP-☐-S	LE-CP-☐

*2 Can be included as an option. Refer to the “How to Order” page of the actuator.

Touch Operator Interface/Human-Machine Interface (Provided by the customer)

GP4501T/GP3500T
Schneider Electric Japan Holdings Ltd.

Pro-face
for the best interface

Cockpit parts can be downloaded for free via the Pro-face website.
By using the cockpit parts, adjustments can be made from the Touch Operator Interface.

GOT2000 Series
Mitsubishi Electric Corporation

GOT2000
Graphic Operation Terminal

Sample screens for monitoring and changing the current value and set value of the electric actuator can be downloaded for free via the Mitsubishi Electric website.

Options

Teaching box p. 201
(With 3 m cable)
LEC-T1-3JG☐

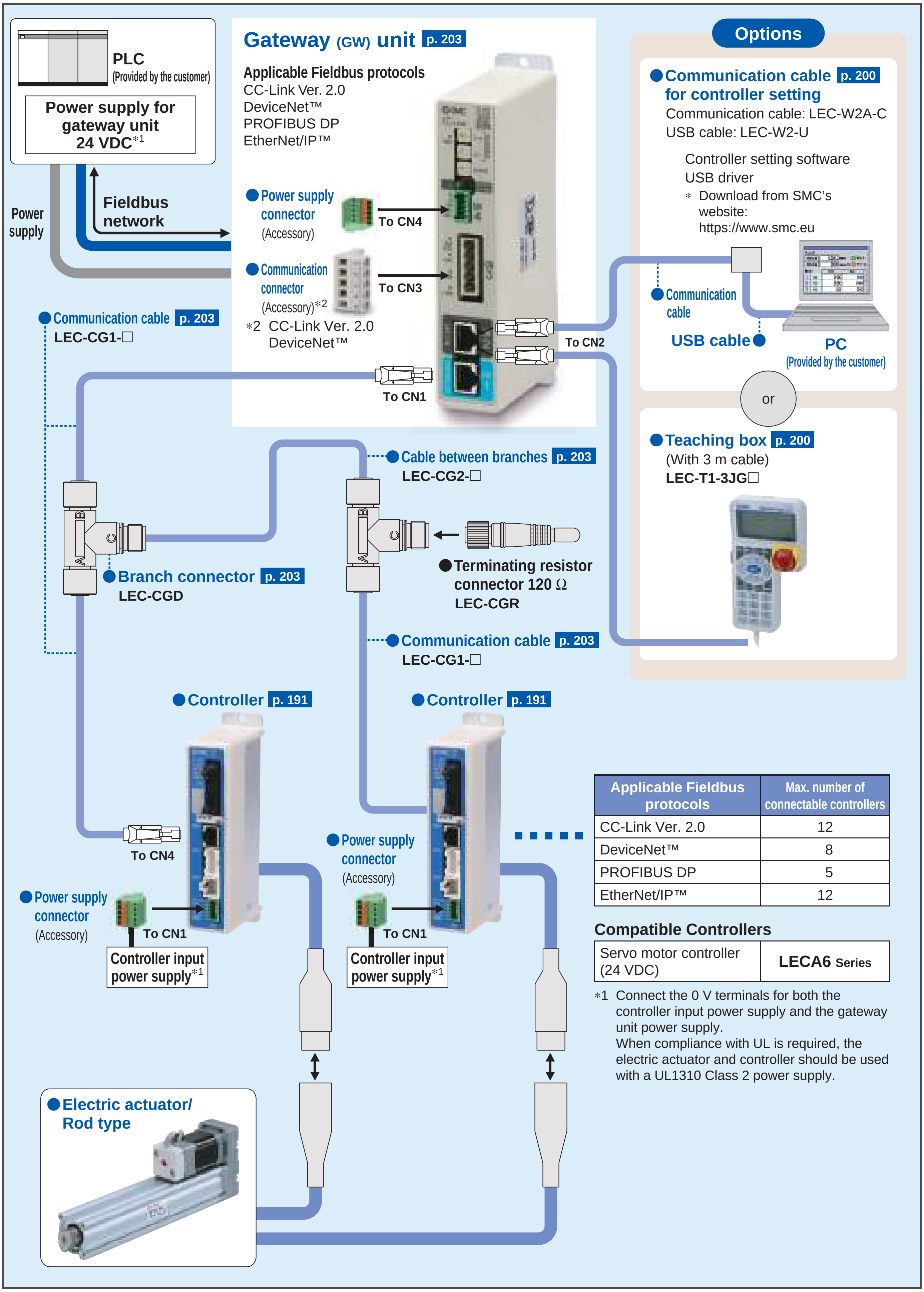
Communication cable for controller setting p. 200

Communication cable: LEC-W2A-C
USB cable: LEC-W2-U
Controller setting software
USB driver

* Download from SMC’s website:
https://www.smc.eu

* Cannot be used with the programless type (LECP1)

System Construction/Fieldbus Network



PLC
(Provided by the customer)

Power supply for gateway unit 24 VDC[*1]

Power supply

Fieldbus network

Gateway (GW) unit p. 203

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

● Power supply connector (Accessory) → To CN4

● Communication connector (Accessory)*2 → To CN3

*2 CC-Link Ver. 2.0
DeviceNet™

To CN2

To CN1

Options

● **Communication cable for controller setting** p. 200
Communication cable: LEC-W2A-C
USB cable: LEC-W2-U

Controller setting software
USB driver
* Download from SMC's website:
https://www.smc.eu

● Communication cable

USB cable ●

PC
(Provided by the customer)

or

● **Teaching box** p. 200
(With 3 m cable)
LEC-T1-3JG☐

● Communication cable p. 203
LEC-CG1-☐

● Cable between branches p. 203
LEC-CG2-☐

● **Branch connector** p. 203
LEC-CGD

● **Terminating resistor connector 120 Ω**
LEC-CGR

● Communication cable p. 203
LEC-CG1-☐

● **Controller** p. 191

● **Controller** p. 191

To CN4

● Power supply connector (Accessory) → To CN1
Controller input power supply*1

● Power supply connector (Accessory) → To CN1
Controller input power supply*1

● **Electric actuator/ Rod type**

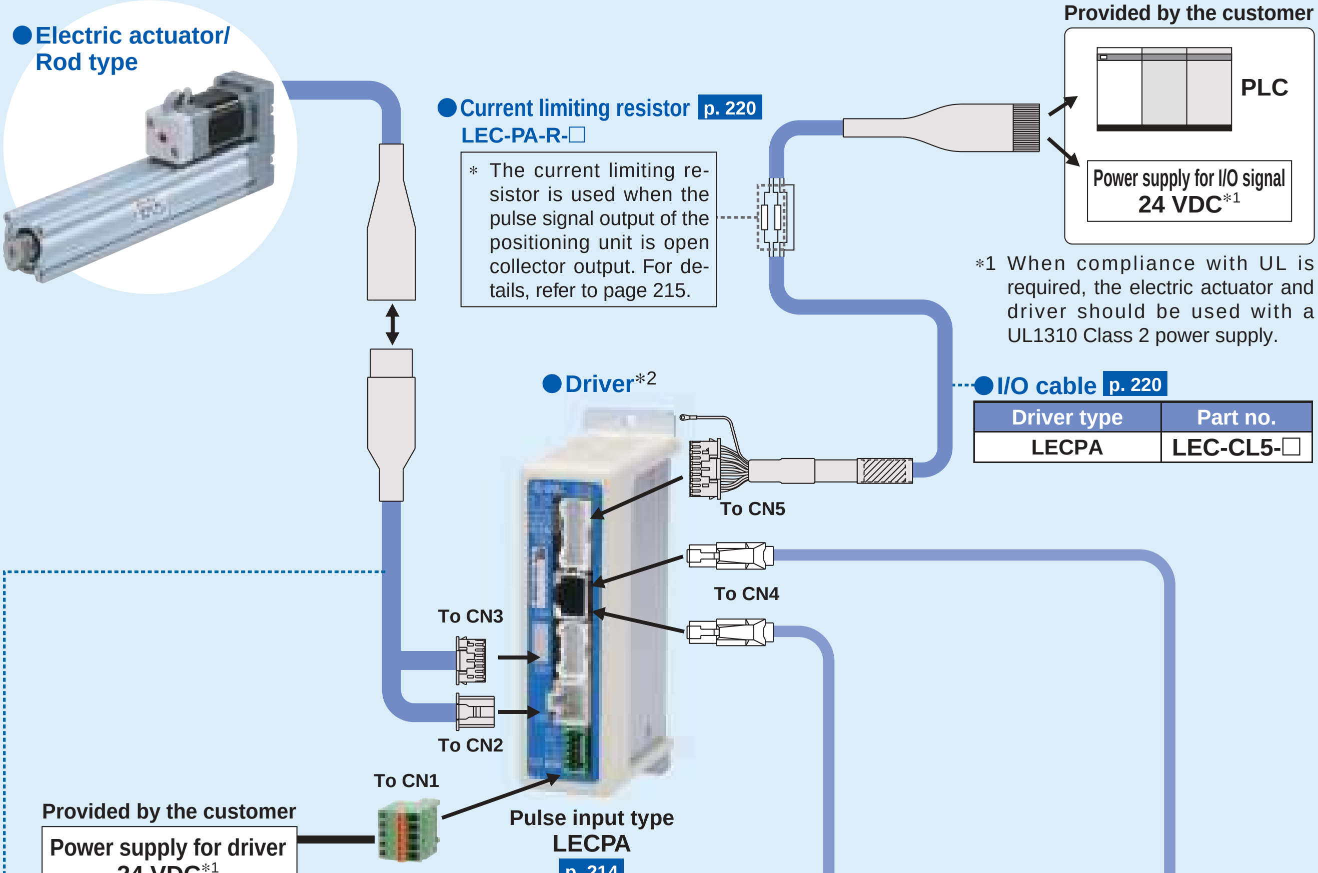
Applicable Fieldbus protocols	Max. number of connectable controllers
CC-Link Ver. 2.0	12
DeviceNet™	8
PROFIBUS DP	5
EtherNet/IP™	12

Compatible Controllers

Servo motor controller (24 VDC)	**LECA6 Series**

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

System Construction/Pulse Signal



Electric actuator/ Rod type

Current limiting resistor p. 220
LEC-PA-R-☐

∗ The current limiting resistor is used when the pulse signal output of the positioning unit is open collector output. For details, refer to page 215.

Provided by the customer

Power supply for I/O signal 24 VDC[∗1]

∗1 When compliance with UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

Driver[∗2]

I/O cable p. 220

Driver type	Part no.
LECPA	LEC-CL5-☐

Pulse input type LECPA p. 214

Provided by the customer

Power supply for driver 24 VDC[∗1]

∗1 When compliance with 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 mm^2)

Actuator cable[∗2] p. 219

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

∗2 Can be included as an option. Refer to the "How to Order" page of the actuator.

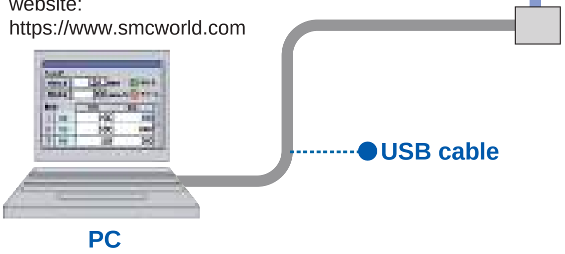
Options

Teaching box p. 222
(With 3 m cable)
LEC-T1-3JG☐

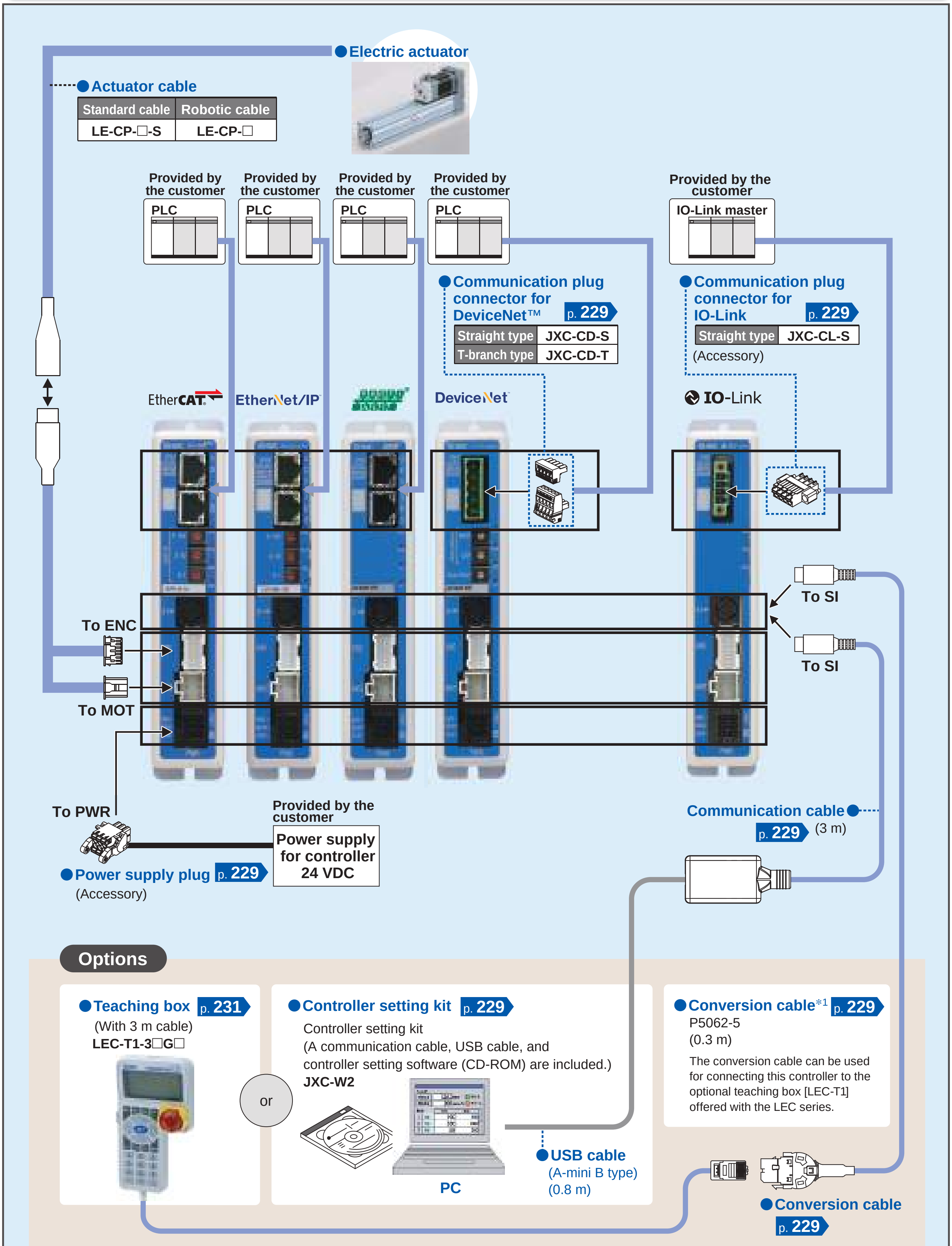
or

Communication cable for controller setting p. 221
Communication cable: LEC-W2A-C
USB cable: LEC-W2-U

Controller setting software
USB driver
∗ Download from SMC's website:
https://www.smcworld.com



System Construction/Fieldbus Network (EtherCAT®/EtherNet/IP™/PROFINET/DeviceNet™/IO-Link Direct Input Type)



● **Electric actuator**

● **Actuator cable**

Standard cable	Robotic cable
LE-CP-□-S	LE-CP-□

Provided by the customer
PLC

Provided by the customer
PLC

Provided by the customer
PLC

Provided by the customer
PLC

Provided by the customer
IO-Link master

● **Communication plug connector for DeviceNet™** p. 229

Straight type	JXC-CD-S
T-branch type	JXC-CD-T

● **Communication plug connector for IO-Link** p. 229

Straight type	JXC-CL-S

(Accessory)

Provided by the customer
Power supply for controller 24 VDC

● **Power supply plug** p. 229
(Accessory)

Communication cable ● p. 229 (3 m)

Options

● **Teaching box** p. 231
(With 3 m cable)
LEC-T1-3□G□

or

● **Controller setting kit** p. 229
Controller setting kit
(A communication cable, USB cable, and controller setting software (CD-ROM) are included.)
JXC-W2

PC

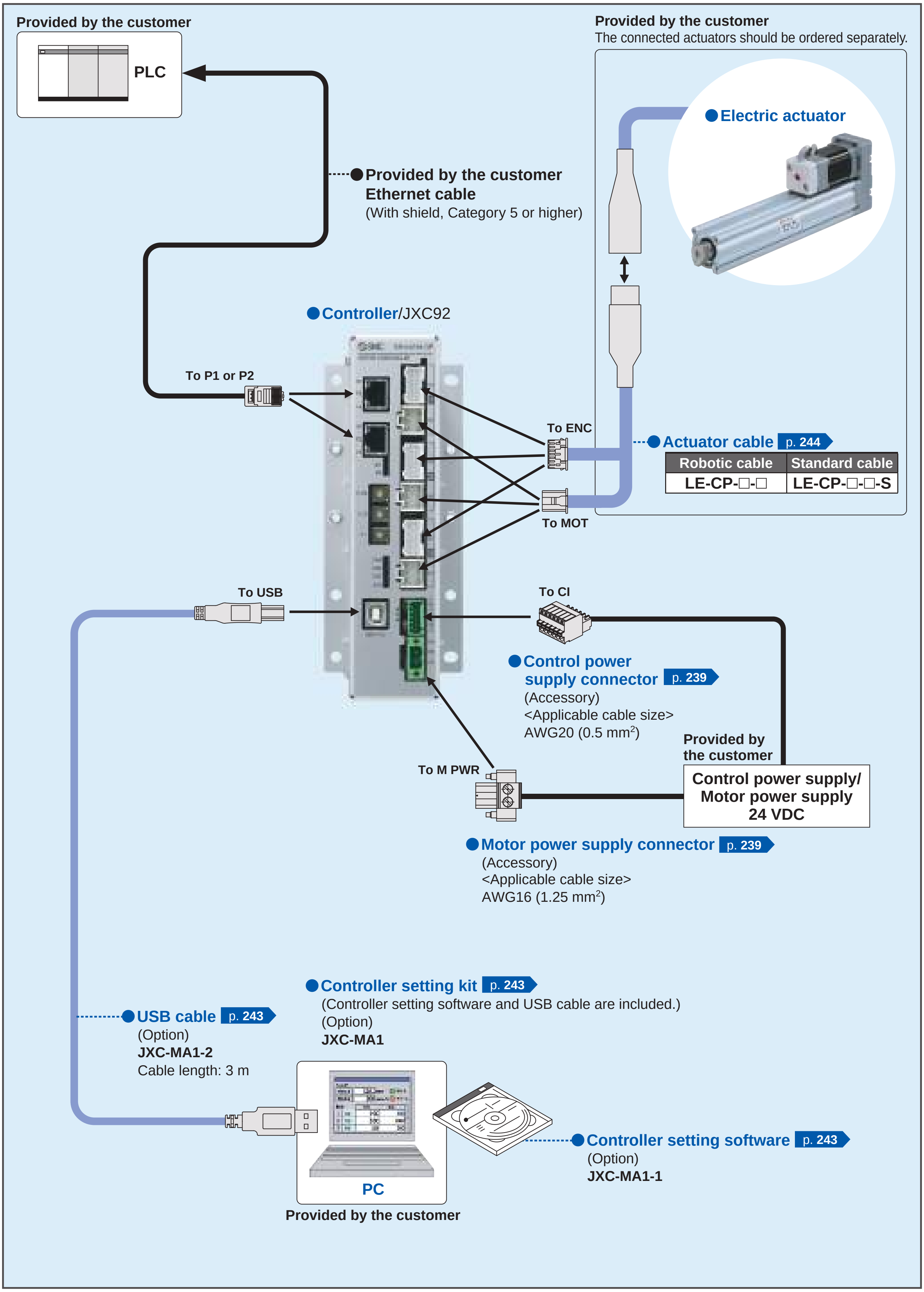
● **USB cable**
(A-mini B type)
(0.8 m)

● **Conversion cable**[*1] p. 229
P5062-5
(0.3 m)
The conversion cable can be used for connecting this controller to the optional teaching box [LEC-T1] offered with the LEC series.

● **Conversion cable**
p. 229

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

System Construction/EtherNet/IP™ Type (JXC92)



Provided by the customer

Provided by the customer
The connected actuators should be ordered separately.

● **Electric actuator**

● **Provided by the customer**
Ethernet cable
(With shield, Category 5 or higher)

● **Controller**/JXC92

● **Actuator cable** p. 244

Robotic cable	Standard cable
LE-CP-□-□	LE-CP-□-□-S

● **Control power supply connector** p. 239
(Accessory)
<Applicable cable size>
AWG20 (0.5 mm^2)

Provided by the customer

Control power supply/
Motor power supply
24 VDC

● **Motor power supply connector** p. 239
(Accessory)
<Applicable cable size>
AWG16 (1.25 mm^2)

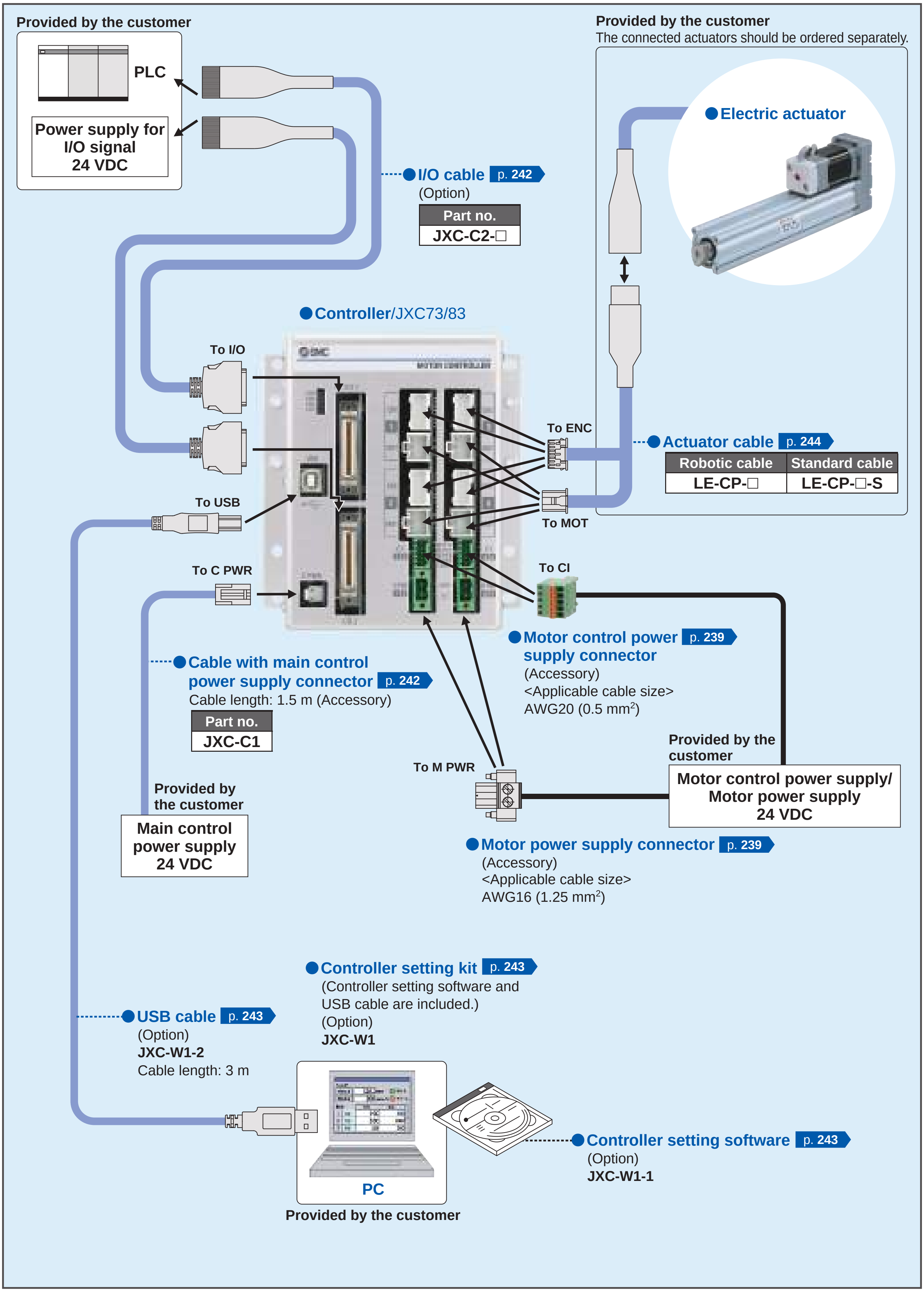
● **Controller setting kit** p. 243
(Controller setting software and USB cable are included.)
(Option)
JXC-MA1

● **USB cable** p. 243
(Option)
JXC-MA1-2
Cable length: 3 m

● **Controller setting software** p. 243
(Option)
JXC-MA1-1

Provided by the customer

System Construction/Parallel I/O (JXC73/83)



Provided by the customer

Provided by the customer

The connected actuators should be ordered separately.

● **Electric actuator**

● **I/O cable** p. 242

(Option)

Part no.
JXC-C2-□

● **Controller**/JXC73/83

● **Actuator cable** p. 244

Robotic cable	Standard cable
LE-CP-□	LE-CP-□-S

● **Motor control power supply connector** p. 239

(Accessory)

<Applicable cable size>

AWG20 (0.5 mm^2)

● **Cable with main control power supply connector** p. 242

Cable length: 1.5 m (Accessory)

Part no.
JXC-C1

Provided by the customer

Motor control power supply/ Motor power supply 24 VDC

Provided by the customer

Main control power supply 24 VDC

● **Motor power supply connector** p. 239

(Accessory)

<Applicable cable size>

AWG16 (1.25 mm^2)

● **Controller setting kit** p. 243

(Controller setting software and USB cable are included.)

(Option)

JXC-W1

● **USB cable** p. 243

(Option)

JXC-W1-2

Cable length: 3 m

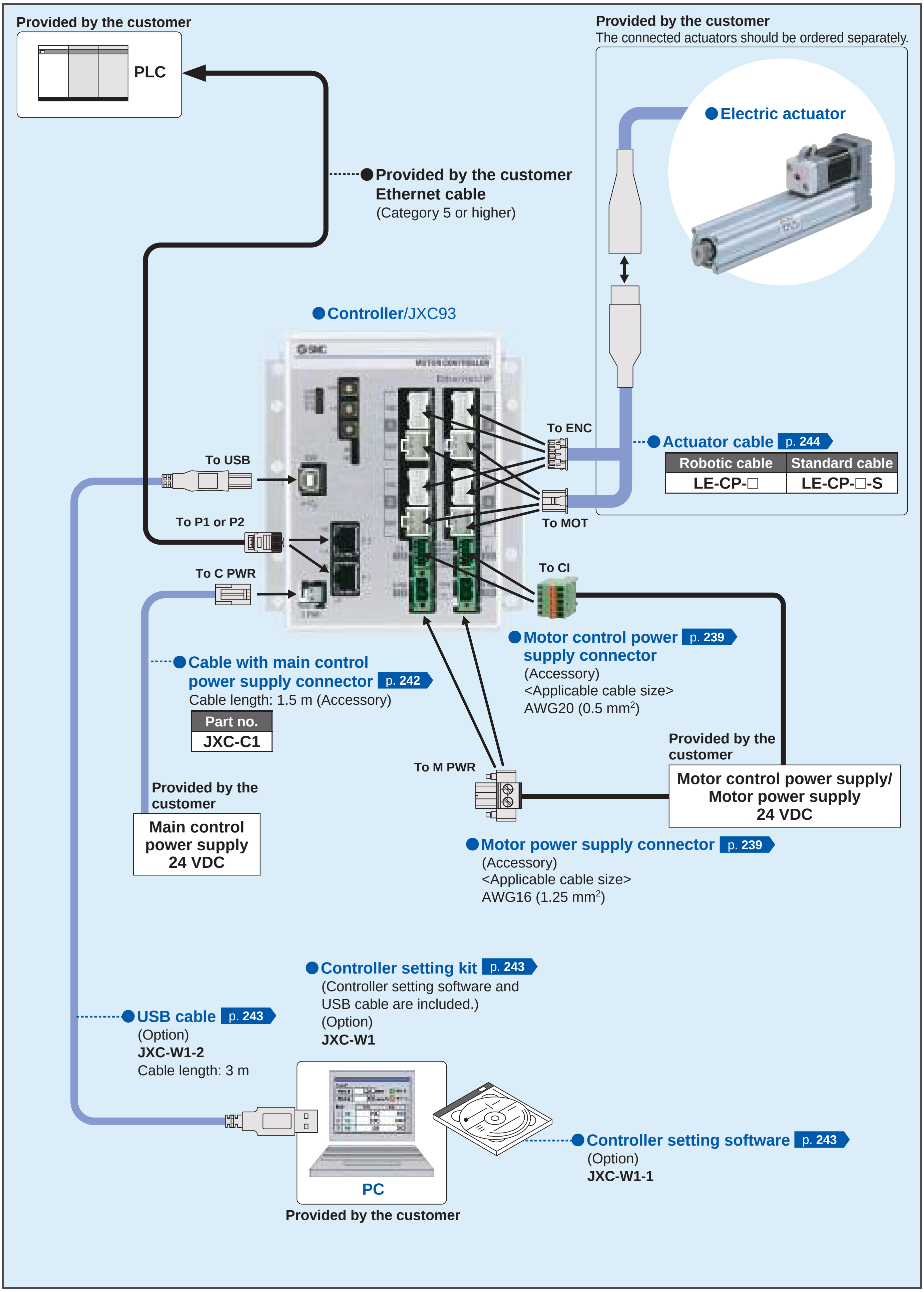
● **Controller setting software** p. 243

(Option)

JXC-W1-1

Provided by the customer

System Construction/EtherNet/IP™ Type (JXC93)



Provided by the customer

Provided by the customer
The connected actuators should be ordered separately.

Provided by the customer
Ethernet cable
(Category 5 or higher)

Actuator cable p. 244

Robotic cable	Standard cable
LE-CP-□	LE-CP-□-S

Motor control power supply connector p. 239
(Accessory)
<Applicable cable size>
AWG20 (0.5 mm^2)

Cable with main control power supply connector p. 242
Cable length: 1.5 m (Accessory)

Part no.
JXC-C1

Provided by the customer

Motor control power supply/
Motor power supply
24 VDC

Provided by the customer

Main control power supply
24 VDC

Motor power supply connector p. 239
(Accessory)
<Applicable cable size>
AWG16 (1.25 mm^2)

Controller setting kit p. 243
(Controller setting software and
USB cable are included.)
(Option)
JXC-W1

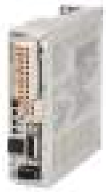
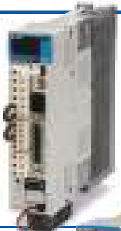
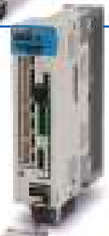
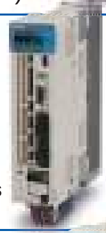
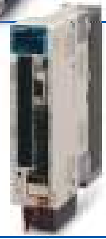
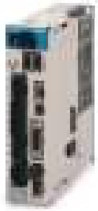
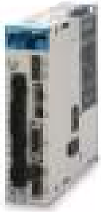
USB cable p. 243
(Option)
JXC-W1-2
Cable length: 3 m

Controller setting software p. 243
(Option)
JXC-W1-1

Provided by the customer

AC Servo Motor Driver

LECS□/LECSS-T/LECY□ Series List

Type	Series	Compatible motor			Control method			Application/ Function	Compatible option
		100 W	200 W	400 W	Positioning *1	Pulse	Network direct input	Synchronous *2	Setup software
Incremental Type	**LECSA** (Pulse input type/ Positioning type) 	●	●	●	Up to 7 points ●	●			LEC-MRC2 ●
Absolute Type	**LECSB** (Pulse input type) 	●	●	●		●			LEC-MRC2 ●
	CC-Link **LECSC** (CC-Link direct input type) 	●	●	●	Up to 255 points ●		CC-Link Ver. 1.10 ●		LEC-MRC2 ●
	SSCNETⅢ SERVO SYSTEM CONTROLLER NETWORK **LECSS** (SSCNET Ⅲ type) Compatible with Mitsubishi Electric's servo system controller network 	●	●	●			SSCNETⅢ ●	*2 ●	LEC-MRC2 ●
	SSCNETⅢ/H SERVO SYSTEM CONTROLLER NETWORK **LECSS-T** (SSCNET Ⅲ/H type) Compatible with Mitsubishi Electric's servo system controller network 	●	●	●			SSCNETⅢ/H ●	*2 ●	LEC-MRC2 ●
	MECHATROLINK-Ⅱ **LECYM** 	●	●	●			MECHATROLINK-Ⅱ ●	*3 ●	SigmaWin+™ ●
	MECHATROLINK-Ⅲ **LECYU** 	●	●	●			MECHATROLINK-Ⅲ ●	*3 ●	SigmaWin+™ ●

*1 For positioning types, the settings need to be changed in order to use the max. set values. Setup software (MR Configurator2™) LEC-MRC2 is required.

*2 Available when a Mitsubishi motion controller is used as the master

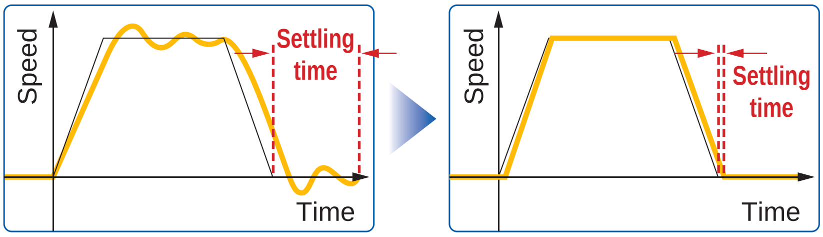
*3 Available when a motion controller is used as the master

* For customer-provided PLC and motion controller setting and usage instructions, confirm with the retailer or manufacturer.

Gain adjustment using auto tuning

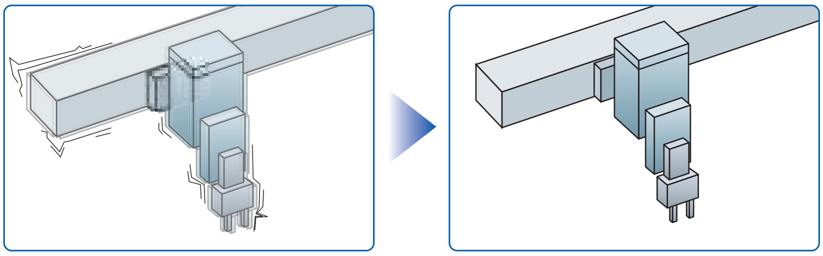
Auto-tuning function

- Controls the difference between the command value and the actual action



Vibration suppression control function

- Automatically suppresses low-frequency machine vibrations (1 to 100 Hz)



AC Servo Motor Driver

With display setting function

One-touch adjustment button

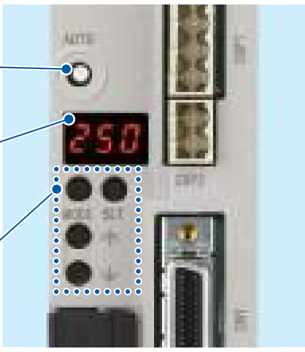
One-touch servo adjustment

Display

Display the monitor, parameters, and alarm.

Settings

Set the parameters, monitor display, etc., with push buttons.



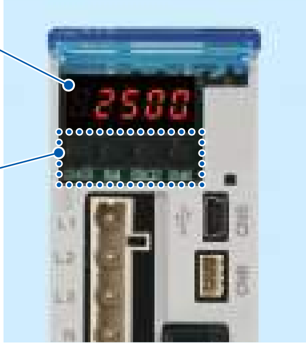
LECSA

Display

Display the monitor, parameters, and alarm.

Settings

Set the parameters, monitor display, etc., with push buttons.



(With the front cover opened)

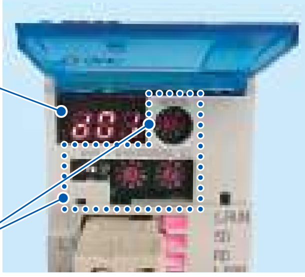
LECSB

Display

Display the communication status with the driver, the alarm, and the point table no.

Settings

Control the Baud rate, station number, and the occupied station count.



(With the front cover opened)

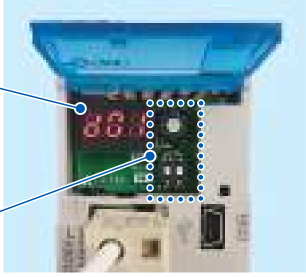
LECSC

Display

Display the communication status with the driver and the alarm.

Settings

Switches for selecting the axis and switching to the test operation



(With the front cover opened)

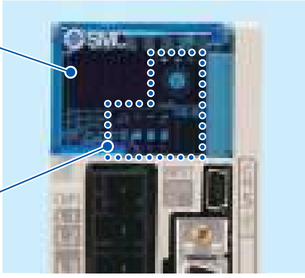
LECSS

Display

Display the communication status with the driver and the alarm.

Settings

Switches for axis setting, control axis deactivation, switching to the test operation, etc.



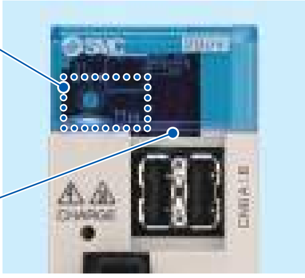
LECSS2-T

Settings

Switches for station address, communication speed, number of transmission bytes, etc.

Display

Display the driver status and alarm.



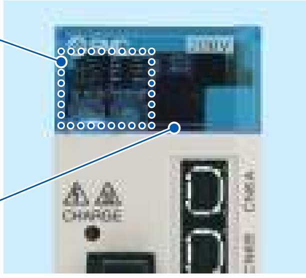
LECYM

Settings

Switches for station address, number of transmission bytes, etc.

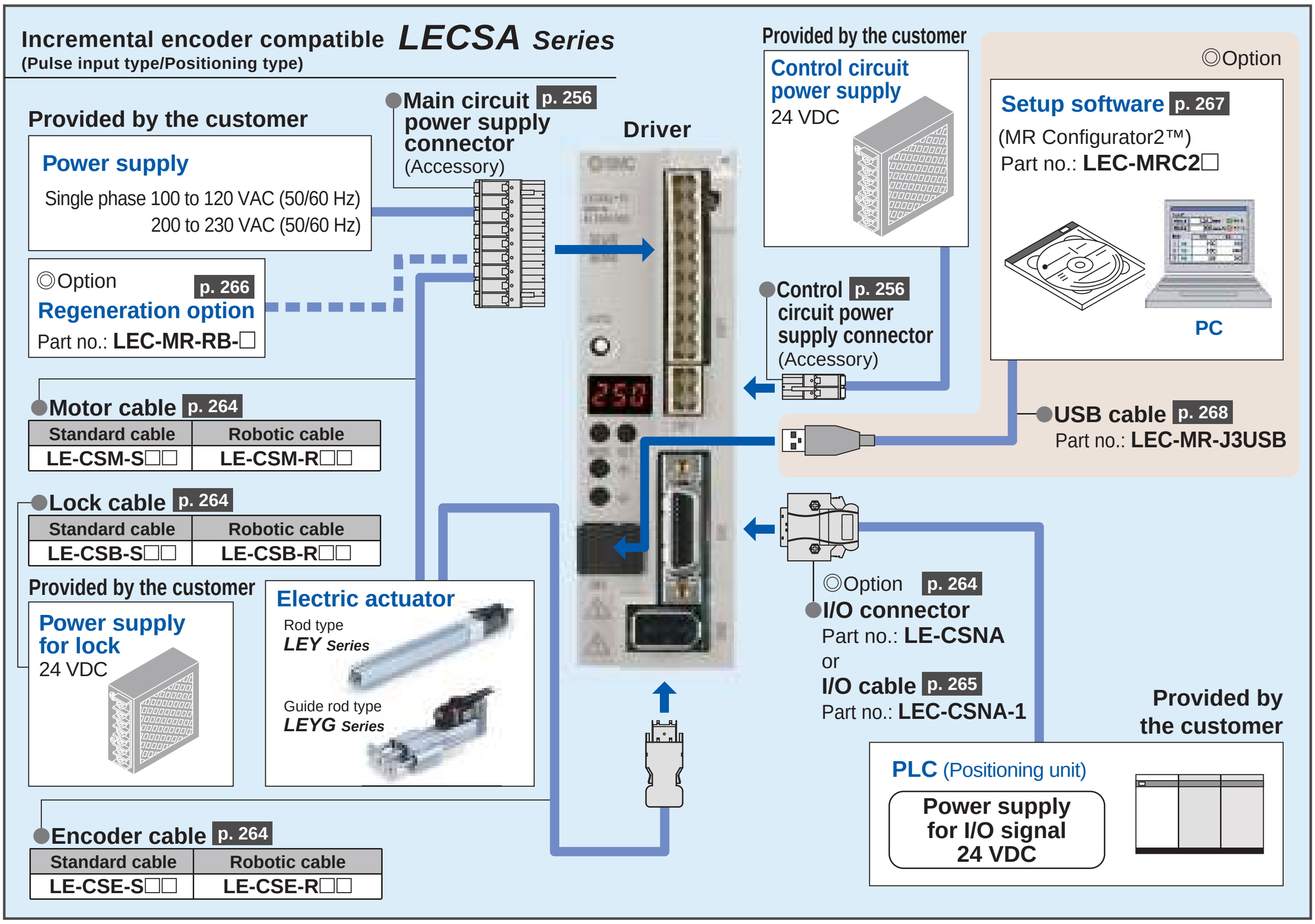
Display

Display the driver status and alarm.



LECYU

System Construction



Incremental encoder compatible *LECSA Series*

(Pulse input type/Positioning type)

Provided by the customer

Power supply
Single phase 100 to 120 VAC (50/60 Hz)
200 to 230 VAC (50/60 Hz)

◎Option p. 266
Regeneration option
Part no.: **LEC-MR-RB-□**

●**Main circuit power supply connector** p. 256
(Accessory)

Driver

Provided by the customer
Control circuit power supply
24 VDC

●**Control circuit power supply connector** p. 256
(Accessory)

◎Option

Setup software p. 267
(MR Configurator2™)
Part no.: **LEC-MRC2□**

●**USB cable** p. 268
Part no.: **LEC-MR-J3USB**

●**Motor cable** p. 264

Standard cable	Robotic cable
LE-CSM-S□□	LE-CSM-R□□

●**Lock cable** p. 264

Standard cable	Robotic cable
LE-CSB-S□□	LE-CSB-R□□

Provided by the customer
Power supply for lock
24 VDC

Electric actuator
Rod type
LEY Series
Guide rod type
LEYG Series

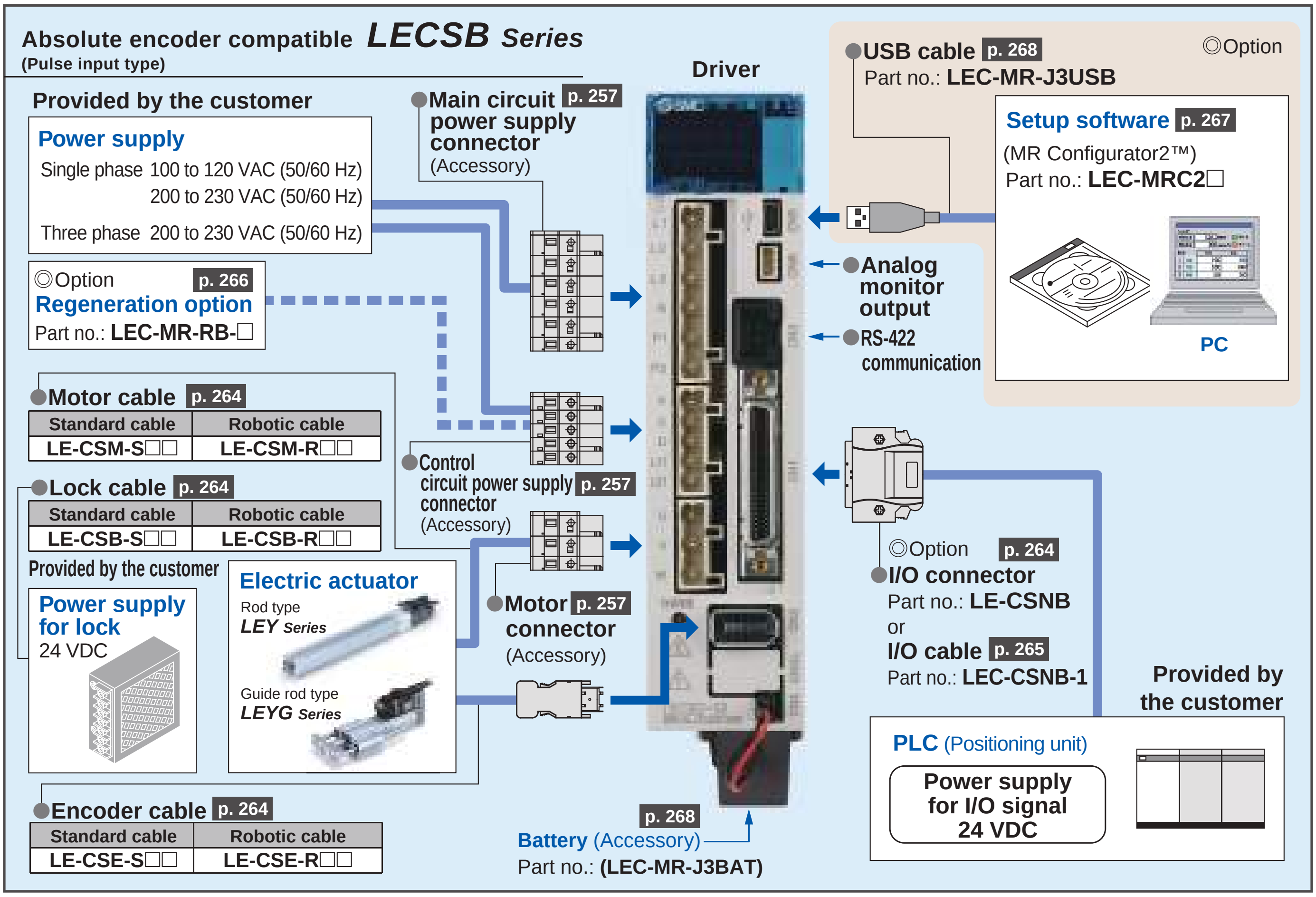
◎Option p. 264
●**I/O connector**
Part no.: **LE-CSNA**
or
I/O cable p. 265
Part no.: **LEC-CSNA-1**

Provided by the customer

PLC (Positioning unit)
Power supply for I/O signal 24 VDC

●**Encoder cable** p. 264

Standard cable	Robotic cable
LE-CSE-S□□	LE-CSE-R□□



Absolute encoder compatible *LECSB Series*

(Pulse input type)

Provided by the customer

Power supply
Single phase 100 to 120 VAC (50/60 Hz)
200 to 230 VAC (50/60 Hz)
Three phase 200 to 230 VAC (50/60 Hz)

◎Option p. 266
Regeneration option
Part no.: **LEC-MR-RB-□**

●**Main circuit power supply connector** p. 257
(Accessory)

Driver

●**USB cable** p. 268
Part no.: **LEC-MR-J3USB**

◎Option

Setup software p. 267
(MR Configurator2™)
Part no.: **LEC-MRC2□**

●**Analog monitor output**

●**RS-422 communication**

●**Motor cable** p. 264

Standard cable	Robotic cable
LE-CSM-S□□	LE-CSM-R□□

●**Control circuit power supply connector** p. 257
(Accessory)

●**Lock cable** p. 264

Standard cable	Robotic cable
LE-CSB-S□□	LE-CSB-R□□

Provided by the customer
Power supply for lock
24 VDC

Electric actuator
Rod type
LEY Series
Guide rod type
LEYG Series

●**Motor connector** p. 257
(Accessory)

◎Option p. 264
●**I/O connector**
Part no.: **LE-CSNB**
or
I/O cable p. 265
Part no.: **LEC-CSNB-1**

Provided by the customer

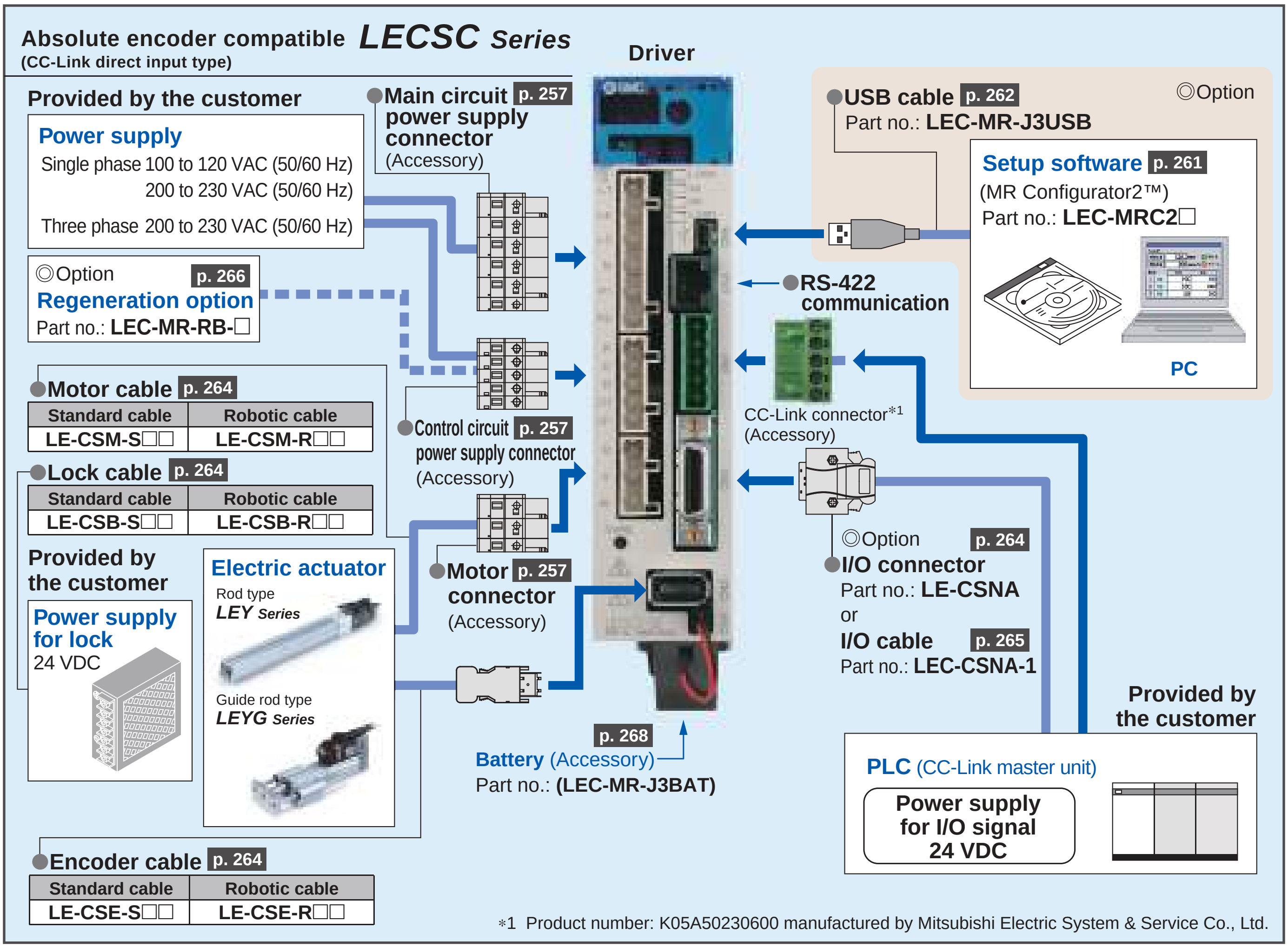
PLC (Positioning unit)
Power supply for I/O signal 24 VDC

●**Encoder cable** p. 264

Standard cable	Robotic cable
LE-CSE-S□□	LE-CSE-R□□

p. 268
Battery (Accessory)
Part no.: **(LEC-MR-J3BAT)**

System Construction



Absolute encoder compatible *LECSC Series*

(CC-Link direct input type)

Driver

Provided by the customer

Power supply

Single phase 100 to 120 VAC (50/60 Hz)
200 to 230 VAC (50/60 Hz)
Three phase 200 to 230 VAC (50/60 Hz)

◎Option p. 266
Regeneration option
Part no.: **LEC-MR-RB-□**

●**Main circuit power supply connector** p. 257
(Accessory)

●**Control circuit power supply connector** p. 257
(Accessory)

●**Motor connector** p. 257
(Accessory)

●**Motor cable** p. 264

Standard cable	Robotic cable
LE-CSM-S□□	LE-CSM-R□□

●**Lock cable** p. 264

Standard cable	Robotic cable
LE-CSB-S□□	LE-CSB-R□□

Provided by the customer

Power supply for lock
24 VDC

Electric actuator
Rod type
LEY Series
Guide rod type
LEYG Series

●**Encoder cable** p. 264

Standard cable	Robotic cable
LE-CSE-S□□	LE-CSE-R□□

Battery (Accessory) p. 268
Part no.: **(LEC-MR-J3BAT)**

●**USB cable** p. 262 ◎Option
Part no.: **LEC-MR-J3USB**

Setup software p. 261
(MR Configurator2™)
Part no.: **LEC-MRC2□**

PC

●**RS-422 communication**

CC-Link connector[*1]
(Accessory)

◎Option p. 264
●**I/O connector**
Part no.: **LEC-CSNA**
or
I/O cable p. 265
Part no.: **LEC-CSNA-1**

Provided by the customer

PLC (CC-Link master unit)

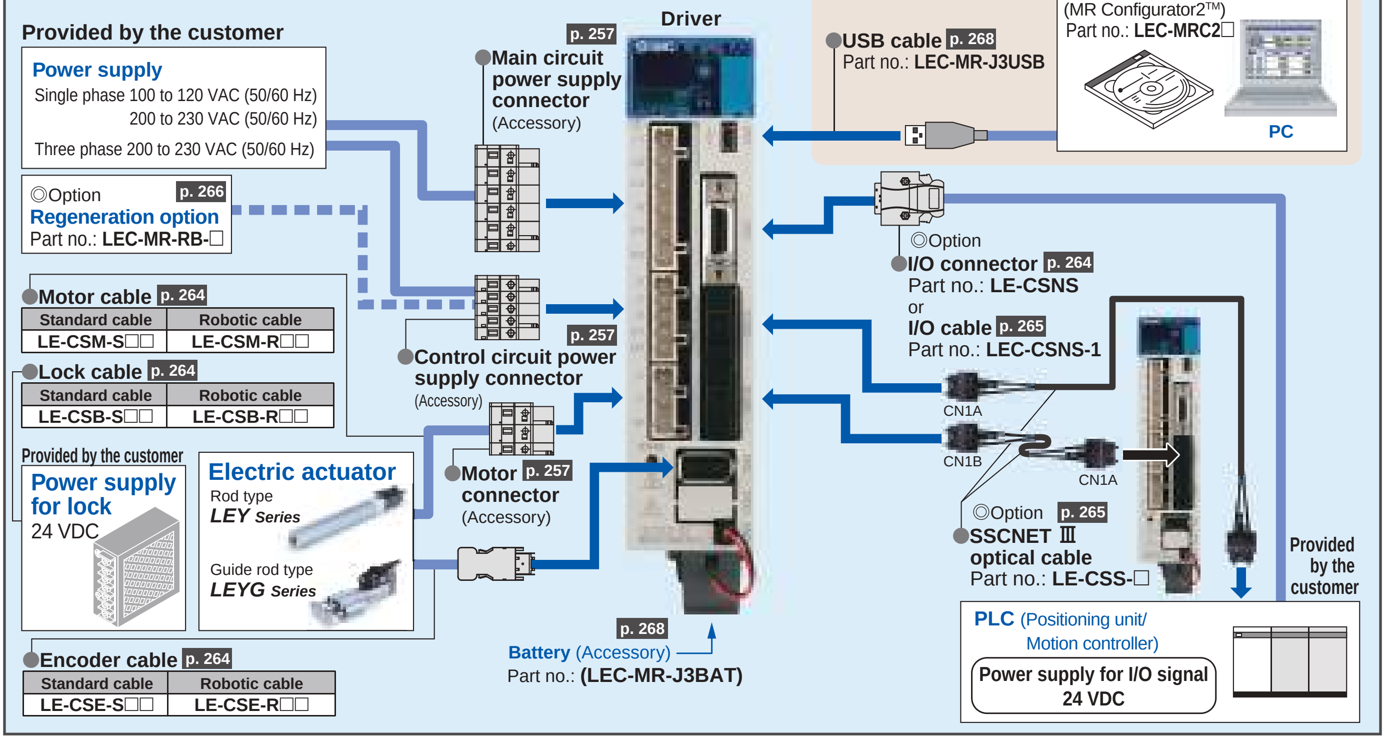
Power supply for I/O signal 24 VDC

[*1] Product number: K05A50230600 manufactured by Mitsubishi Electric System & Service Co., Ltd.

System Construction

Absolute encoder compatible *LECSS* Series

(SSCNET Ⅲ type)



Provided by the customer

Power supply
Single phase 100 to 120 VAC (50/60 Hz)
200 to 230 VAC (50/60 Hz)
Three phase 200 to 230 VAC (50/60 Hz)

◎Option p. 266
Regeneration option
Part no.: **LEC-MR-RB-☐**

●**Motor cable** p. 264

Standard cable	Robotic cable
LE-CSM-S☐☐	LE-CSM-R☐☐

●**Lock cable** p. 264

Standard cable	Robotic cable
LE-CSB-S☐☐	LE-CSB-R☐☐

Provided by the customer

Power supply for lock
24 VDC

Electric actuator
Rod type
LEY Series
Guide rod type
LEYG Series

●**Encoder cable** p. 264

Standard cable	Robotic cable
LE-CSE-S☐☐	LE-CSE-R☐☐

Driver

p. 257
●**Main circuit power supply connector**
(Accessory)

p. 257
●**Control circuit power supply connector**
(Accessory)

●**Motor connector** p. 257
(Accessory)

p. 268
Battery (Accessory)
Part no.: **(LEC-MR-J3BAT)**

◎Option
Setup software p. 267
(MR Configurator2^{TM})
Part no.: **LEC-MRC2☐**
PC

●**USB cable** p. 268
Part no.: **LEC-MR-J3USB**

◎Option
●**I/O connector** p. 264
Part no.: **LE-CSNS**
or
I/O cable p. 265
Part no.: **LEC-CSNS-1**

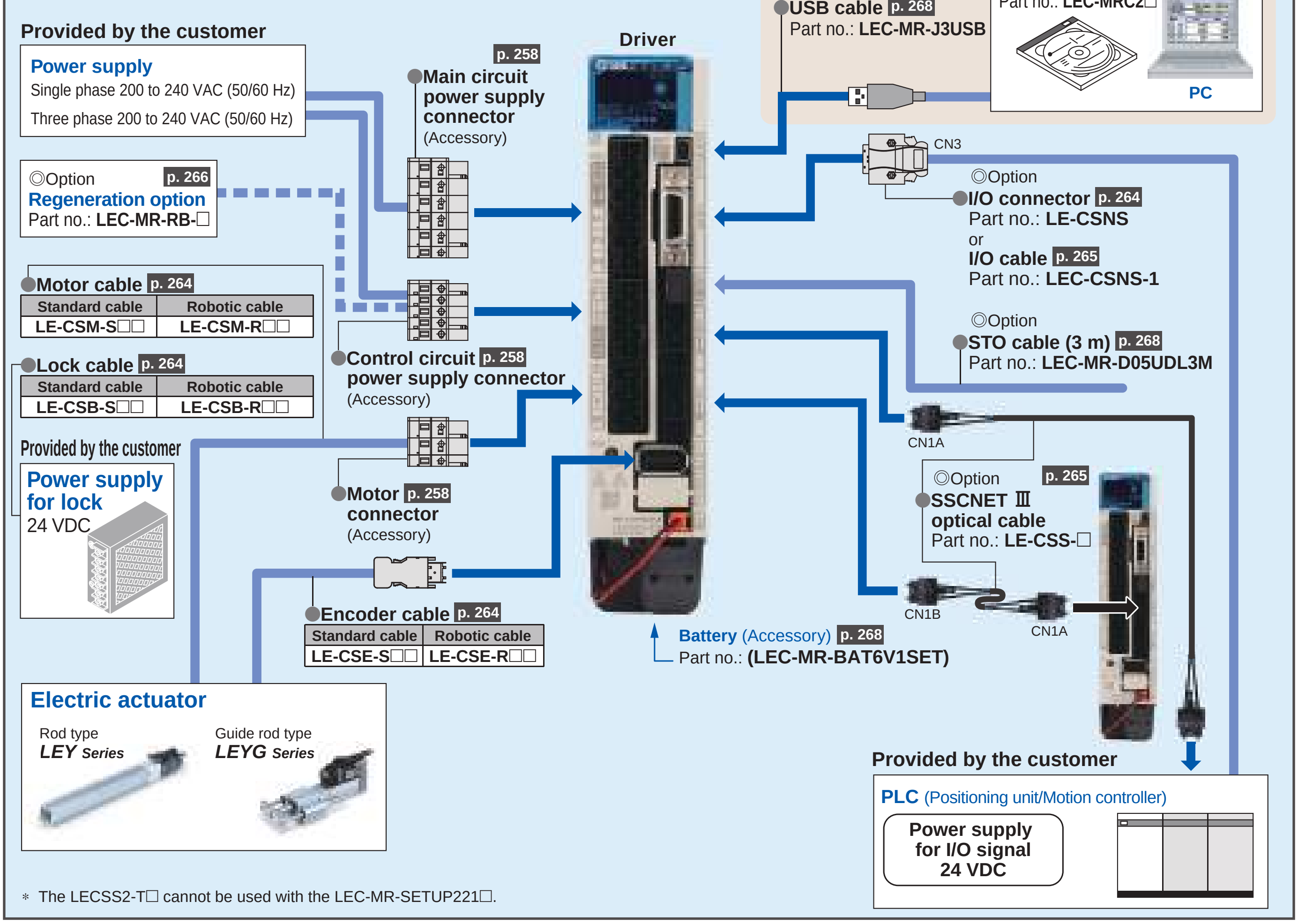
◎Option p. 265
●**SSCNET Ⅲ optical cable**
Part no.: **LE-CSS-☐**

Provided by the customer

PLC (Positioning unit/Motion controller)
Power supply for I/O signal 24 VDC

Absolute encoder compatible *LECSS-T* Series

SSCNETIII/H
SERVO SYSTEM CONTROLLER NETWORK



Provided by the customer

Power supply
Single phase 200 to 240 VAC (50/60 Hz)
Three phase 200 to 240 VAC (50/60 Hz)

◎Option p. 266
Regeneration option
Part no.: **LEC-MR-RB-☐**

●**Motor cable** p. 264

Standard cable	Robotic cable
LE-CSM-S☐☐	LE-CSM-R☐☐

●**Lock cable** p. 264

Standard cable	Robotic cable
LE-CSB-S☐☐	LE-CSB-R☐☐

Provided by the customer

Power supply for lock
24 VDC

Driver

p. 258
●**Main circuit power supply connector**
(Accessory)

●**Control circuit power supply connector** p. 258
(Accessory)

●**Motor connector** p. 258
(Accessory)

●**Encoder cable** p. 264

Standard cable	Robotic cable
LE-CSE-S☐☐	LE-CSE-R☐☐

Electric actuator
Rod type
LEY Series
Guide rod type
LEYG Series

Battery (Accessory) p. 268
Part no.: **(LEC-MR-BAT6V1SET)**

◎Option
Setup software p. 267
(MR Configurator2^{TM})
Part no.: **LEC-MRC2☐**
PC

●**USB cable** p. 268
Part no.: **LEC-MR-J3USB**

◎Option
●**I/O connector** p. 264
Part no.: **LE-CSNS**
or
I/O cable p. 265
Part no.: **LEC-CSNS-1**

◎Option
●**STO cable (3 m)** p. 268
Part no.: **LEC-MR-D05UDL3M**

◎Option p. 265
●**SSCNET Ⅲ optical cable**
Part no.: **LE-CSS-☐**

Provided by the customer

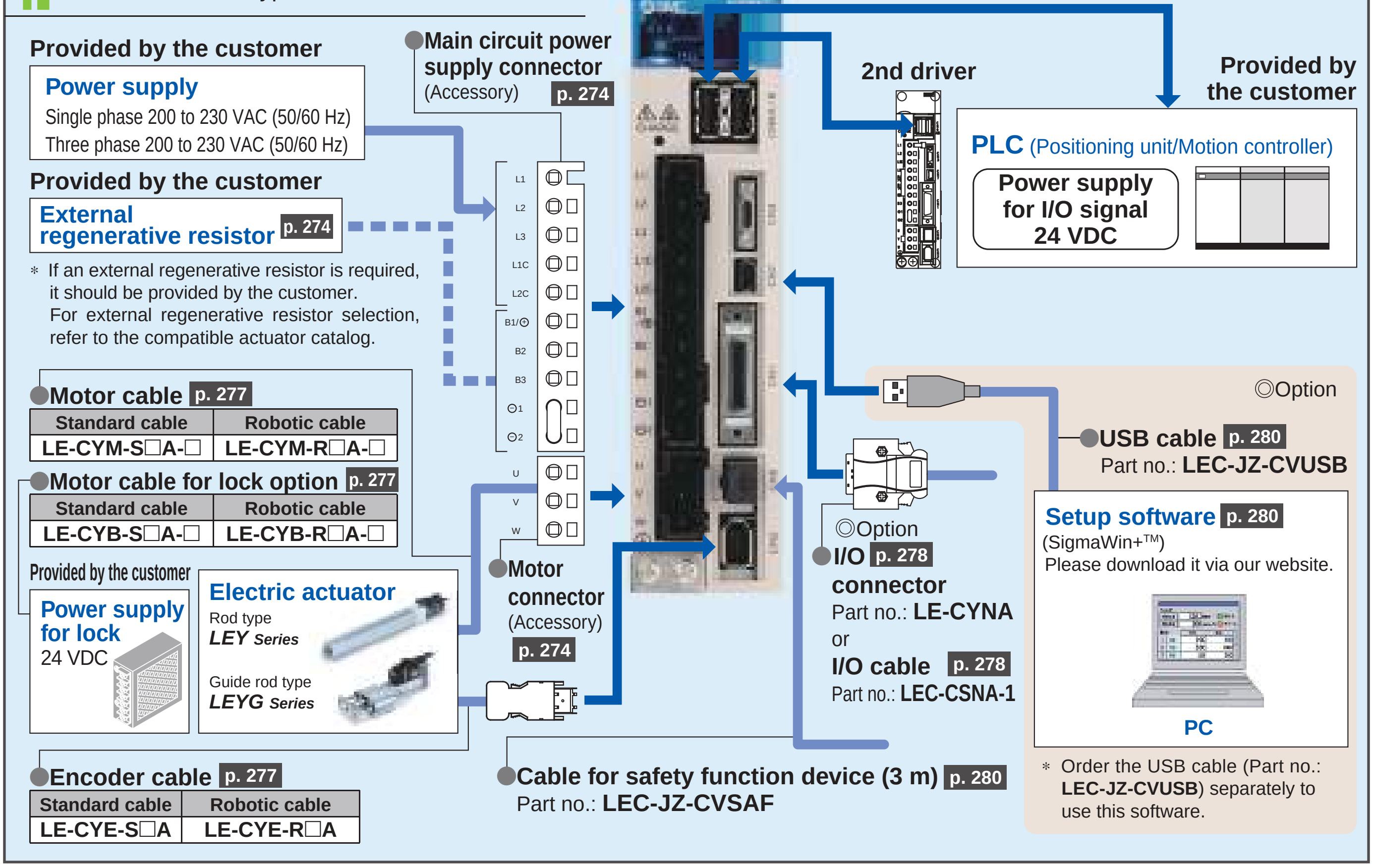
PLC (Positioning unit/Motion controller)
Power supply for I/O signal 24 VDC

∗ The LECSS2-T☐ cannot be used with the LEC-MR-SETUP221☐.

System Construction

Absolute encoder compatible *LECYM* Series

MECHATROLINK-Ⅱ type



Driver

2nd driver

Provided by the customer

Power supply

Single phase 200 to 230 VAC (50/60 Hz)
Three phase 200 to 230 VAC (50/60 Hz)

Provided by the customer

External regenerative resistor p. 274

∗ If an external regenerative resistor is required, it should be provided by the customer. For external regenerative resistor selection, refer to the compatible actuator catalog.

●**Main circuit power supply connector**
(Accessory) **p. 274**

●**Motor cable** **p. 277**

Standard cable	Robotic cable
LE-CYM-S□A-□	LE-CYM-R□A-□

●**Motor cable for lock option** **p. 277**

Standard cable	Robotic cable
LE-CYB-S□A-□	LE-CYB-R□A-□

Provided by the customer

Power supply for lock
24 VDC

Electric actuator
Rod type
LEY ***Series***
Guide rod type
LEYG ***Series***

●**Motor connector**
(Accessory)
p. 274

●**Encoder cable** **p. 277**

Standard cable	Robotic cable
LE-CYE-S□A	LE-CYE-R□A

●**Cable for safety function device (3 m)** **p. 280**
Part no.: **LEC-JZ-CVSAF**

Provided by the customer

PLC (Positioning unit/Motion controller)

Power supply for I/O signal 24 VDC

◎Option
●**I/O connector** **p. 278**
Part no.: **LE-CYNA**
or
I/O cable **p. 278**
Part no.: **LEC-CSNA-1**

◎Option

●**USB cable** **p. 280**
Part no.: **LEC-JZ-CVUSB**

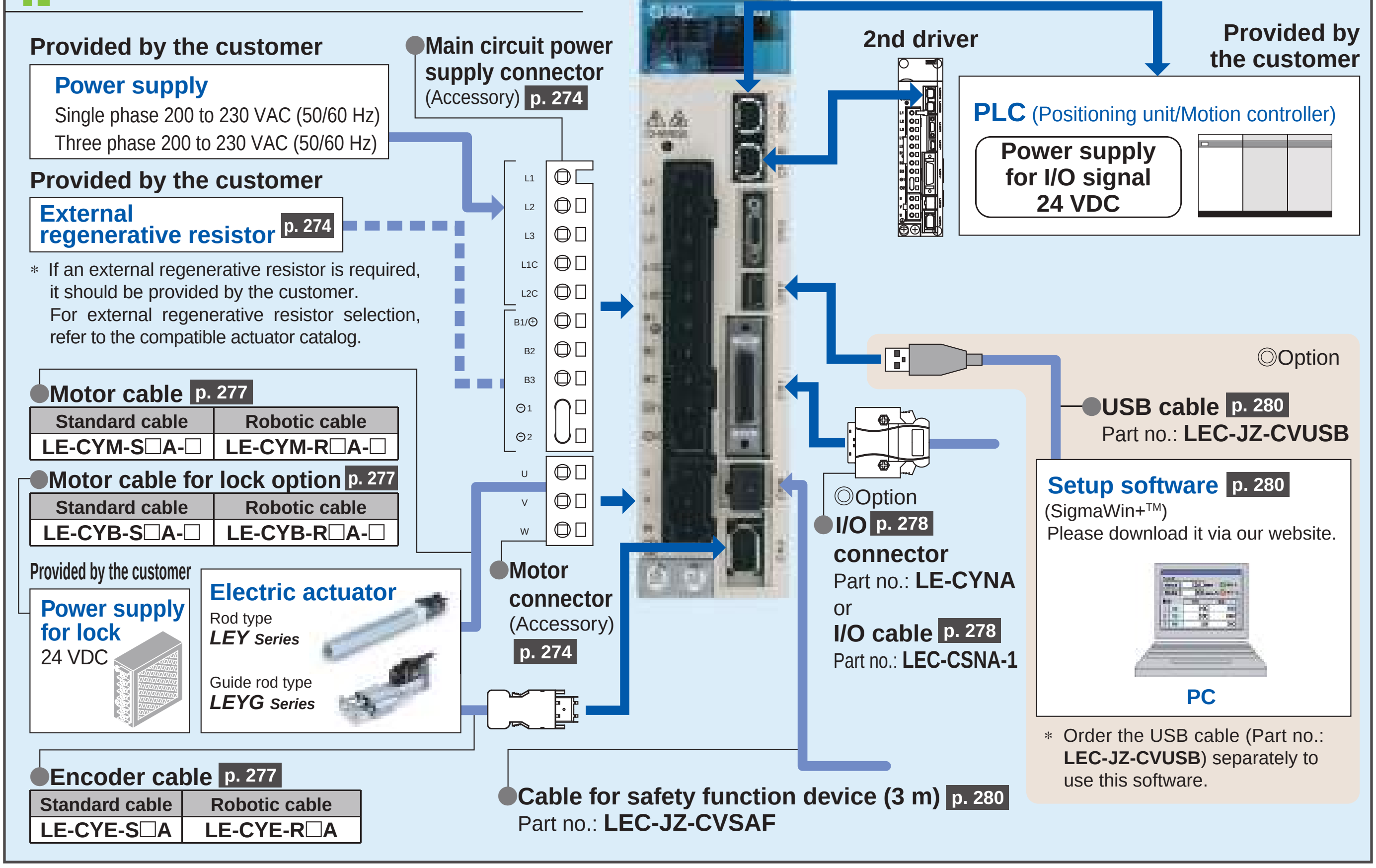
Setup software **p. 280**
(SigmaWin+™)
Please download it via our website.

PC

∗ Order the USB cable (Part no.: **LEC-JZ-CVUSB**) separately to use this software.

Absolute encoder compatible *LECYU* Series

MECHATROLINK-Ⅲ type



Driver

2nd driver

Provided by the customer

Power supply

Single phase 200 to 230 VAC (50/60 Hz)
Three phase 200 to 230 VAC (50/60 Hz)

Provided by the customer

External regenerative resistor p. 274

∗ If an external regenerative resistor is required, it should be provided by the customer. For external regenerative resistor selection, refer to the compatible actuator catalog.

●**Main circuit power supply connector**
(Accessory) **p. 274**

●**Motor cable** **p. 277**

Standard cable	Robotic cable
LE-CYM-S□A-□	LE-CYM-R□A-□

●**Motor cable for lock option** **p. 277**

Standard cable	Robotic cable
LE-CYB-S□A-□	LE-CYB-R□A-□

Provided by the customer

Power supply for lock
24 VDC

Electric actuator
Rod type
LEY ***Series***
Guide rod type
LEYG ***Series***

●**Motor connector**
(Accessory)
p. 274

●**Encoder cable** **p. 277**

Standard cable	Robotic cable
LE-CYE-S□A	LE-CYE-R□A

●**Cable for safety function device (3 m)** **p. 280**
Part no.: **LEC-JZ-CVSAF**

Provided by the customer

PLC (Positioning unit/Motion controller)

Power supply for I/O signal 24 VDC

◎Option
●**I/O connector** **p. 278**
Part no.: **LE-CYNA**
or
I/O cable **p. 278**
Part no.: **LEC-CSNA-1**

◎Option

●**USB cable** **p. 280**
Part no.: **LEC-JZ-CVUSB**

Setup software **p. 280**
(SigmaWin+™)
Please download it via our website.

PC

∗ Order the USB cable (Part no.: **LEC-JZ-CVUSB**) separately to use this software.

SMC Electric Actuator

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

Ball screw drive
***LEFS* Series**
Clean room compatible

Belt drive
***LEFB* Series**

Ball screw drive
***LEFS* Series**
Clean room compatible

Belt drive
***LEFB* Series**

LEFS Series

Size	Max. work load [kg]	Stroke [mm]
16	15	Up to 500
25	30	Up to 800
32	50	Up to 1000
40	65	Up to 1200

LEFB Series

Size	Max. work load [kg]	Stroke [mm]
16	1	Up to 1000
25	10	Up to 2000
32	19	Up to 2000

LEFS Series

Size	Max. work load [kg]	Stroke [mm]
25	20	Up to 800
32	45	Up to 1000
40	60	Up to 1200

LEFB Series

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

High Rigidity Slider Type AC Servo Motor

Ball screw drive
***LEJS* Series**

Belt drive
***LEJB* Series**

LEJS Series

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

LEJB Series

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

Guide Rod Slider Step Motor (Servo/24 VDC)

Belt drive
***LEL* Series**

LEL25M Series
Sliding bearing

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

LEL25L Series
Ball bushing bearing

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

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

Basic type
***LEMB* Series**

Cam follower guide type
***LEMC* Series**

Linear guide single axis type
***LEMH* Series**

Linear guide double axis type
***LEMHT* Series**

LEMB Series

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

LEMC Series

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

LEMH Series

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

LEMHT Series

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

SMC Electric Actuator

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

p. 34, 104

Basic type
LEY Series

Dust-tight/Water-jet-proof

In-line motor type
LEY□D Series

Dust-tight/Water-jet-proof

Guide rod type
LEYG Series

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

LEY Series

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

LEYG Series

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

AC Servo Motor

p. 34, 104

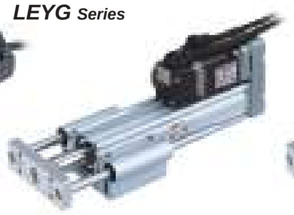
Basic type
LEY Series

Dust-tight/Water-jet-proof

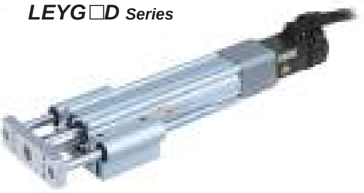
In-line motor type
LEY□D Series

Dust-tight/Water-jet-proof

Guide rod type
LEYG Series



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



LEY Series

Size	Pushing force [N]	Stroke [mm]
25	485	Up to 400
32	588	Up to 500
63	3343	Up to 800

LEY Series

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

LEYG Series

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

LEYG Series

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

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

LES Series

Basic type/R type
LES□R Series

Symmetrical type/L type
LES□L Series

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

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

LESH Series

Basic type/R type
LESH□R Series

Symmetrical type/L type
LESH□L Series

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

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

Miniature Step Motor (Servo/24 VDC)

Rod type
LEPY Series

Slide table type
LEPS Series

LEPY Series

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

LEPS Series

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

Rotary Table Step Motor (Servo/24 VDC)

Basic type
LER Series

High-precision type
LERH Series

LER Series

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		

SMC Electric Actuator

Gripper Step Motor (Servo/24 VDC)

2-finger type
LEHZ Series

2-finger type
With dust cover
LEHZJ Series

2-finger type
Long stroke
LEHF Series

3-finger type
LEHS Series

LEHZ Series

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

LEHZJ Series

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

LEHF Series

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)

∗ ( ): Long stroke

LEHS Series

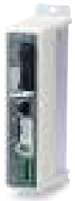
Size	Max. gripping force [N]		Stroke/diameter [mm]
	Basic	Compact	
10	5.5	3.5	4
20	22	17	6
32	90	—	8
40	130	—	12

Controller/Driver

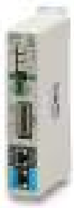
p. 190

Single Axis Controller

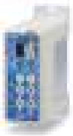
Step data input type
Servo motor
(24 VDC)
LECA6 Series



Gateway unit
LEC-G Series



Programless type
Step motor
(Servo/24 VDC)
LECP1 Series



Pulse input type
Step motor
(Servo/24 VDC)
LECPA Series

EtherCAT®/EtherNet/IP™/PROFINET/DeviceNet™/IO-Link direct input type
JXC□ Series

EtherCAT.

EtherNet/IP

PROFI NET

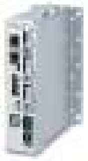
DeviceNet

IO-Link

Multi-Axis Controller

EtherNet/IP™ direct input type

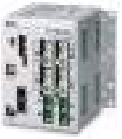
For 3 axes *JXC92* Series



Parallel I/O/EtherNet/IP™ direct input type

For 4 axes *JXC73* Series
JXC83 Series

JXC93 Series
EtherNet/IP



Driver

p. 246

AC Servo Motor Driver

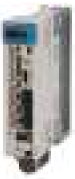
Pulse input type
LECSA Series
LECSB Series
- Absolute encoder (LECSB)
- Built-in positioning function (LECSA)

LECSA Series

LECSB Series

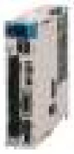
CC-Link
direct input type
LECSC Series
CC-Link

SSCNET Ⅲ type
LECSS Series
SSCNETⅢ SERVO SYSTEM CONTROLLER NETWORK

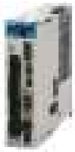


SSCNET Ⅲ/H type
LECSS-T Series
SSCNETⅢ/H SERVO SYSTEM CONTROLLER NETWORK

MECHATROLINK-Ⅱ type
LECYM Series
MECHATROLINK-Ⅱ

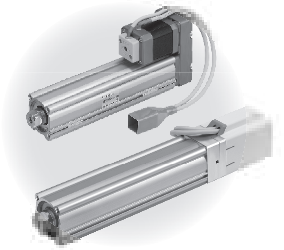


MECHATROLINK-Ⅲ type
LECYU Series
MECHATROLINK-Ⅲ



INDEX

Electric Actuator/Rod Type *LEY* *Series*



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

◎Rod Type *LEY* *Series*

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Construction .... p. 61
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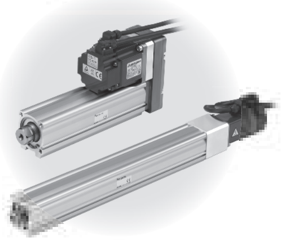
Accessory Mounting Brackets .... p. 97



AC Servo Motor

LECS□* *Series

◎Rod Type *LEY* *Series* Size 25, 32

Model Selection .... p. 41
How to Order .... p. 69
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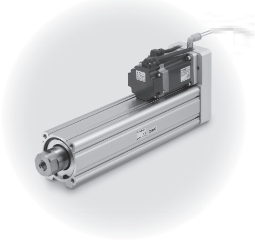

◎Rod Type *LEY* *Series* Size 63 Dust-tight/Water-jet-proof (IP65 Equivalent) ⁎ Option

Model Selection .... p. 41
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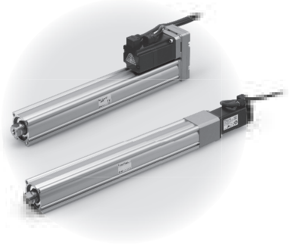

LECY□* *Series

◎Rod Type *LEY* *Series*

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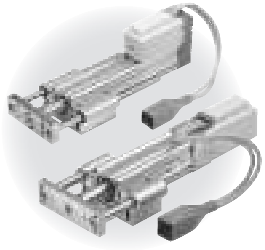
Electric Actuator/Guide Rod Type *LEYG* *Series*



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

◎Guide Rod Type *LEYG* *Series*

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How to Order .... p. 121
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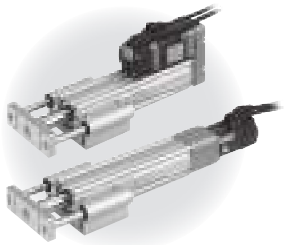

AC Servo Motor

LECS□* *Series

◎Guide Rod Type *LEYG* *Series*

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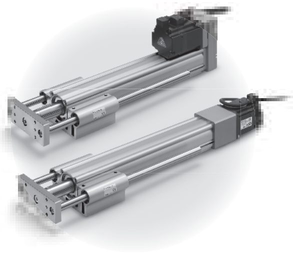

LECY□* *Series

◎Guide Rod Type *LEYG* *Series*

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How to Order .... p. 143
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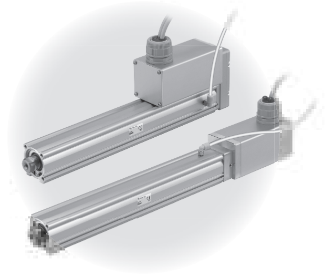
Environment



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

◎Rod Type *LEY-X5* (Made to Order) Dust-tight/Water-jet-proof (IP65 Equivalent)

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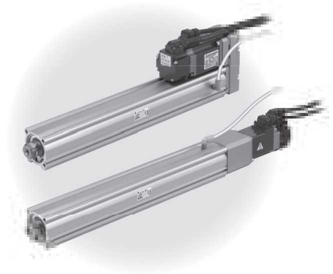

AC Servo Motor

LECS□ ***Series***

◎Rod Type *LEY-X5* (Made to Order) Dust-tight/Water-jet-proof (IP65 Equivalent)

Model Selection .... p. 43
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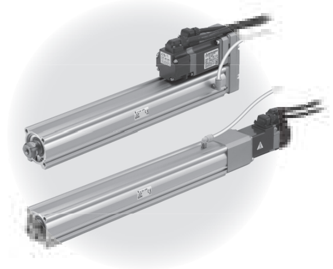

AC Servo Motor

LECY□ ***Series***

◎Rod Type *LEY-X5* (Made to Order) Dust-tight/Water-jet-proof (IP65 Equivalent)

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Step Motor (Servo/24 VDC) Servo Motor (24 VDC) AC Servo Motor

◎Rod Type *25A-LEY* Secondary Battery Compatible .... p. 177

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

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  Communication Cable for Controller Setting/***LEC-W2A*** ... p. 200
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  Teaching Box/***LEC-T1*** .... p. 231

◎3-Axis Step Motor (Servo/24 VDC) Controller

EtherNet/IP™ Type/***JXC92*** ***Series*** .... p. 233

◎4-Axis Step Motor (Servo/24 VDC) Controller

Parallel I/O Type/***JXC73/83*** ***Series*** .... p. 235
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◎AC Servo Motor Driver

LECSA/LECSB/
LECSC/LECSS ***Series*** .... p. 250
LECSS-T ***Series*** .... p. 250
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Rod Type LEY Series

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

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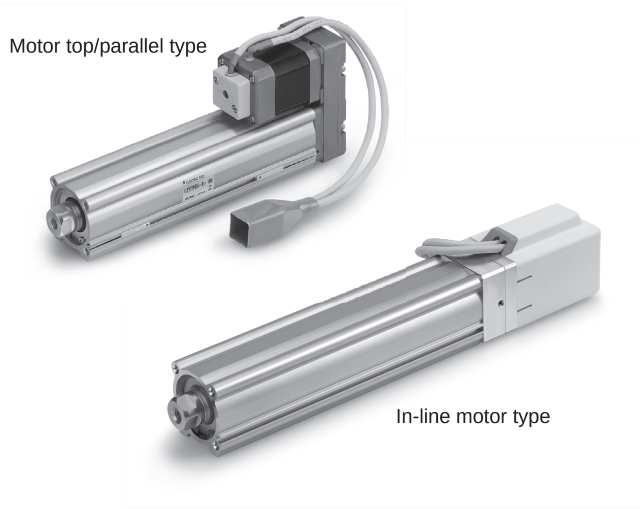
Motor top/parallel type

In-line motor type

AC Servo Motor

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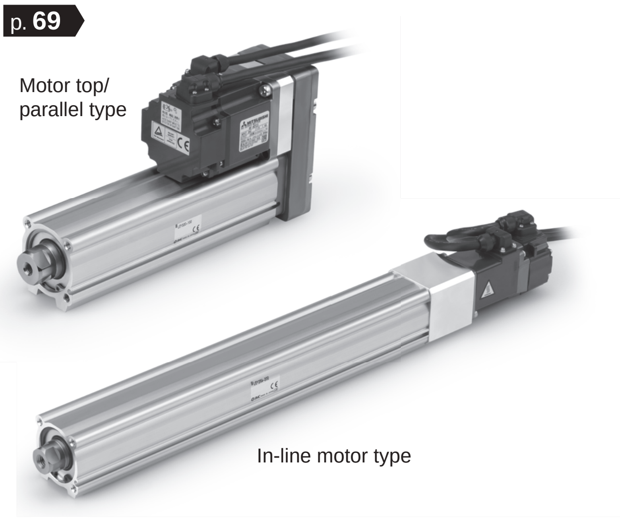
Motor top/ parallel type

In-line motor type

Environment

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

Dust-tight/Water-jet-proof (IP65 Equivalent)

LEY-X5 (Made to order)

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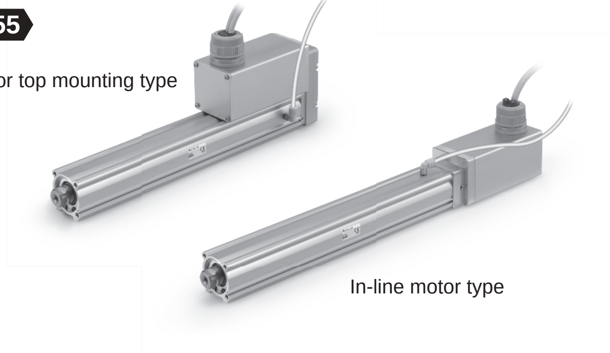
Motor top mounting type

In-line motor type

Secondary Battery Compatible

25A-LEY

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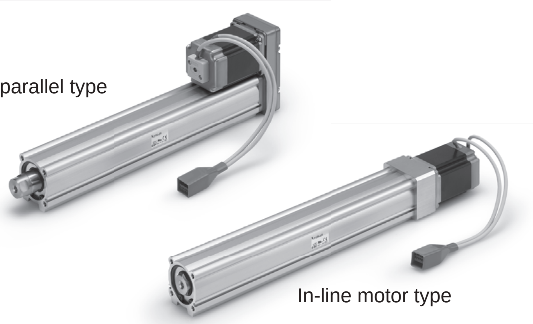
Motor top/parallel type

In-line motor type

AC Servo Motor

Dust-tight/Water-jet-proof (IP65 Equivalent)

LEY-X5 (Made to order)

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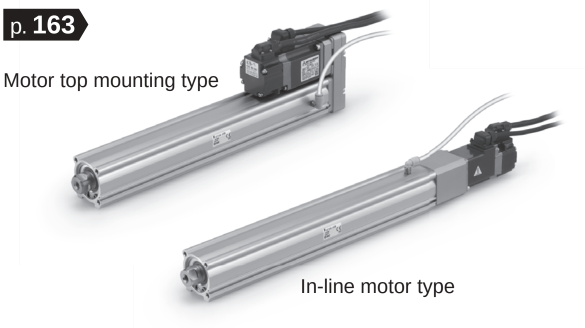
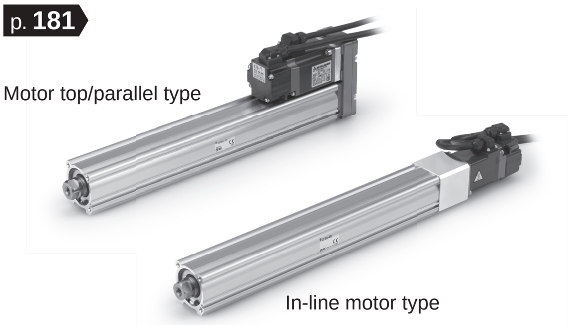

Motor top mounting type

In-line motor type

Secondary Battery Compatible

25A-LEY

p. 181


Motor top/parallel type

In-line motor type

Step Motor/Servo Motor Controller/Driver p. 200

AC Servo Motor Driver p. 246

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

Electric Actuator/Rod Type Secondary Battery Compatible

LEY/25A-LEY Series

Model Selection

LEY Series▸p. 55 **25A-LEY Series**▸p. 177

Selection Procedure

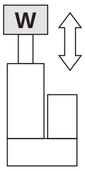
Positioning Control Selection Procedure

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

Selection Example

Operating conditions

- Workpiece mass: 4 [kg]
- Speed: 100 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s^2]
- Stroke: 200 [mm]
- Workpiece mounting condition: Vertical upward downward transfer

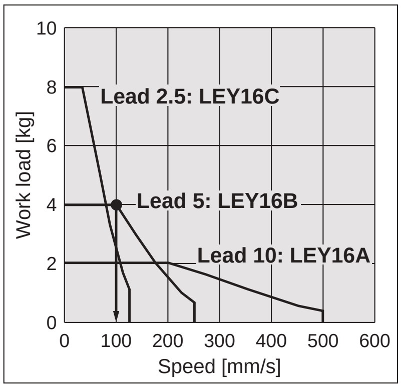


Step 1 **Check the work load–speed. <Speed–Vertical work load graph>**

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

Selection example) The **LEY16B** 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 the horizontal work load in the specifications on page 59 and the precautions.



<Speed–Vertical work load graph>
(LEY16/Step motor)

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.

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

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

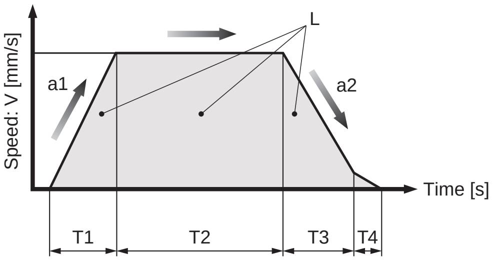
$$\boxed{T1 = V/a1\ [s]} \quad \boxed{T3 = V/a2\ [s]}$$

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

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

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

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



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 positioning is completed

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

$T1 = V/a1 = 100/3000 = 0.033$ [s], $T3 = V/a2 = 100/3000 = 0.033$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 100 \cdot (0.033 + 0.033)}{100} = 1.97\ [s]$$

$T4 = 0.2$ [s]

Therefore, the cycle time can be obtained as follows.
$T = T1 + T2 + T3 + T4 = 0.033 + 1.967 + 0.033 + 0.2 =$ **2.233 [s]**

Based on the above calculation result, the LEY16B-200 is selected.

Selection Procedure

Pushing Control Selection Procedure

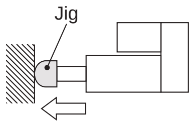
Step 1 Check the duty ratio. → **Step 2** Check the pushing force. → **Step 3** Check the lateral load on the rod end.

＊ The duty ratio is a ratio of the operation time in one cycle.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.2 [kg]
- Pushing force: 60 [N]
- Duty ratio: 20 [%]
- Speed: 100 [mm/s]
- Stroke: 200 [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>.

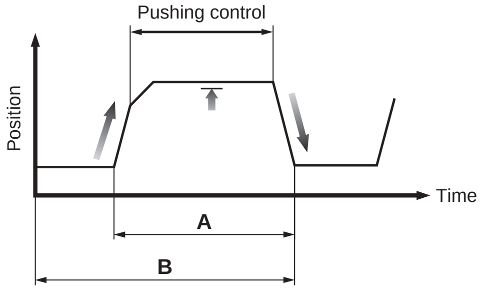
Selection example)
Based on the table below,
- Duty ratio: 20 [%]

Therefore, the set value of pushing force will be 70 [%].

<Conversion table of pushing force–duty ratio>
(LEY16/Step motor)

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 or less	100	—
50	70	12
70	20	1.3
85	15	0.8

＊ [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.



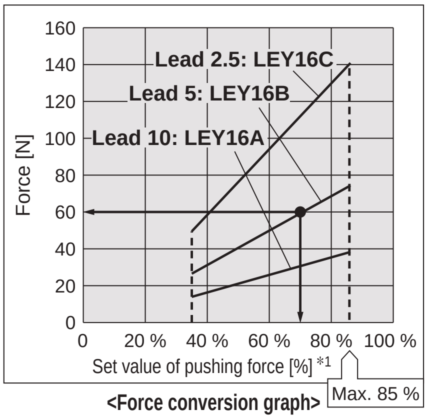
Duty ratio = A/B x 100 [%]

Step 2 Check the pushing force. <Force conversion graph>

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

Selection example)
Based on the graph shown on the right side,
- Set value of pushing force: 70 [%]
- Pushing force: 60 [N]

Therefore, the **LEY16B** is temporarily selected.



<Force conversion graph>
(LEY16/Step motor)

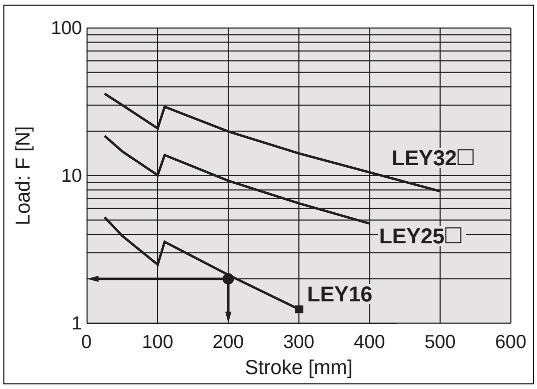
＊1 Set values for the controller.

Step 3 Check the lateral load on the rod end. <Graph of allowable lateral load on the rod end>

Confirm the allowable lateral load on the rod end of the actuator: LEY16□, which has been selected temporarily with reference to the <Graph of allowable lateral load on the rod end>.

Selection example)
Based on the graph shown on the right side,
- Jig weight: 0.2 [kg] ≈ 2 [N]
- Product stroke: 200 [mm]

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



<Graph of allowable lateral load on the rod end>

Based on the above calculation result, the LEY16B-200 is selected.

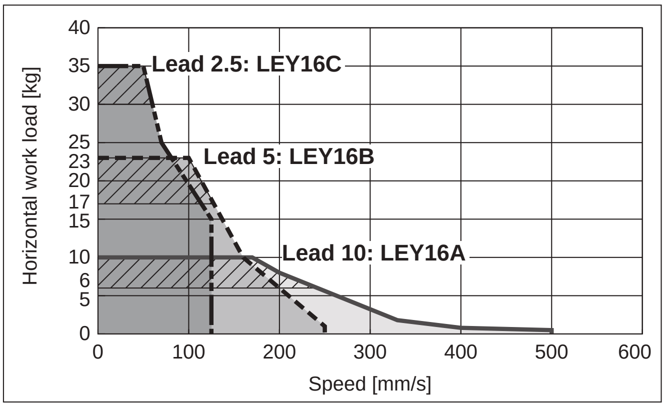
Refer to page 38 for the LECPA, JXC□$^{2}_{3}$ and page 39 for the LECA6.

Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECP1, LECPMJ, JXC□1

Horizontal

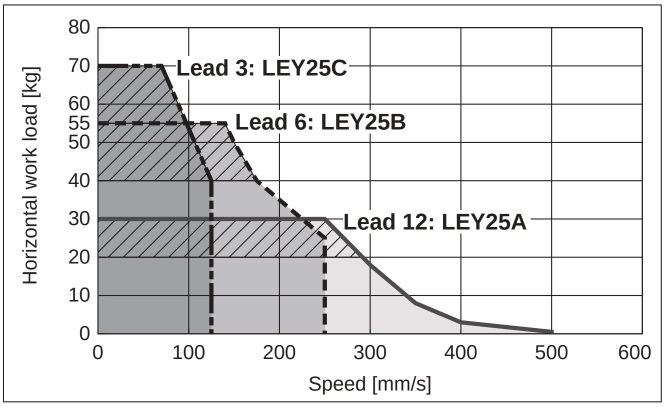
LEY16□

▨ for acceleration/deceleration: 2000 mm/s²



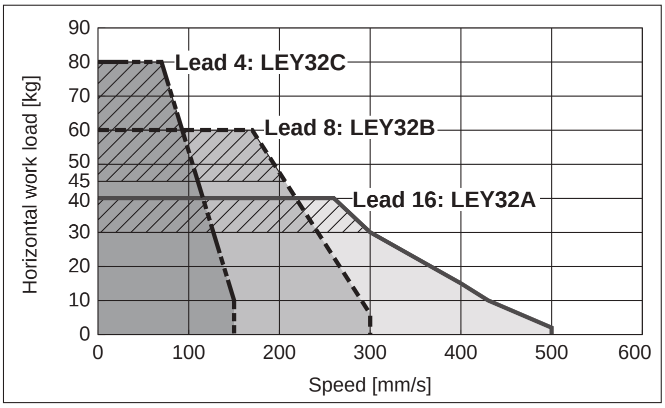
LEY25□

▨ for acceleration/deceleration: 2000 mm/s²



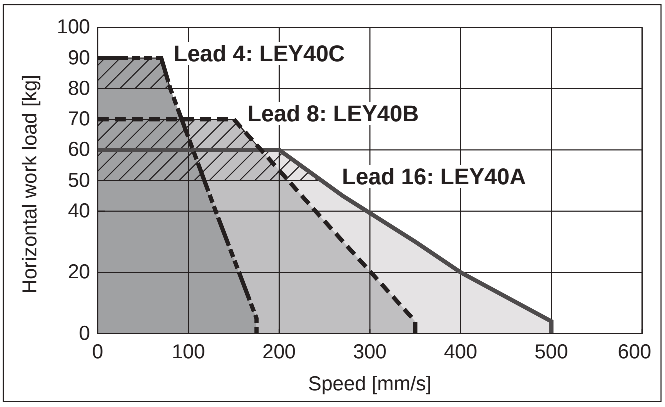
LEY32□

▨ for acceleration/deceleration: 2000 mm/s²



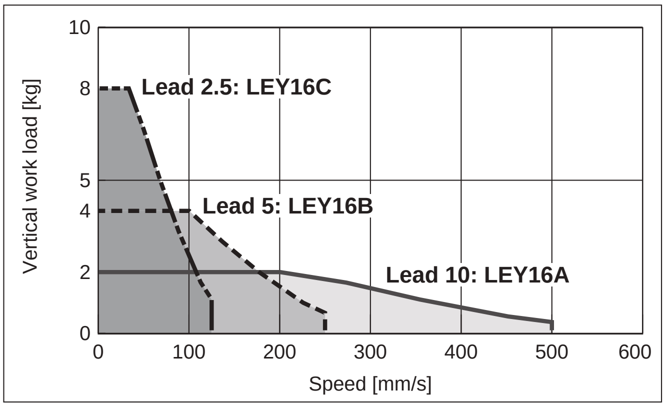
LEY40□

▨ for acceleration/deceleration: 2000 mm/s²

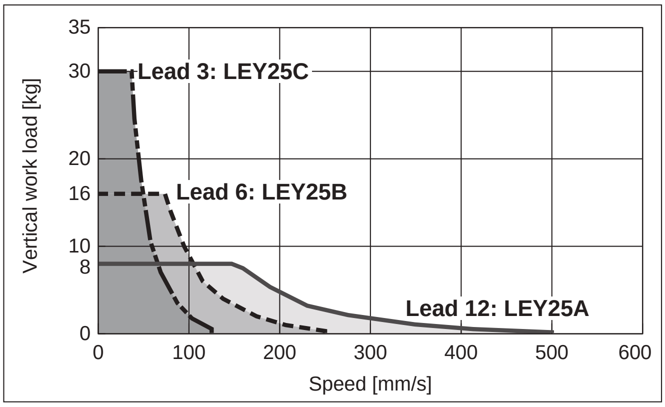


Vertical

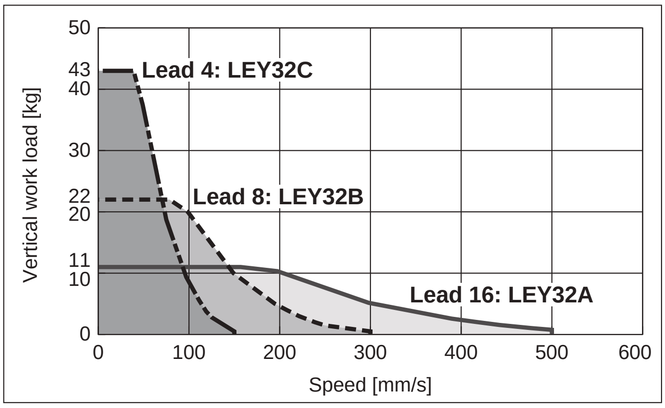
LEY16□



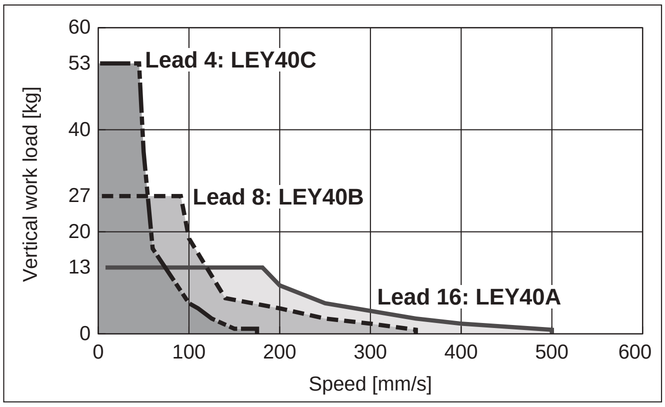
LEY25□



LEY32□



LEY40□



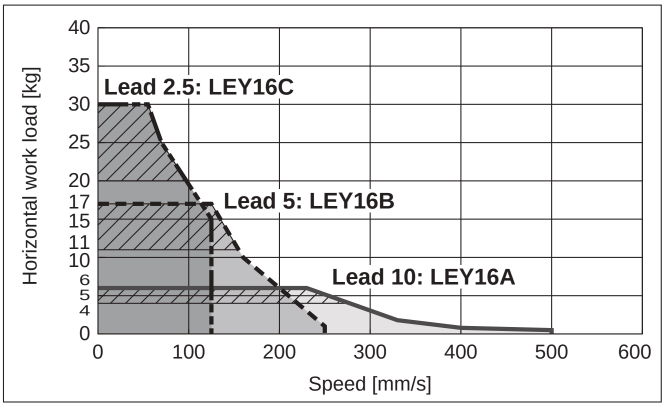
Refer to page 37 for the LECP1, LECPMJ, JXC□1 and page 39 for the LECA6.

Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA, JXC□$^{2}_{3}$

Horizontal

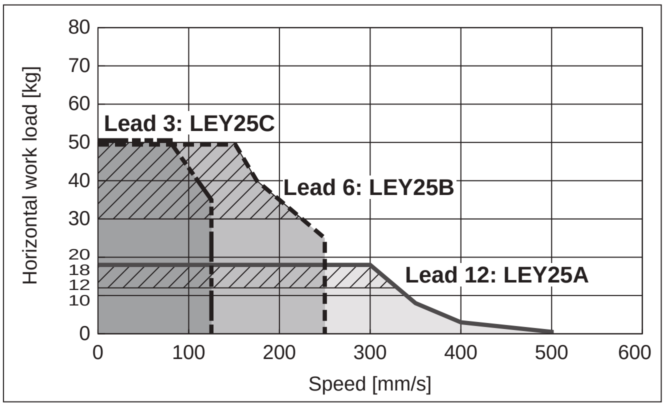
LEY16□

▨ for acceleration/deceleration: 2000 mm/s²



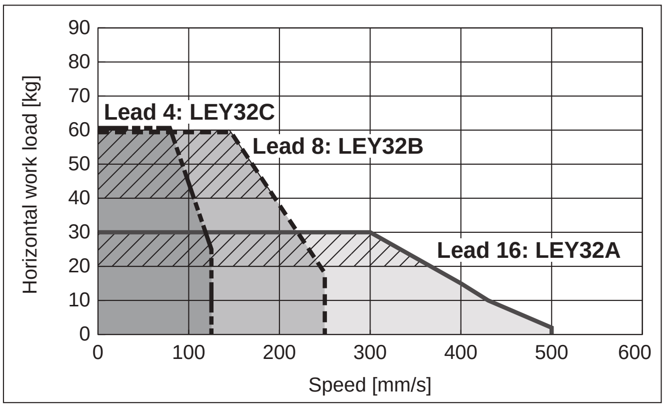
LEY25□

▨ for acceleration/deceleration: 2000 mm/s²

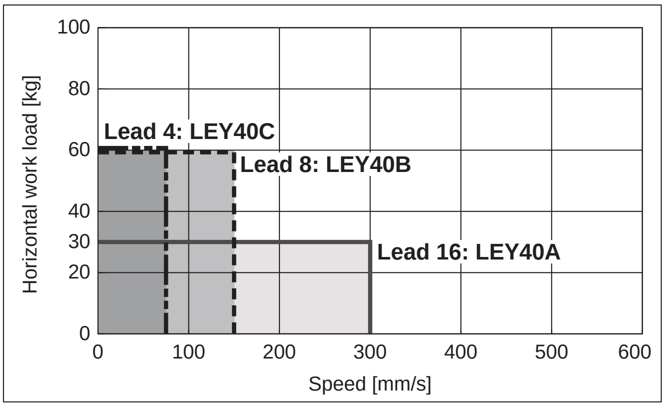


LEY32□

▨ for acceleration/deceleration: 2000 mm/s²

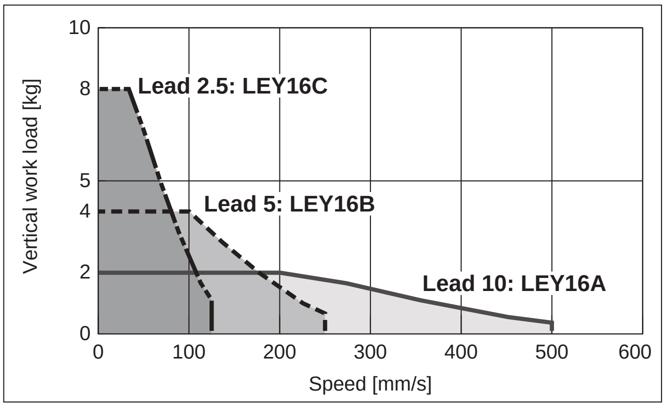


LEY40□

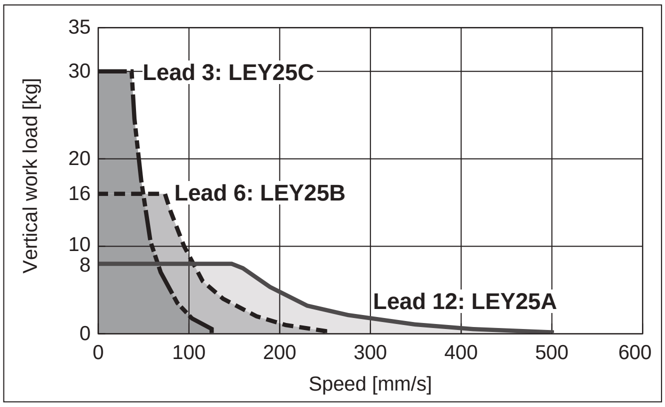


Vertical

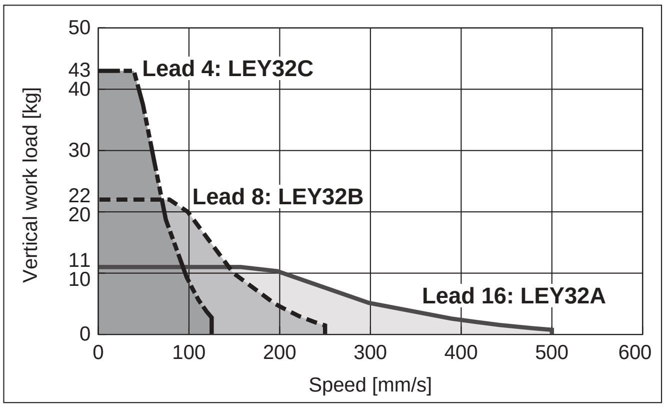
LEY16□



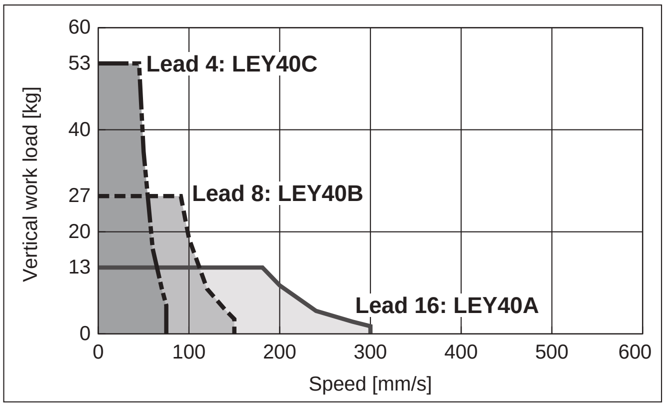
LEY25□



LEY32□



LEY40□

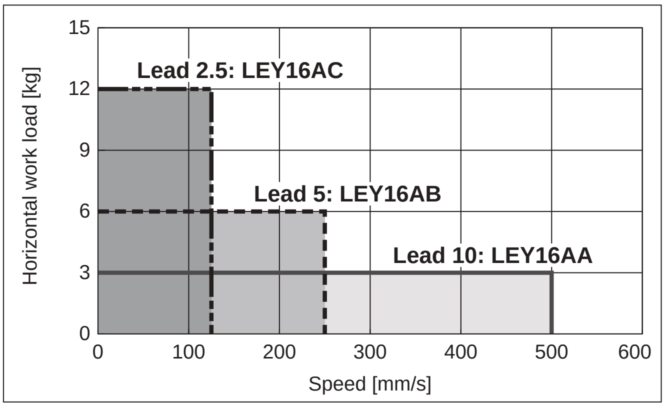


Speed–Work Load Graph (Guide)
For Servo Motor (24 VDC) LECA6

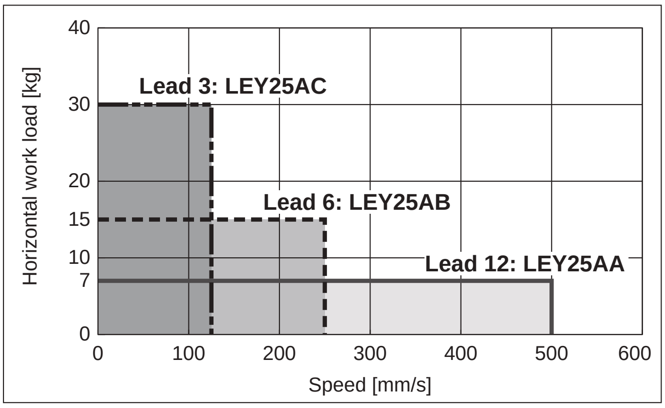
Refer to page 37 for the LECP1, LECPMJ, JXC□1 and page 39 for the LECPA, JXC□$^{2}_{3}$.

Horizontal

LEY16□A

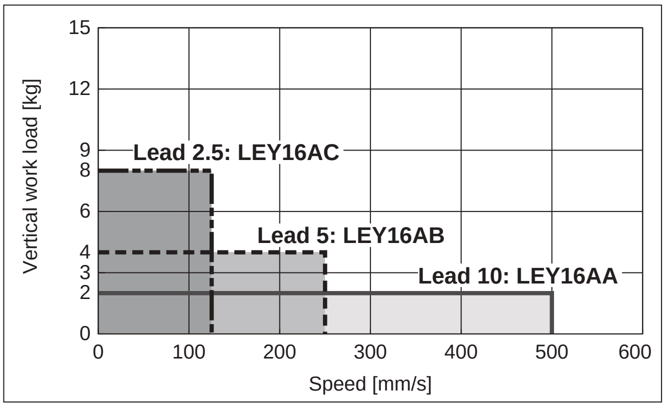


LEY25□A

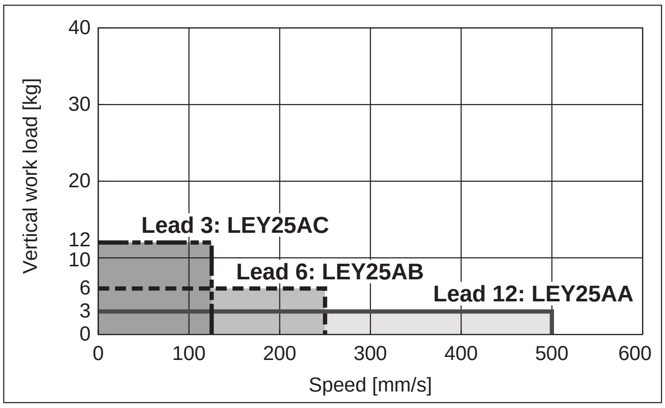


Vertical

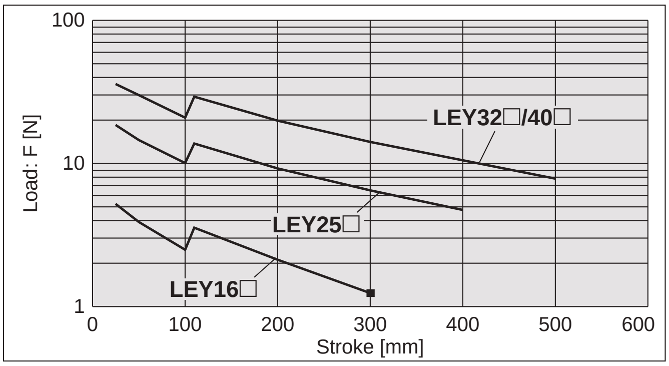
LEY16□A



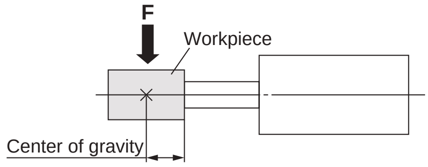
LEY25□A



Graph of Allowable Lateral Load on the Rod End (Guide)

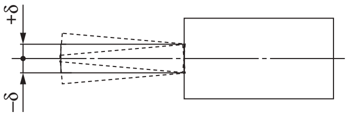


[Stroke] = [Product stroke] + [Distance from the rod end to the centre of gravity of the workpiece]

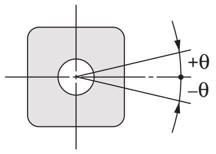


Rod Displacement: δ [mm]

Size \ Stroke	30	50	100	150	200	250	300	350	400	450	500
16	±0.4	±0.5	±0.9	±0.8	±1.1	±1.3	±1.5	—	—	—	—
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—
32, 40	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8



Non-rotating Accuracy of Rod



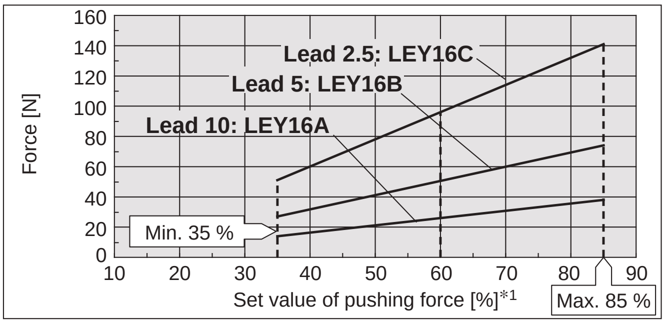
Size	Non-rotating accuracy θ
16	±1.1°
25	±0.8°
32	±0.7°
40	

∗ Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

Force Conversion Graph (Guide)

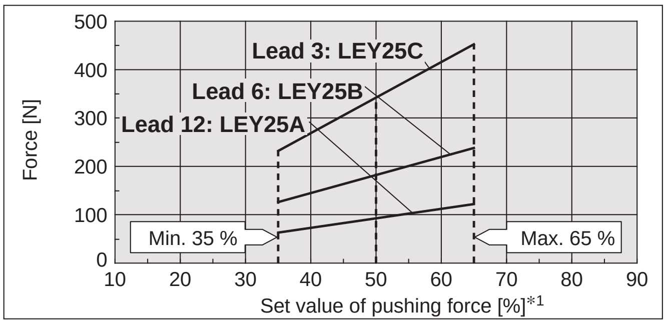
Step Motor (Servo/24 VDC)

LEY16



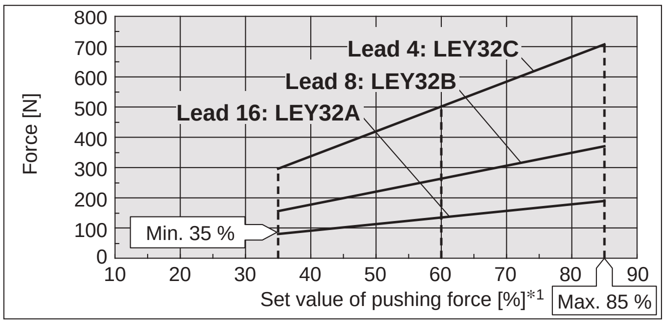
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	40 or less	100	—
	50	70	12
	70	20	1.3
	85	15	0.8

LEY25



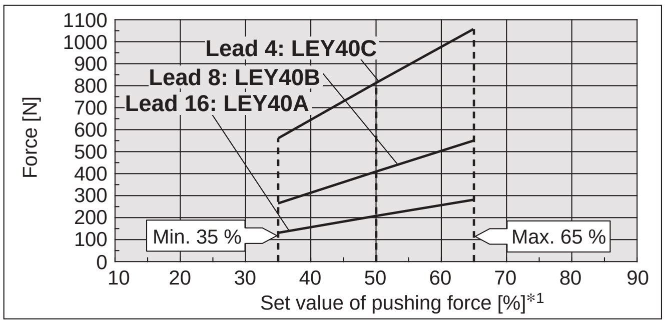
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

LEY32



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	65 or less	100	—
	85	50	15

LEY40

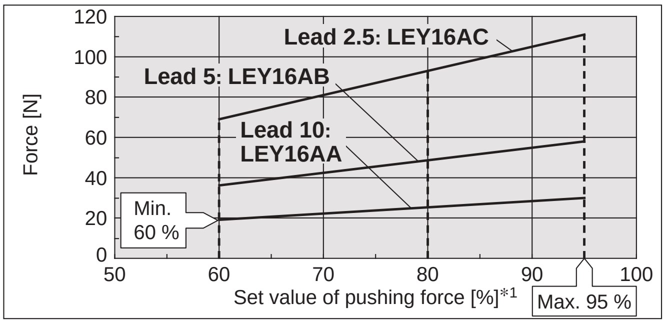


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

∗1 Set values for the controller

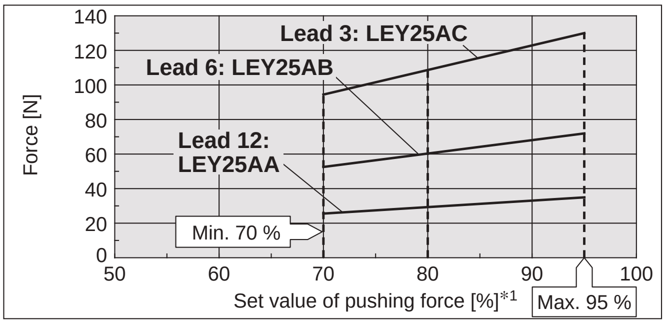
Servo Motor (24 VDC)

LEY16□A



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	95 or less	100	—

LEY25□A



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	95 or less	100	—

<Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed>

Without Load

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY16	A/B/C	21 to 50	60 to 85 %
LEY25	A/B/C	21 to 35	50 to 65 %
LEY32	A	24 to 30	60 to 85 %
	B/C	21 to 30	
LEY40	A	24 to 30	50 to 65 %
	B/C	21 to 30	

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY16□A	A/B/C	21 to 50	80 to 95 %
LEY25□A	A/B/C	21 to 35	80 to 95 %

There is a limit to the pushing force in relation to the pushing speed. If the product is operated outside of the range (low pushing force), the completion signal [INP] may be output before the pushing operation has been completed (during the moving operation). If operating with the pushing speed below the min. speed, please check for operating problems before using the product.

<Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	**LEY16□**			**LEY25□**			**LEY32□**			**LEY40□**			**LEY16□A**			**LEY25□A**		
Lead	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**
Work load [kg]	1	1.5	3	2.5	5	10	4.5	9	18	7	14	28	1	1.5	3	1.2	2.5	5
Pushing force	85 %			65 %			85 %			65 %			95 %			95 %		

AC Servo Motor **LECS□ Series**

Electric Actuator/Rod Type

LEY/LEY-X5/25A-LEY Series Dust-tight/Water-jet-proof (IP65 Equivalent) Secondary Battery Compatible

Model Selection

Size **25, 32, 63**

LEY Series▶p. 69, 79 **LECY□ Series**▶p. 87
LEY-X5 Series▶p. 163 **25A-LEY Series**▶p. 181

Selection Procedure

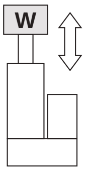
Positioning Control Selection Procedure

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

Selection Example

Operating conditions

- Workpiece mass: 16 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 5000 [mm/s²]
- Stroke: 300 [mm]
- Workpiece mounting condition: Vertical upward downward transfer



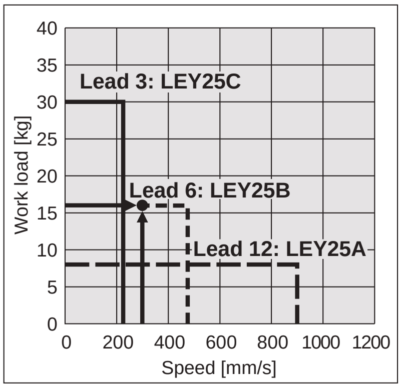
Step 1 **Check the work load–speed. <Speed–Vertical work load graph>**

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

Selection example) The **LEY25B** 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 the horizontal work load in the specifications on pages 71, 72, 80, 89, 90, and 164 and the precautions.

The regeneration option may be necessary. Refer to pages 43 and 44 for "Required Conditions for Regeneration Option."



<Speed–Vertical work load graph>
(LEY25)

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.

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

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

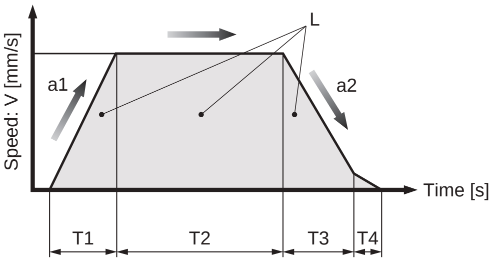
$$\boxed{T1 = V/a1 \text{ [s]}} \quad \boxed{T3 = V/a2 \text{ [s]}}$$

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

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

- T4: Settling time varies depending on the motor type and load. The value below is recommended.

$$\boxed{T4 = 0.05 \text{ [s]}}$$



L : Stroke [mm] ··· (Operating condition)
V : Speed [mm/s] ··· (Operating condition)
a1: Acceleration [mm/s²] ··· (Operating condition)
a2: Deceleration [mm/s²] ··· (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 positioning is completed

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

$$T1 = V/a1 = 300/5000 = 0.06 \text{ [s]}, \quad T3 = V/a2 = 300/5000 = 0.06 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{300 - 0.5 \cdot 300 \cdot (0.06 + 0.06)}{300} = 0.94 \text{ [s]}$$

$$T4 = 0.05 \text{ [s]}$$

Therefore, the cycle time can be obtained as follows.
$T = T1 + T2 + T3 + T4 = 0.06 + 0.94 + 0.06 + 0.05 =$ **1.11 [s]**

Based on the above calculation result, the LEY25S2B-300 is selected.

Selection Procedure

Force Control Selection Procedure

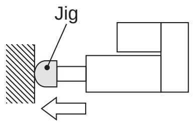
Step 1 Check the duty ratio. → **Step 2** Check the force. → **Step 3** Check the lateral load on the rod end.

∗ The duty ratio is a ratio of the operation time in one cycle.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.5 [kg]
- Force: 255 [N]
- Duty ratio: 60 [%]
- Speed: 100 [mm/s]
- Stroke: 300 [mm]

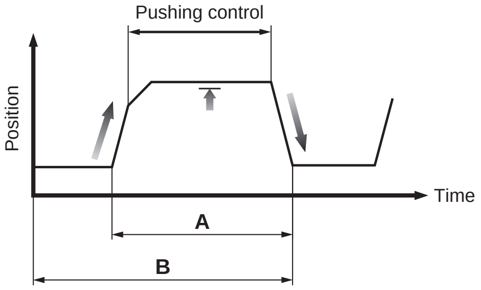


Step 1 **Check the duty ratio.**
<Conversion table of force–duty ratio>

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

Selection example)
Based on the table below,
- Duty ratio: 60 [%]

Therefore, Torque limit/Command value will be 30 [%].



Duty ratio = A/B x 100 [%]

<Conversion table of force–duty ratio>
(LEY25/AC Servo motor)

Torque limit/ Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

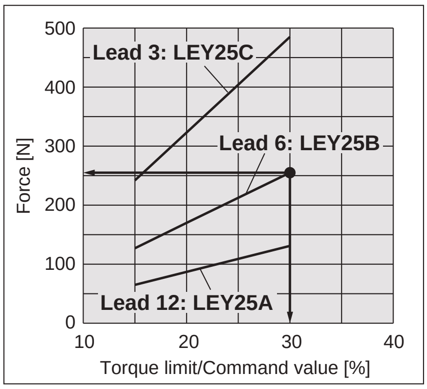
∗ [Torque limit/Command value [%]] is the set value for the driver.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.

Step 2 **Check the force. <Force conversion graph>**

Select the target model based on the torque limit/command value and pushing force with reference to the <Force conversion graph>.

Selection example)
Based on the graph shown on the right side,
- Torque limit/Command value: 30 [%]
- Force: 255 [N]

Therefore, the **LEY25B** is temporarily selected.



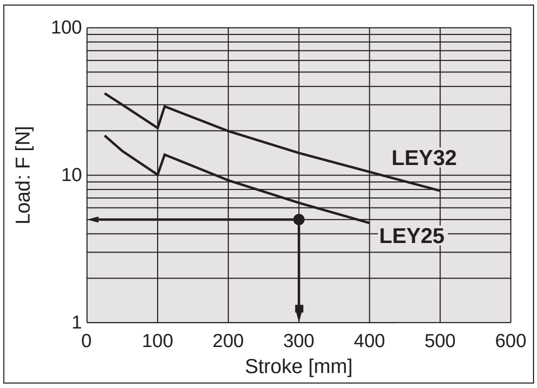
<Force conversion graph>
(LEY25)

Step 3 **Check the lateral load on the rod end.**
<Graph of allowable lateral load on the rod end>

Confirm the allowable lateral load on the rod end of the actuator: LEY25B, which has been selected temporarily with reference to the <Graph of allowable lateral load on the rod end>.

Selection example)
Based on the graph shown on the right side,
- Jig weight: 0.5 [kg] ≈ 5 [N]
- Product stroke: 300 [mm]

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

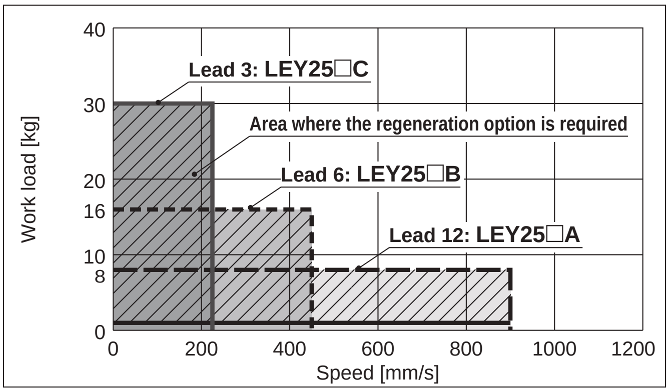


<Graph of allowable lateral load on the rod end>

Based on the above calculation result, the LEY25S2B-300 is selected.

Speed–Vertical Work Load Graph/Required Conditions for “Regeneration Option”

LEY25□S$^{2}_{6}$/T6 (Motor mounting position: Top/Parallel, In-line)



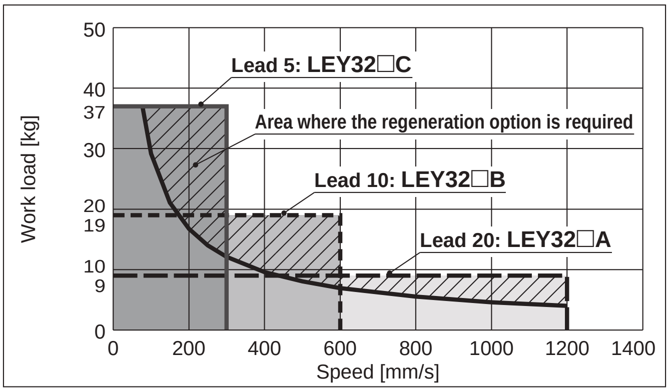
Required conditions for “Regeneration option”

∗ Regeneration option is required when using product above regeneration line in graph. (Order separately.)

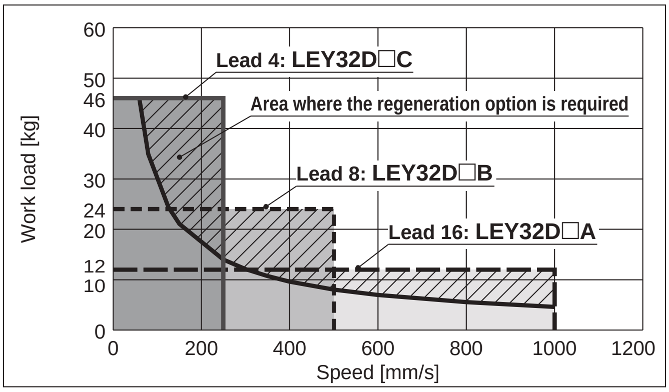
“Regeneration Option” Models

Size	Model
LEY25□	LEC-MR-RB-032
LEY32□	LEC-MR-RB-032
LEY63□	LEC-MR-RB-12

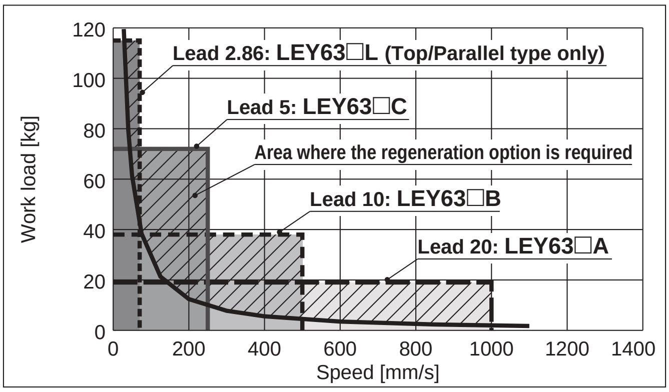
LEY32□S$^{3}_{7}$/T7 (Motor mounting position: Top/Parallel)



LEY32DS$^{3}_{7}$/T7 (Motor mounting position: In-line)

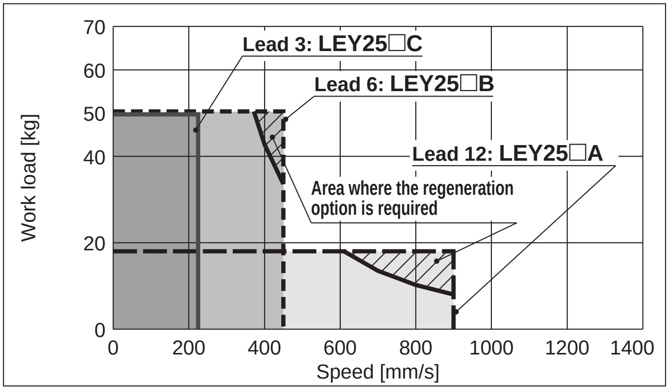


LEY63□S$^{4}_{8}$/T8 (Motor mounting position: Top/Parallel, In-line)



Speed–Horizontal Work Load Graph/Required Conditions for “Regeneration Option”

LEY25□S$^2_6$/T6 (Motor mounting position: Top/Parallel, In-line)



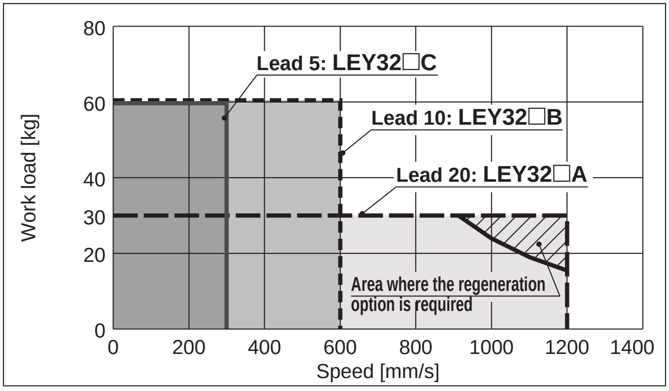
Required conditions for “Regeneration option”

∗ Regeneration option is required when using product above regeneration line in graph. (Order separately.)

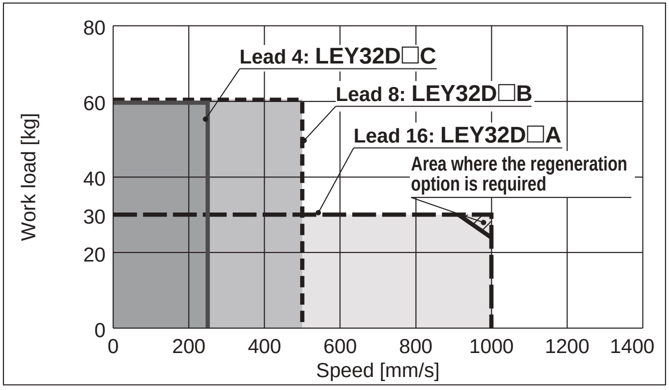
“Regeneration Option” Models

Size	Model
LEY25□	LEC-MR-RB-032
LEY32□	LEC-MR-RB-032
LEY63□	—

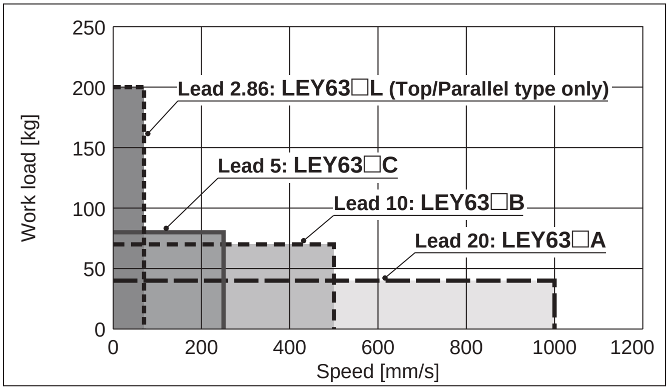
LEY32□S$^3_7$/T7 (Motor mounting position: Top/Parallel)



LEY32DS$^3_7$/T7 (Motor mounting position: In-line)



LEY63□S$^4_8$/T8 (Motor mounting position: Top/Parallel, In-line)



Allowable Stroke Speed

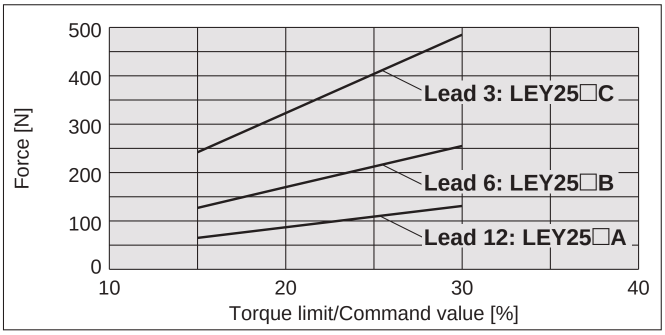
[mm/s]

Model	AC servo motor	Lead		Stroke [mm]													
		Symbol	[mm]	30	50	100	150	200	250	300	350	400	450	500	600	700	800
LEY25□S$^2_6$/T6 (Motor mounting position: Top/Parallel, In-line)	100 W /□40	**A**	12	900							600		—	—	—		
		B	6	450							300		—	—	—		
		C	3	225							150		—	—	—		
		(Motor rotation speed)		(4500 rpm)							(3000 rpm)		—	—	—		
LEY32□S$^3_7$/T7 (Motor mounting position: Top/Parallel)	200 W /□60	**A**	20	1200									800		—		
		B	10	600									400		—		
		C	5	300									200		—		
		(Motor rotation speed)		(3600 rpm)									(2400 rpm)		—		
LEY32DS$^3_7$/T7 (Motor mounting position: In-line)	200 W /□60	**A**	16	1000									640		—		
		B	8	500									320		—		
		C	4	250									160		—		
		(Motor rotation speed)		(3750 rpm)									(2400 rpm)		—		
LEY63□S$^4_8$/T8 (Motor mounting position: Top/Parallel, In-line)	400 W /□60	**A**	20	1000											800	600	500
		B	10	500											400	300	250
		C	5	250											200	150	125
		(Motor rotation speed)		(3000 rpm)											(2400 rpm)	(1800 rpm)	(1500 rpm)
		L∗1	2.86	70													
		(Motor rotation speed)		(1470 rpm)													

∗1 Top/Parallel type only

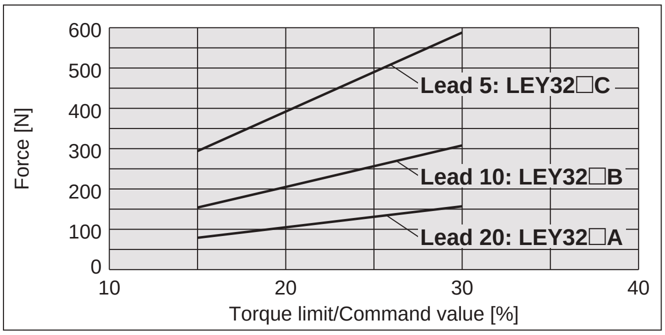
Force Conversion Graph (Guide)
For LECSA, LECSB, LECSC, LECSS

LEY25□S$_6^2$ (Motor mounting position: Top/Parallel, In-line)



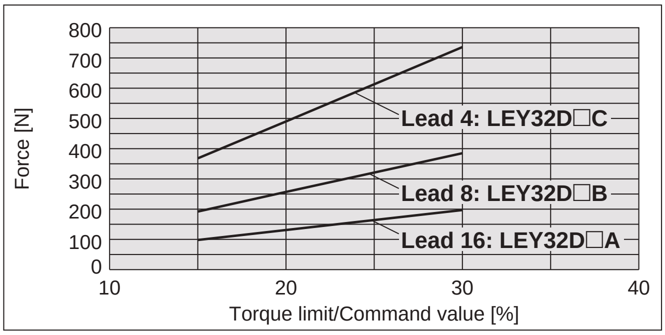
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32□S$_7^3$ (Motor mounting position: Top/Parallel)



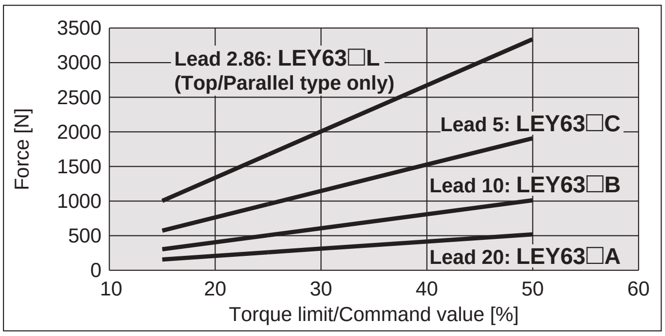
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEY32DS$_7^3$ (Motor mounting position: In-line)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

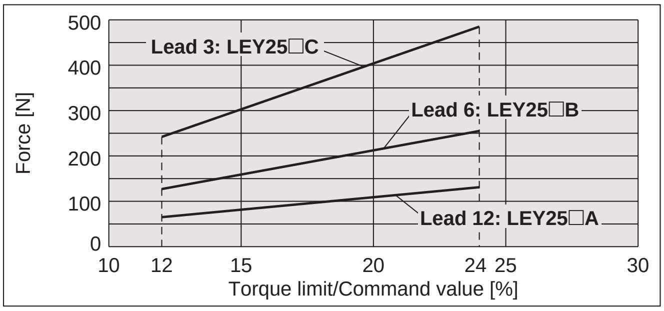
LEY63□S$_8^4$ (Motor mounting position: Top/Parallel, In-line)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5
40	30	0.5
50	20	0.16

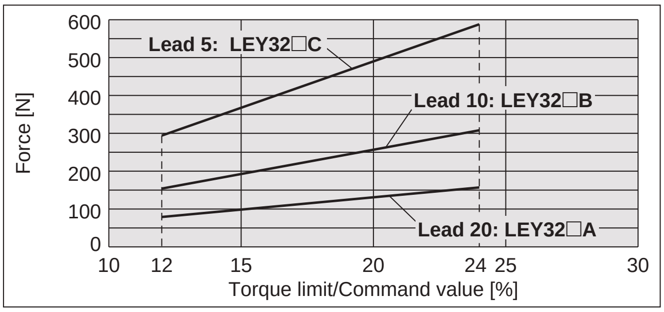
Force Conversion Graph (Guide)
For LECSS-T

LEY25□T6 (Motor mounting position: Top/Parallel, In-line)



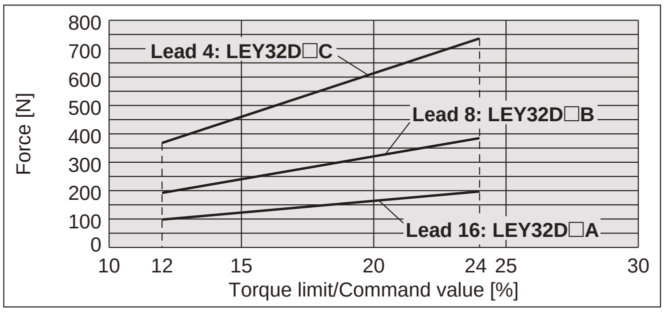
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5

LEY32□T7 (Motor mounting position: Top/Parallel)



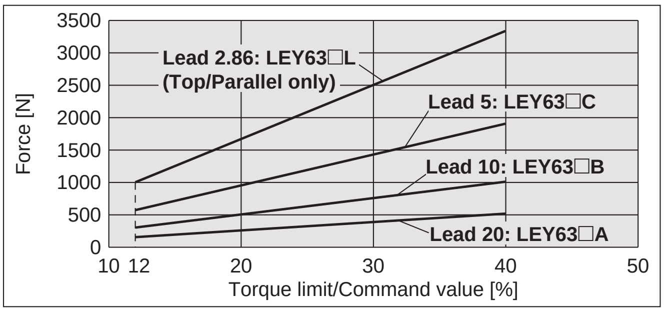
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5

LEY32DT7 (Motor mounting position: In-line)



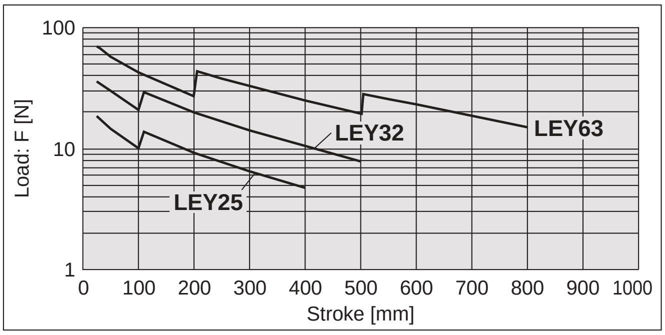
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5

LEY63□T8 (Motor mounting position: Top/Parallel, In-line)

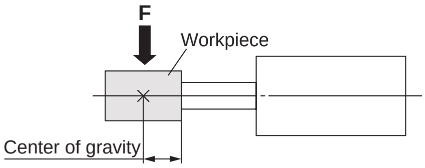


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5
32	30	0.5
40	20	0.16

Graph of Allowable Lateral Load on the Rod End (Guide)

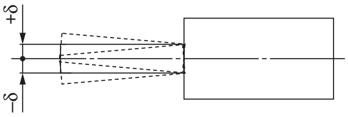


[Stroke] = [Product stroke] + [Distance from the rod end to the centre of gravity of the workpiece]

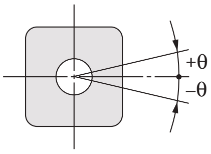


Rod Displacement: δ [mm]

Stroke / Size	30	50	100	150	200	250	300	350	400	450	500	600	700	800
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—	—	—	—
32	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8	—	—	—
63	—	±0.5	±0.7	±0.9	±1.2	±1.1	±1.3	±1.5	±1.7	±1.9	±2.1	±1.7	±2.0	±2.2



Non-rotating Accuracy of Rod



Size	Non-rotating accuracy θ
25	±0.8°
32	±0.7°
63	±0.6°

* Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

AC Servo Motor ***LECY□ Series***

Electric Actuator/Rod Type

LEY/LEY-X5/25A-LEY Series Dust-tight/Water-jet-proof (IP65 Equivalent) Secondary Battery Compatible

Model Selection

Size **25, 32, 63**

LEY Series▸p. 87 **LECS□ Series▸p. 69, 79**
LEY-X5 Series▸p. 169 **25A-LEY Series▸p. 183**

Selection Procedure

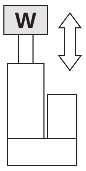
Positioning Control Selection Procedure

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

Selection Example

Operating conditions

- Workpiece mass: 16 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 5000 [mm/s²]
- Stroke: 300 [mm]
- Workpiece mounting condition: Vertical upward downward transfer



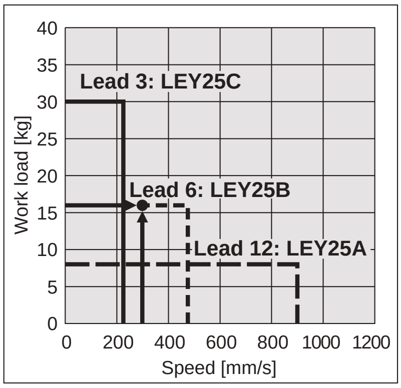
Step 1 **Check the work load–speed. <Speed–Vertical work load graph>**

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

Selection example) The **LEY25B** 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 the horizontal work load in the specifications on pages 89 and 90 and the precautions.

The regenerative resistor may be necessary. Refer to pages 50 and 51 for “Conditions for Regenerative Resistor (Guide).”



<Speed–Vertical work load graph> (LEY25)

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.

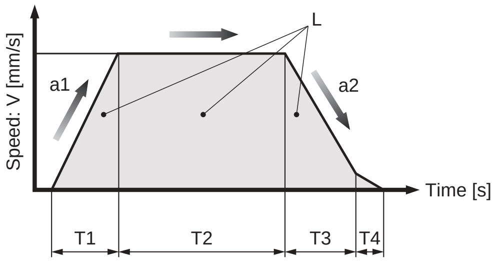
$$T1 = V/a1 \text{ [s]} \qquad T3 = V/a2 \text{ [s]}$$

- 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 motor type and load. The value below is recommended.

$$T4 = 0.05 \text{ [s]}$$



L : Stroke [mm] ··· (Operating condition)
V : Speed [mm/s] ··· (Operating condition)
a1: Acceleration [mm/s²] ··· (Operating condition)
a2: Deceleration [mm/s²] ··· (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 positioning is completed

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

$$T1 = V/a1 = 300/5000 = 0.06 \text{ [s]}, \quad T3 = V/a2 = 300/5000 = 0.06 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{300 - 0.5 \cdot 300 \cdot (0.06 + 0.06)}{300} = 0.94 \text{ [s]}$$

$$T4 = 0.05 \text{ [s]}$$

Therefore, the cycle time can be obtained as follows.
T = T1 + T2 + T3 + T4 = 0.06 + 0.94 + 0.06 + 0.05 = **1.11 [s]**

Based on the above calculation result, the LEY25V6B-300 is selected.

Selection Procedure

Pushing Control Selection Procedure

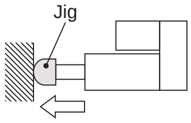
Step 1 Check the duty ratio. → **Step 2** Check the force. → **Step 3** Check the lateral load on the rod end.

∗ The duty ratio is a ratio of the operation time in one cycle.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.5 [kg]
- Force: 255 [N]
- Duty ratio: 60 [%]
- Pushing speed: 35 [mm/s]
- Stroke: 300 [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: 60 [%]

Therefore, Torque limit/command value will be 90 [%].

<Conversion table of pushing force–duty ratio>
(LEY25/AC Servo motor)

Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

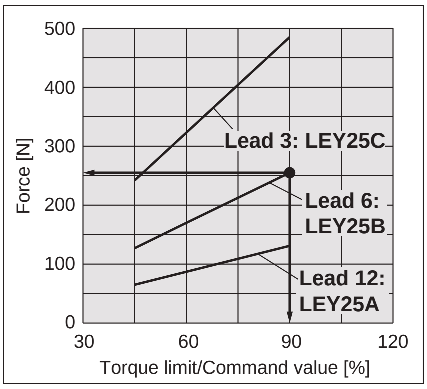
∗ [Set value of pushing force] is one of the data input to the driver.
∗ [Continuous pushing time] is the time that the actuator can continuously keep pushing.

Step 2 **Check the pushing force. <Force conversion graph>**

Select the target model based on the torque limit/command value and pushing force with reference to the <Force conversion graph>.

Selection example)
Based on the graph shown on the right side,
- Torque limit/Command value: 90 [%]
- Pushing force: 255 [N]

Therefore, the **LEY25B** is temporarily selected.



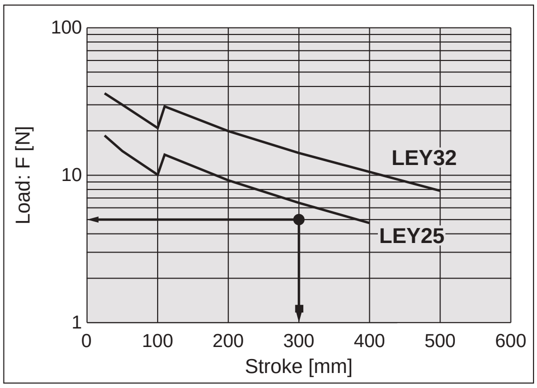
<Force conversion graph>
(LEY25)

Step 3 **Check the lateral load on the rod end.**
<Graph of allowable lateral load on the rod end>

Confirm the allowable lateral load on the rod end of the actuator: LEY25B, which has been selected temporarily with reference to the <Graph of allowable lateral load on the rod end>.

Selection example)
Based on the graph shown on the right side,
- Jig weight: 0.5 [kg] ≈ 5 [N]
- Product stroke: 300 [mm]

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



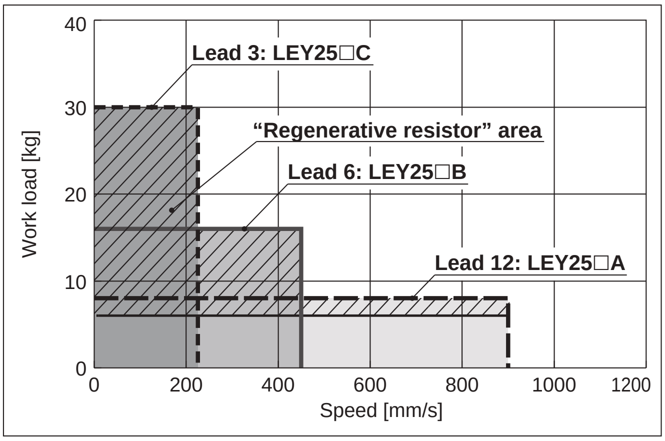
<Graph of allowable lateral load on the rod end>

Based on the above calculation result, the LEY25V6B-300 is selected.

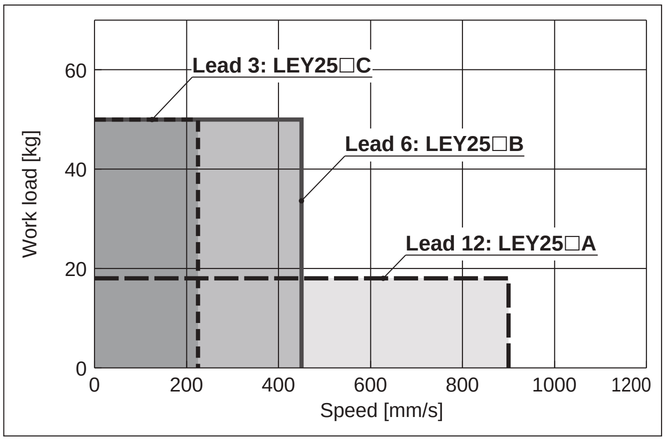
Speed–Work Load Graph/Conditions for “Regenerative Resistor” (Guide)

LEY25□V6 (Motor mounting position: Top/Parallel, In-line)

Vertical

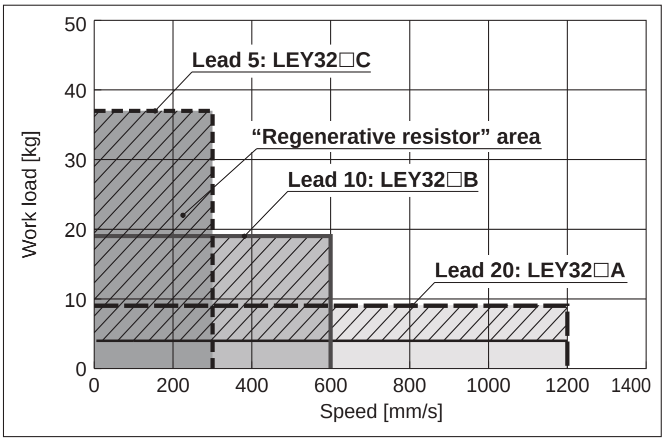


Horizontal

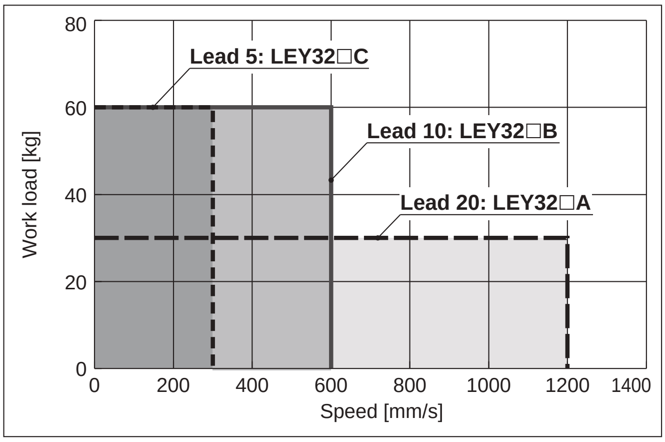


LEY32□V7 (Motor mounting position: Top/Parallel)

Vertical

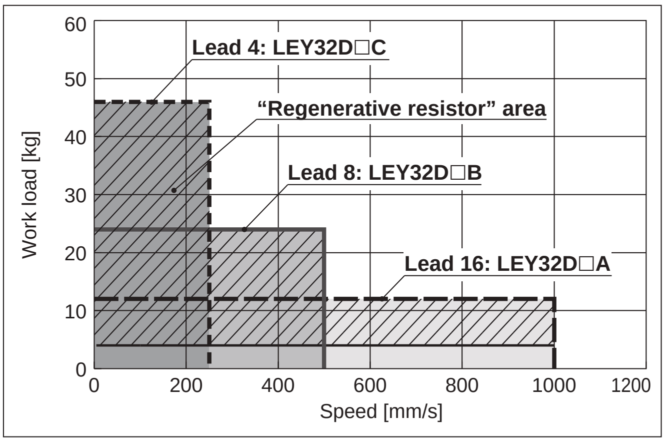


Horizontal

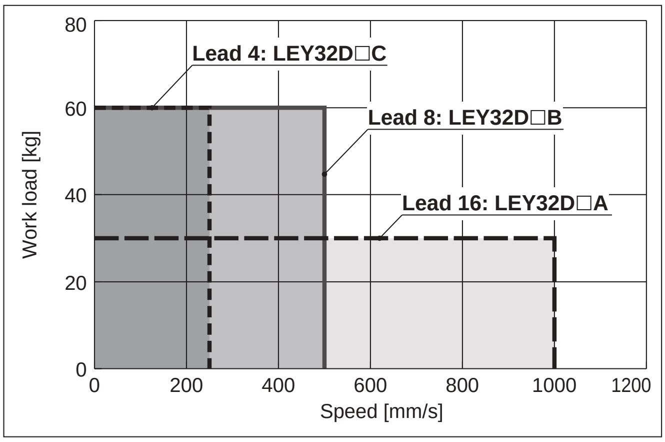


LEY32DV7 (Motor mounting position: In-line)

Vertical



Horizontal



“Regenerative resistor” area

- ∗ When using the actuator in the “Regenerative resistor” area, download the “AC servo drive capacity selection program/SigmaJunmaSize+” from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.
- ∗ Regenerative resistor should be provided by the customer.

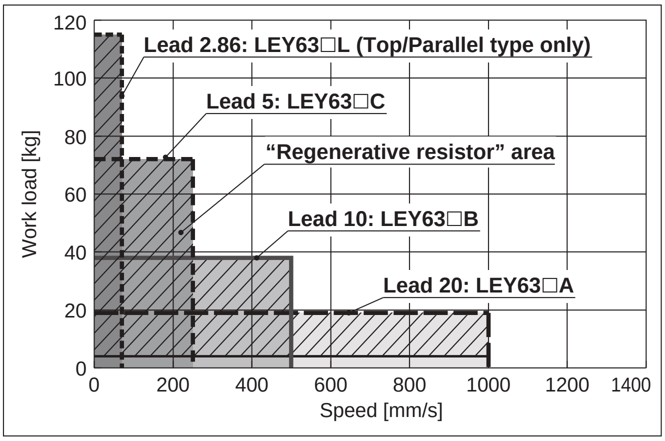
Applicable Motor/Driver

Model	Applicable model	
	Motor	Servopack (SMC driver)
LEY25□	SGMJV-01A3A	SGDV-R90A11□ (LECYM2-V5) SGDV-R90A21□ (LECYU2-V5)
LEY32□	SGMJV-02A3A	SGDV-1R6A11□ (LECYM2-V7) SGDV-1R6A21□ (LECYU2-V7)

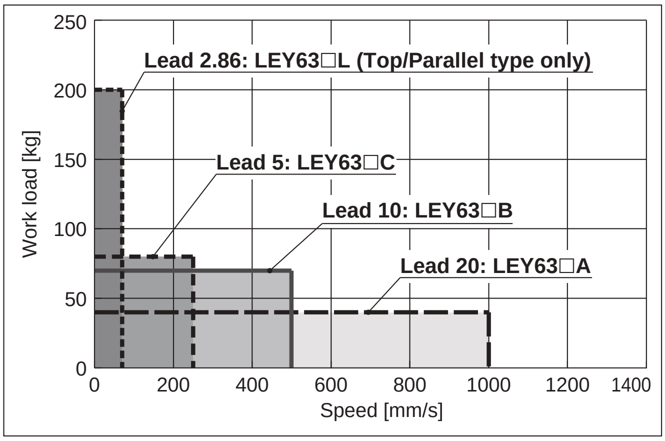
Speed–Work Load Graph/Conditions for “Regenerative Resistor” (Guide)

LEY63□V8 (Motor mounting position: Top/Parallel, In-line)

Vertical



Horizontal



“Regenerative resistor” area

- ∗ When using the actuator in the “Regenerative resistor” area, download the “AC servo drive capacity selection program/SigmaJunmaSize+” from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.
- ∗ Regenerative resistor should be provided by the customer.

Applicable Motor/Driver

Product no.	Applicable model	
	Motor	Servopack (SMC driver)
LEY63□	SGMJV-04A3A	SGDV-2R8A11□ (LECYM2-V8) SGDV-2R8A21□ (LECYU2-V8)

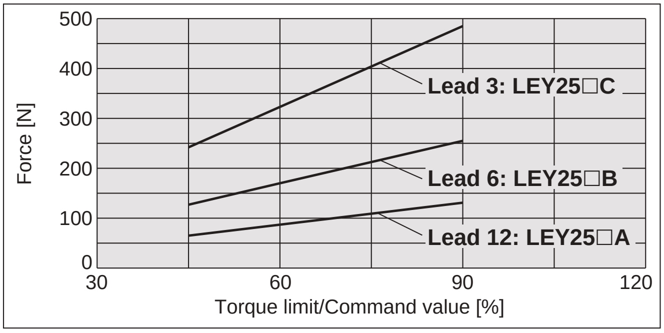
Allowable Stroke Speed

[mm/s]

Model	AC servo motor	Lead		Stroke [mm]													
		Symbol	[mm]	Up to 30	Up to 50	Up to 100	Up to 150	Up to 200	Up to 250	Up to 300	Up to 350	Up to 400	Up to 450	Up to 500	Up to 600	Up to 700	Up to 800
LEY25□V6 (Motor mounting position: Top/Parallel, In-line)	100 W /□40	**A**	12	900							600		—	—	—	—	—
		B	6	450							300		—	—	—	—	—
		C	3	225							150		—	—	—	—	—
		(Motor rotation speed)		(4500 rpm)							(3000 rpm)		—	—	—	—	—
LEY32□V7 (Motor mounting position: Top/Parallel)	200 W /□60	**A**	20	1200									800		—	—	—
		B	10	600									400		—	—	—
		C	5	300									200		—	—	—
		(Motor rotation speed)		(3600 rpm)									(2400 rpm)		—	—	—
LEY32DV7 (Motor mounting position: In-line)	200 W /□60	**A**	16	1000									640		—	—	—
		B	8	500									320		—	—	—
		C	4	250									160		—	—	—
		(Motor rotation speed)		(3750 rpm)									(2400 rpm)		—	—	—
LEY63□V8 (Motor mounting position: Top/Parallel, In-line)	400 W /□60	**A**	20	—	1000										800	600	500
		B	10	—	500										400	300	250
		C	5	—	250										200	150	125
		(Motor rotation speed)		—	(3000 rpm)										(2400 rpm)	(1800 rpm)	(1500 rpm)
		L	2.86	—	70												
		(Motor rotation speed)		—	(1470 rpm)												

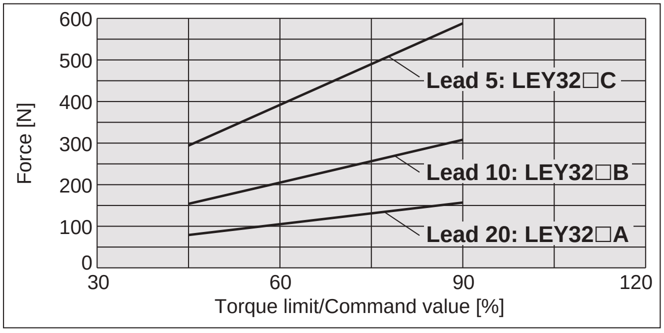
Force Conversion Graph (Guide)

LEY25□V6 (Motor mounting position: Top/Parallel, In-line)



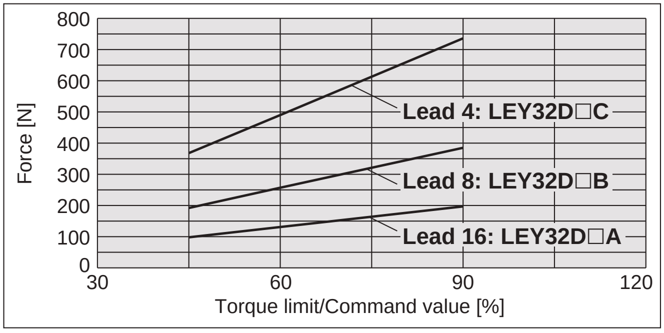
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEY32□V7 (Motor mounting position: Top/Parallel)



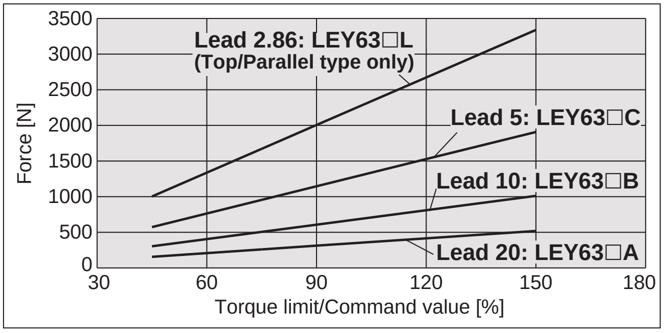
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEY32DV7 (Motor mounting position: In-line)



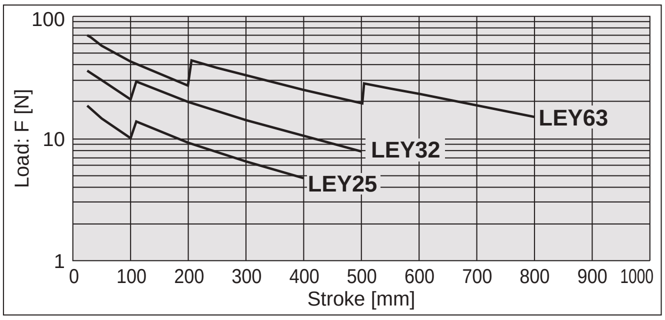
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEY63□V8 (Motor mounting position: Top/Parallel, In-line)

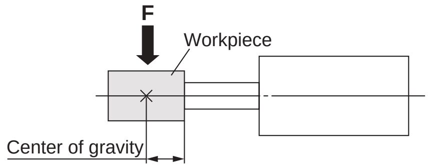


Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5
120	30	0.5
150	20	0.16

Graph of Allowable Lateral Load on the Rod End (Guide)

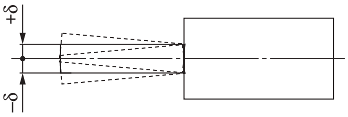


[Stroke] = [Product stroke] + [Distance from the rod end to the centre of gravity of the workpiece]

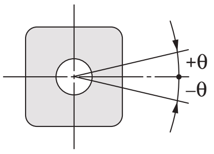


Rod Displacement: δ [mm]

Stroke / Size	30	50	100	150	200	250	300	350	400	450	500	600	700	800
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—	—	—	—
32	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8	—	—	—
63	—	±0.5	±0.7	±0.9	±1.2	±1.1	±1.3	±1.5	±1.7	±1.9	±2.1	±1.7	±2.0	±2.2



Non-rotating Accuracy of Rod



Size	Non-rotating accuracy θ
25	±0.8°
32	±0.7°
63	±0.6°

* Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

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

Electric Actuator/ Rod Type

LEY Series LEY16, 25, 32, 40

RoHS

Dust-tight/Water-jet-proof▶p. 155 **Secondary Battery Compatible▶p. 175**

How to Order

Motor mounting position: Top/Parallel Motor mounting position: In-line

LEY **16** ☐ ☐ **B** – **30** ☐ ☐ ☐ – **S1**
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

LEC☐ *Series* **6P** **1** ☐
JXC☐ *Series* **CD17T**
❿ ⓫ ⓬

For details on controllers, refer to page 58.

* Refer to the table below.

RoHS

❶ Size

16
25
32
40

❷ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

❸ Motor type

Symbol	Type	Applicable size			Compatible controller/driver	
		LEY16	**LEY25**	**LEY32/40**		
—	Step motor (Servo/24 VDC)	●	●	●	LECP1 LECPA	JXCE1 JXC91 JXCP1 JXCD1 JXCL1
A	Servo motor (24 VDC)	●	●	—	LECA6	

❹ Lead [mm]

Symbol	LEY16	LEY25	LEY32/40
A	10	12	16
B	5	6	8
C	2.5	3	4

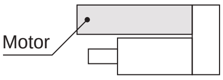
❺ Stroke [mm]

30	30
to	to
500	500

* For details, refer to the applicable stroke table below.

❻ Motor option*2

—	Without option
C	With motor cover
B	With lock
W	With lock/motor cover



❼ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❽ Mounting*3

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/Body bottom tapped*4	●	●
L	Foot	●	—
F	Rod flange*4	●*6	●
G	Head flange*4	●*7	—
D	Double clevis*5	●	—

❾ Actuator cable type/length*9

Standard cable [m]

—	None
S1	1.5*11
S3	3*11
S5	5*11

Robotic cable [m]

R1	1.5	**RA**	10*8
R3	3	**RB**	15*8
R5	5	**RC**	20*8
R8	8*8		

Applicable Stroke Table*1

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range
LEY16	●	●	●	●	●	●	●	—	—	—	—	10 to 300
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32/40	●	●	●	●	●	●	●	●	●	●	●	20 to 500

For auto switches, refer to pages 101 to 103.

LEC□ Series (For details, refer to page 57.)

6P 1 □
⑩ ⑪ ⑫

⑩ Controller/Driver type*10

—	Without controller/driver	
1N	**LECP1***11 (Programless type)	NPN
1P		PNP
AN	**LECPA***11 *13 (Pulse input type)	NPN
AP		PNP

⑪ I/O cable length*14, Communication plug

—	Without cable (Without communication plug connector)
1	1.5 m
3	3 m*15
5	5 m*15
S	Straight type communication plug connector
T	T-branch type communication plug connector

⑫ Controller/Driver mounting

—	Screw mounting
D	DIN rail*16

JXC□ Series (For details, refer to page 57.)

⑩ Controller

—	Without controller
C□1□□	With controller

C D 1 7 T

Communication protocol

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

For single axis

Mounting

7	Screw mounting
8*16	DIN rail

Communication plug connector for DeviceNet™*17

—	Without plug connector
S	Straight type
T	T-branch type

---

*1 Please consult with SMC for non-standard strokes as they are produced as special orders.
*2 When “With lock” or “With lock/motor cover” is selected for the top mounting and right/left side parallel types, the motor body will stick out from the end of the body for size 16/40 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.
*3 The mounting bracket is shipped together with the product but does not come assembled.
*4 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
·LEY25: 200 mm or less ·LEY32/40: 100 mm or less
*5 For the mounting of the double clevis type, use the actuator within the following stroke range.
·LEY16: 100 mm or less ·LEY25: 200 mm or less ·LEY32/40: 200 mm or less
*6 The rod flange type is not available for the LEY16/40 with a 30 mm stroke and motor option “With lock,” “With lock/motor cover.”
*7 The head flange type is not available for the LEY32/40.
*8 Produced upon receipt of order (Robotic cable only)
*9 The standard cable should only be used on fixed parts. For use on moving parts, select the robotic cable.
*10 For details on controllers/drivers and compatible motors, refer to the compatible controller/driver on the next page.
*11 Only available for the motor type “Step motor”
*12 Not compliant with CE
*13 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 220 separately.
*14 When “Without controller/driver” is selected for controller/driver types, I/O cable cannot be selected. Refer to page 199 (For LECA6), page 213(For LECP1), or page 220 (For LECPA) if I/O cable is required.
*15 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
*16 The DIN rail is not included. Order it separately.
*17 Select “—” for anything other than DeviceNet™.

⚠Caution

[CE-compliant products]

① EMC compliance was tested by combining the electric actuator LEY series and the controller LEC/JXC series.
The EMC depends on the configuration of the customer’s control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer’s equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.
② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 199 for the noise filter set. Refer to the LECA series Operation Manual for installation.

[UL-compliant products (For the LEC series)]

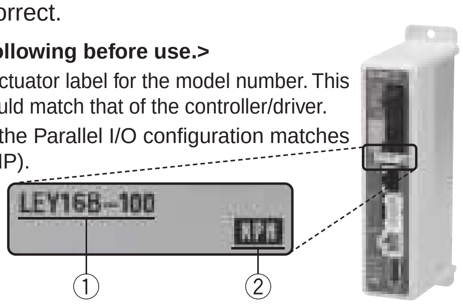
When compliance with UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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

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

<Check the following before use.>

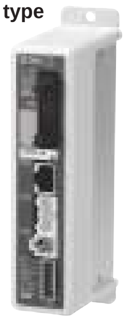
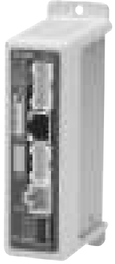
① Check the actuator label for the model number. This number should match that of the controller/driver.
② Check that the Parallel I/O configuration matches (NPN or PNP).



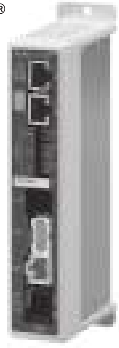
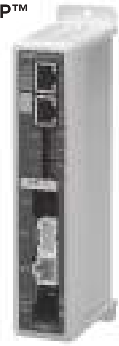
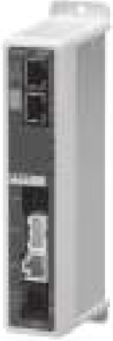
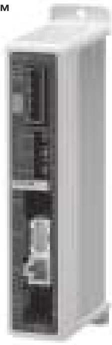
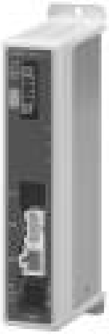
* Refer to the Operation Manual for using the products. Please download it via our website, https://www.smc.eu

Compatible Controller/Driver

LEC□ Series

Type	**Step data input type** 	**Programless type**	**Pulse input type** 
Series	**LECA6**	**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	Servo motor (24 VDC)	Servo motor (Servo/24 VDC)	
Max. number of step data	64 points	14 points	—
Power supply voltage	24 VDC		
Reference page	191	207	214

JXC□ Series

Type	**EtherCAT® direct input type** 	**EtherNet/IP™ direct input type** 	**PROFINET direct input type** 	**DeviceNet™ direct input type** 	**IO-Link direct input type** 
Series	**JXCE1**	**JXC91**	**JXCP1**	**JXCD1**	**JXCL1**
Features	EtherCAT® direct input	EtherNet/IP™ direct input	PROFINET direct input	DeviceNet™ direct input	IO-Link direct input
Compatible motor	Step motor (Servo/24 VDC)				
Max. number of step data	64 points				
Power supply voltage	24 VDC				
Reference page	224				

Specifications

Step Motor (Servo/24 VDC)

Model				LEY16			LEY25			LEY32			LEY40		
Actuator specifications	Work load [kg]*1	Horizontal (LECP1, JXC□1)	(3000 [mm/s^2])	6	17	30	20	40	60	30	45	60	50	60	80
			(2000 [mm/s^2])	10	23	35	30	55	70	40	60	80	60	70	90
		Horizontal (LECPA, JXC□$^2_3$)	(3000 [mm/s^2])	4	11	20	12	30	30	20	40	40	30	60	60
			(2000 [mm/s^2])	6	17	30	18	50	50	30	60	60	—	—	—
		Vertical	(3000 [mm/s^2])	2	4	8	8	16	30	11	22	43	13	27	53
	Pushing force [N]*2 *3 *4			14 to 38	27 to 74	51 to 141	63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707	132 to 283	266 to 553	562 to 1058
	Speed [mm/s]*4	LECP1/ JXC□1		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 300	6 to 150	24 to 500	12 to 350	6 to 175
		LECPA/JXC□$^2_3$									12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
	Max. acceleration/deceleration [mm/s^2]			3000											
	Pushing speed [mm/s]*5			50 or less			35 or less			30 or less			30 or less		
	Positioning repeatability [mm]			±0.02											
	Lost motion [mm]*6			0.1 or less											
	Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
	Impact/Vibration resistance [m/s^2]*7			50/20											
	Actuation type			Ball screw + Belt (LEY□)/Ball screw (LEY□D)											
	Guide type			Sliding bushing (Piston rod)											
	Operating temperature range [°C]			5 to 40											
	Operating humidity range [%RH]			90 or less (No condensation)											
Electric specifications	Motor size			□28			□42			□56.4			□56.4		
	Motor type			Step motor (Servo/24 VDC)											
	Encoder			Incremental A/B phase (800 pulse/rotation)											
	Rated voltage [V]			24 VDC ±10 %											
	Power consumption [W]*8			23			40			50			50		
	Standby power consumption when operating [W]*9			16			15			48			48		
	Max. instantaneous power consumption [W]*10			43			48			104			106		
Lock unit specifications	Type*11			Non-magnetising lock											
	Holding force [N]			20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W]*12			2.9			5			5			5		
	Rated voltage [V]			24 VDC ±10 %											

*1 Horizontal: The maximum value of the work load. An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check "Model Selection" on pages 37 and 38.
Vertical: Speed changes according to the work load. Check "Model Selection" on pages 37 and 38.
The values shown in ( ) are the acceleration/deceleration.
Set these values to be 3000 [mm/s^2] or less.

*2 Pushing force accuracy is ±20 % (F.S.).

*3 The pushing force values for LEY16□ is 35 % to 85 %, for LEY25□ is 35 % to 65 %, for LEY32□ is 35 % to 85 %, and for LEY40□ is 35 % to 65 %.
The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 40.

*4 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 %)

*5 The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.

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

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

*8 The power consumption (including the controller) is for when the actuator is operating.

*9 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation

*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.

*11 With lock only

*12 For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

	Model		LEY16□A			LEY25□A		
Actuator specifications	Work load [kg][1]	Horizontal (3000 [mm/s²])	3	6	12	7	15	30
		Vertical (3000 [mm/s²])	2	4	8	3	6	12
	Pushing force [N][2] [3]		16 to 30	30 to 58	57 to 111	18 to 35	37 to 72	66 to 130
	Speed [mm/s]		1 to 500	1 to 250	1 to 125	2 to 500	1 to 250	1 to 125
	Max. acceleration/deceleration [mm/s²]		3000					
	Pushing speed [mm/s][4]		50 or less			35 or less		
	Positioning repeatability [mm]		±0.02					
	Lost motion [mm][5]		0.1 or less					
	Screw lead [mm]		10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s²][6]		50/20					
	Actuation type		Ball screw + Belt (LEY□)/Ball screw (LEY□D)					
	Guide type		Sliding bushing (Piston rod)					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
Electric specifications	Motor size		□28			□42		
	Motor output [W]		30			36		
	Motor type		Servo motor (24 VDC)					
	Encoder		Incremental A/B phase (800 pulse/rotation)/Z phase					
	Rated voltage [V]		24 VDC ±10 %					
	Power consumption [W][7]		40			86		
	Standby power consumption when operating [W][8]		4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W][9]		59			96		
Lock unit specifications	Type[10]		Non-magnetising lock					
	Holding force [N]		20	39	78	78	157	294
	Power consumption [W][11]		2.9			5		
	Rated voltage [V]		24 VDC ±10 %					

[1] Horizontal: The maximum value of the work load. An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Check "Model Selection" on page 39 for details.
The values shown in ( ) are the acceleration/deceleration.
Set these values to be 3000 [mm/s²] or less.

[2] Pushing force accuracy is ±20 % (F.S.).

[3] The thrust setting values for LEY16A□ is 60 % to 95 % and for LEY25A□ is 70 % to 95 %. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 40.

[4] The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.

[5] A reference value for correcting an error in reciprocal operation

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

[7] The power consumption (including the controller) is for when the actuator is operating.

[8] The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation

[9] 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.

[10] With lock only

[11] For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top/Parallel Type

Series		LEY16							LEY25									LEY32										
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.18	1.25	1.42	1.68	1.86	2.03	2.21	2.38	2.56	2.09	2.20	2.49	2.77	3.17	3.46	3.74	4.03	4.32	4.60	4.89
	Servo motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.14	1.21	1.38	1.64	1.82	1.99	2.17	2.34	2.52	—	—	—	—	—	—	—	—	—	—	—

Series		LEY40										
Stroke [mm]		30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	2.39	2.50	2.79	3.07	3.47	3.76	4.04	4.33	4.62	4.90	5.19
	Servo motor	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

Series		LEY16D							LEY25D									LEY32D										
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.17	1.24	1.41	1.67	1.85	2.02	2.20	2.37	2.55	2.08	2.19	2.48	2.76	3.16	3.45	3.73	4.02	4.31	4.59	4.88
	Servo motor	0.58	0.62	0.73	0.87	0.98	1.09	1.20	1.13	1.20	1.37	1.63	1.81	1.98	2.16	2.33	2.51	—	—	—	—	—	—	—	—	—	—	—

Series		LEY40D										
Stroke [mm]		30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	Step motor	2.38	2.49	2.78	3.06	3.46	3.75	4.03	4.32	4.61	4.89	5.18
	Servo motor	—	—	—	—	—	—	—	—	—	—	—

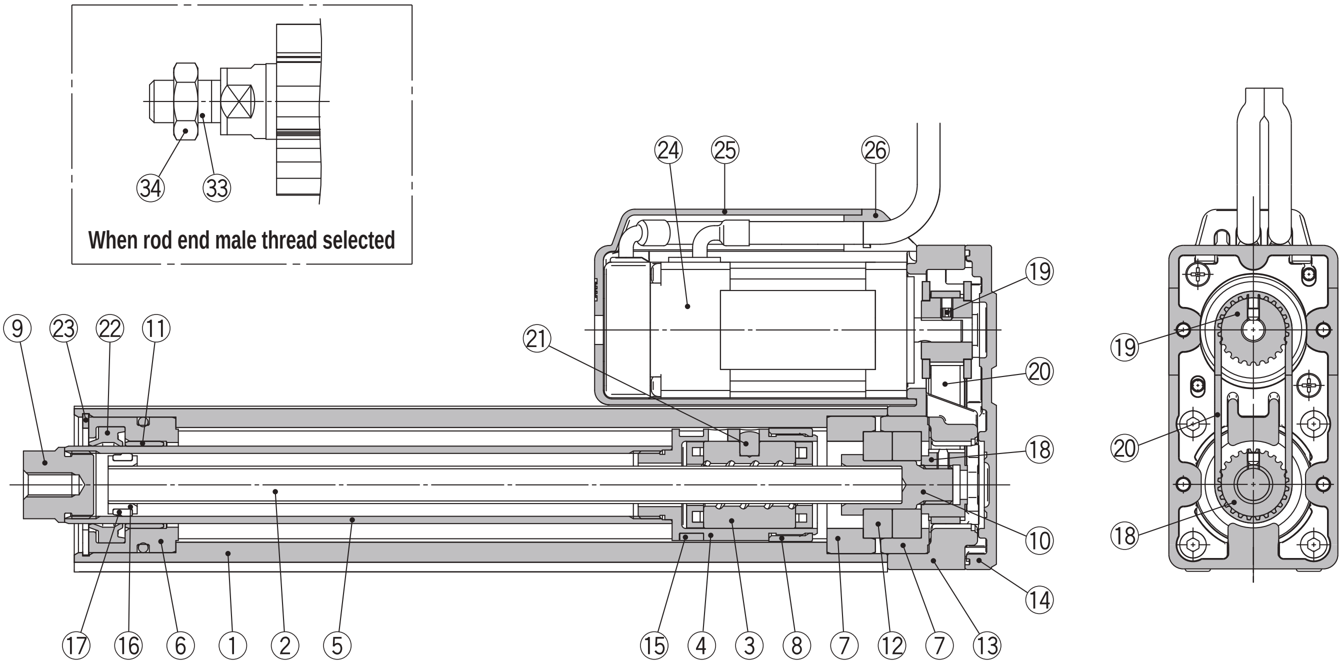
Additional Weight

[kg]

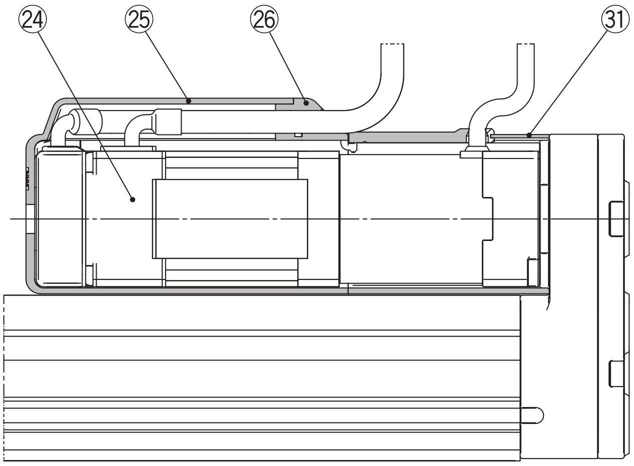
Size		16	25	32	40
Lock		0.12	0.26	0.53	0.53
Motor cover		0.02	0.03	0.04	0.05
Lock/Motor cover		0.16	0.32	0.61	0.62
Rod end male thread	**Male thread**	0.01	0.03	0.03	0.03
	Nut	0.01	0.02	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.06	0.08	0.14	0.14
Rod flange (including mounting bolt)		0.13	0.17	0.20	0.20
Head flange (including mounting bolt)					
Double clevis (including pin, retaining ring, and mounting bolt)		0.08	0.16	0.22	0.22

Construction

Motor top mounting type: LEY 16/25/32/40

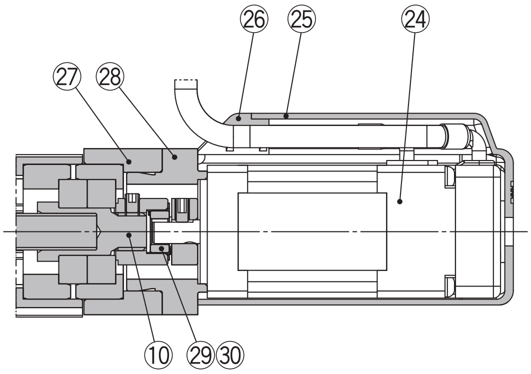

When rod end male thread selected
㉞
㉝
㉔
㉕
㉖
⑲
㉑
⑳
⑱
⑩
⑭
⑨
㉓
㉒
⑪
⑰
⑯
⑥
①
②
⑤
⑮
④
③
⑧
⑦
⑫
⑦
⑬
⑲
⑳
⑱

Motor top/parallel type With lock/motor cover

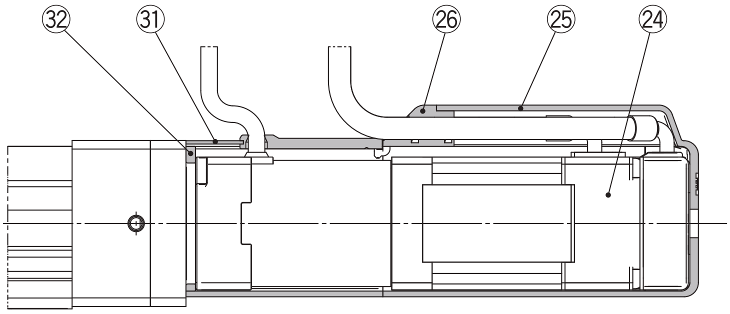


Construction

In-line motor type: LEY 16 25 32 40 D



In-line motor type: With lock/motor cover



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Synthetic resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor**	—	
25	**Motor cover**	Synthetic resin	Only "With motor cover"
26	**Grommet**	Synthetic resin	Only "With motor cover"
27	**Motor block**	Aluminium alloy	Anodised
28	**Motor adapter**	Aluminium alloy	Anodised/LEY16, 25 only
29	**Hub**	Aluminium alloy	
30	**Spider**	NBR	
31	**Motor cover with lock**	Aluminium alloy	Only "With lock/motor cover"
32	**Cover support**	Aluminium alloy	Only "With lock/motor cover"
33	**Socket (Male thread)**	Free cutting carbon steel	Nickel plating
34	**Nut**	Alloy steel	Zinc chromated

Replacement Parts (Motor top/parallel only)/Belt

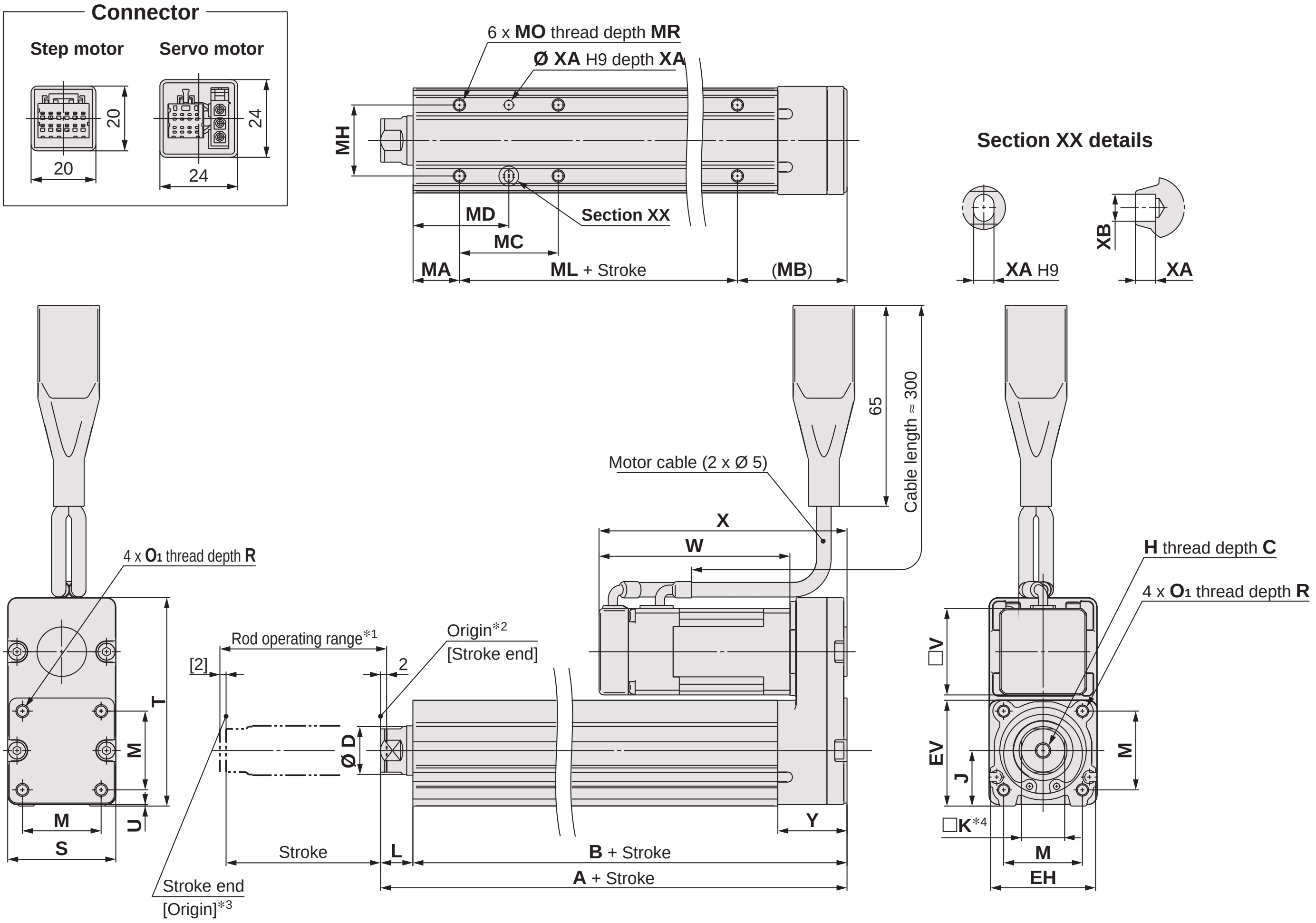
No.	Size	Order no.
21	**16**	LE-D-2-1
	25	LE-D-2-2
	32, 40	LE-D-2-3

Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g) GR-S-020 (20 g)

∗ Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions: Motor Top/Parallel


Connector
Step motor
Servo motor
20
20
24
24
6 x MO thread depth MR
Ø XA H9 depth XA
MH
MD
MC
Section XX
MA
ML + Stroke
(MB)
Section XX details
XB
XA H9
XA
65
Cable length ≈ 300
Motor cable (2 x Ø 5)
X
W
4 x O1 thread depth R
Rod operating range*1
[2]
2
Origin*2
[Stroke end]
Ø D
T
M
M
S
U
Stroke
L
B + Stroke
A + Stroke
Y
Stroke end
[Origin]*3
H thread depth C
4 x O1 thread depth R
□V
EV
J
M
□K*4
M
EH

*1 Range within which the rod can move when it returns to origin
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 Position after return to origin
*3 [ ] for when the direction of return to origin has changed
*4 The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	V	Step motor		Servo motor		Y
																			W	X	W	X	
16	10 to 100	101	90.5	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	67.5	0.5	28	61.8	80.3	62.5	81	22.5
	101 to 300	121	110.5																				
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46	92	1	42	63.4	85.4	59.6	81.6	26.5
	101 to 400	155.5	141																				
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	56.4	68.4	95.4	—	—	34
	101 to 500	178.5	160																				
40	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	56.4	90.4	117.4	—	—	34
	101 to 500	178.5	160																				

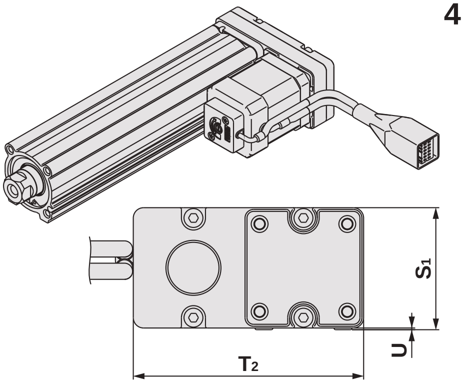
Body Bottom Tapped

[mm]

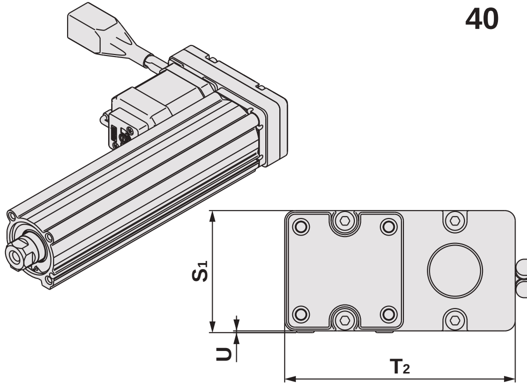
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
16	10 to 39	15	35.5	17	23.5	23	40	M4 x 0.7	5.5	3	4
	40 to 100			32	31						
	101 to 300			62	46		60				
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32 40	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125 to 200			53	51.5						
	201 to 500			70	60						

Dimensions: Motor Top/Parallel

Motor left side parallel type: $\text{LEY}\begin{smallmatrix}16\\25\\32\\40\end{smallmatrix}\text{L}$



Motor right side parallel type: $\text{LEY}\begin{smallmatrix}16\\25\\32\\40\end{smallmatrix}\text{R}$

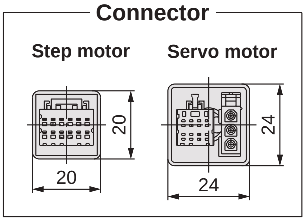


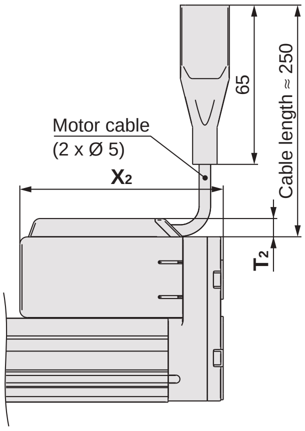
[mm]

Size	S_1	T_2	U
16	35.5	67	0.5
25	47	91	1
32, 40	61	117	1

∗ When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

With motor cover: $\text{LEY}\begin{smallmatrix}16\\25\\32\\40\end{smallmatrix}\square\square\begin{smallmatrix}\text{A}\\\text{B}\\\text{C}\end{smallmatrix}\text{-}\square\text{C}$


Connector
Step motor
Servo motor
20
20
24
24

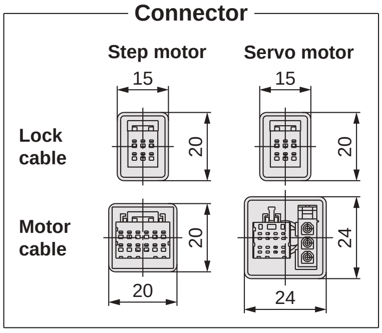

Motor cable
(2 x Ø 5)
X2
65
Cable length ≈ 250
T2

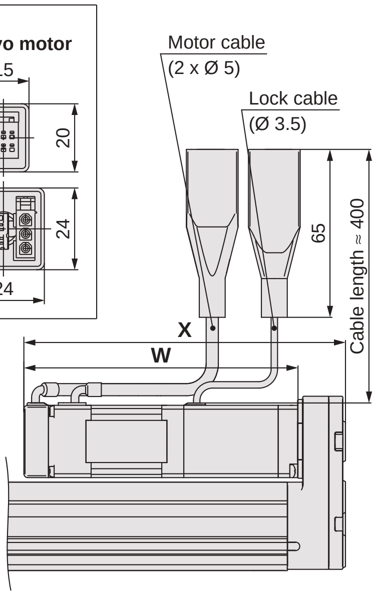
[mm]

Size	T_2	X_2
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material: Synthetic resin

With lock: $\text{LEY}\begin{smallmatrix}16\\25\\32\\40\end{smallmatrix}\square\square\begin{smallmatrix}\text{A}\\\text{B}\\\text{C}\end{smallmatrix}\text{-}\square\text{B}$

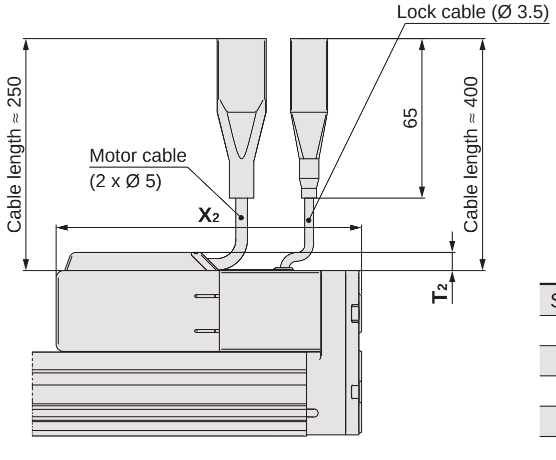

Connector
Step motor
Servo motor
Lock cable
Motor cable
15
15
20
20
20
24
20
24


Motor cable
(2 x Ø 5)
Lock cable
(Ø 3.5)
X
W
65
Cable length ≈ 400

[mm]

Size	Step motor		Servo motor	
	W	X	W	X
16	103.3	121.8	104.0	122.5
25	103.9	125.9	100.1	122.1
32	111.4	138.4	—	—
40	133.4	160.4	—	—

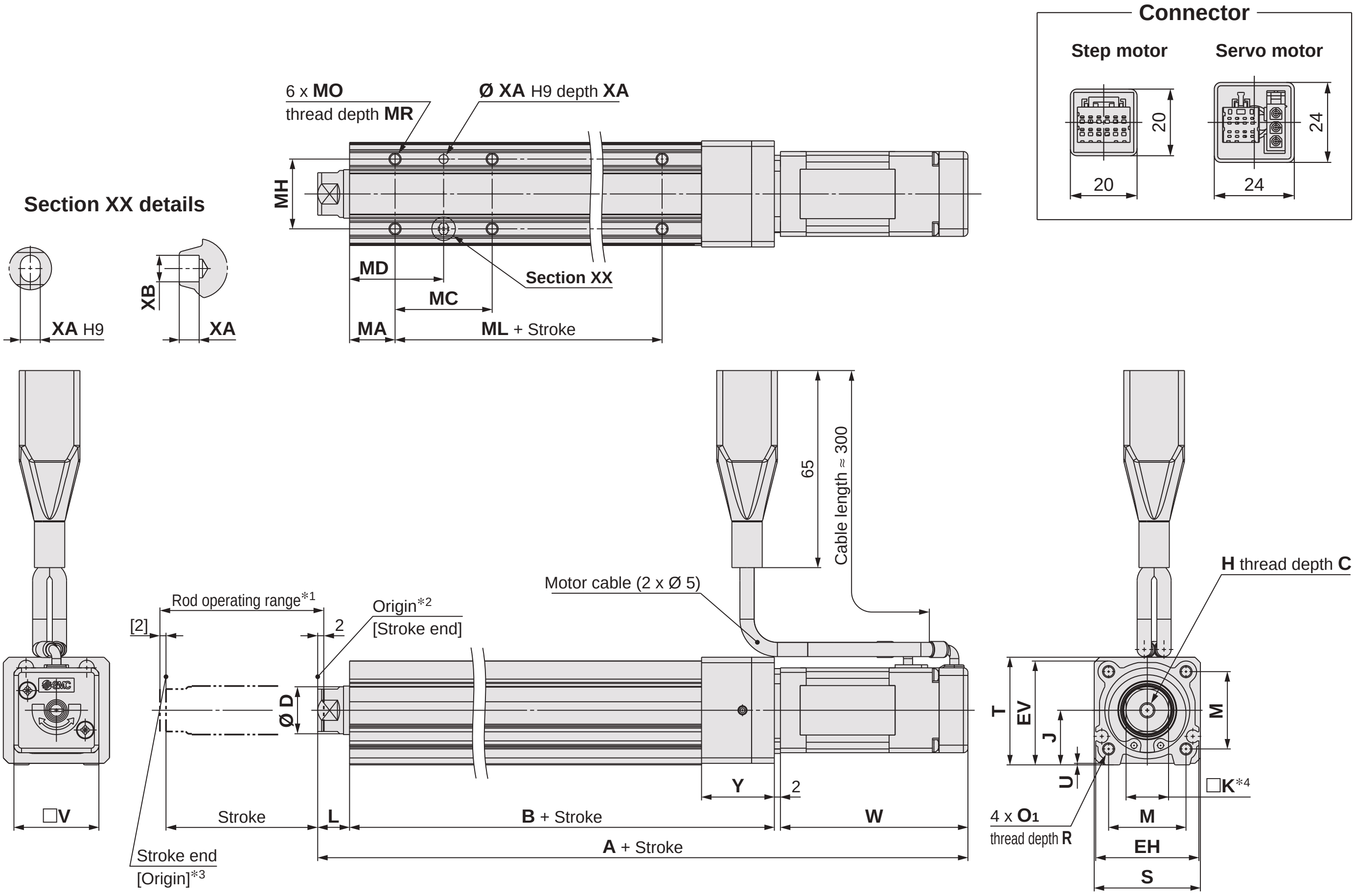
With lock/motor cover: $\text{LEY}\begin{smallmatrix}16\\25\\32\\40\end{smallmatrix}\square\square\begin{smallmatrix}\text{A}\\\text{B}\\\text{C}\end{smallmatrix}\text{-}\square\text{W}$


Lock cable (Ø 3.5)
Cable length ≈ 250
Motor cable
(2 x Ø 5)
X2
65
Cable length ≈ 400
T2

[mm]

Size	T_2	X_2
16	7.5	124.5
25	7.5	129
32	7.5	141.5
40	7.5	163.5

Dimensions: In-line Motor


Connector
Step motor
Servo motor
20
20
24
24
Section XX details
XA H9
XB
XA
6 x MO thread depth MR
Ø XA H9 depth XA
MH
MD
MC
Section XX
MA
ML + Stroke
65
Cable length ≈ 300
Motor cable (2 x Ø 5)
H thread depth C
Rod operating range*1
Origin*2 [Stroke end]
[2]
2
Ø D
T
EV
J
M
U
□K*4
□V
Stroke
L
B + Stroke
Y
2
W
A + Stroke
4 x O1 thread depth R
M
EH
S
Stroke end [Origin]*3

*1 Range within which the rod can move when it returns to origin
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 Position after return to origin
*3 [ ] for when the direction of return to origin has changed
*4 The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	Step motor	Servo motor	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	V	Step motor	Servo motor	Y
		A																		W		
16	10 to 100	166.3	167	92	10	16	34	34.3	M5 x 0.8	18	14	10.5	25.5	M4 x 0.7	7	35	35.5	0.5	28	61.8	62.5	24
	101 to 300	186.3	187	112																		
25	15 to 100	195.4	191.6	115.5	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5	42	63.4	59.6	26
	101 to 400	220.4	216.6	140.5																		
32	20 to 100	216.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	56.4	68.4	—	32
	101 to 500	246.9	—	158																		
40	20 to 100	238.9	—	128	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1	10	60	61	1	56.4	90.4	—	32
	101 to 500	268.9	—	158																		

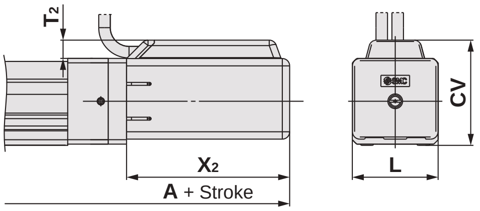
Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
16	10 to 39	15	17	23.5	23	40	M4 x 0.7	5.5	3	4
	40 to 100		32	31						
	101 to 300		62	46		60				
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	101 to 124					75				
	125 to 200		59	49.5						
	201 to 400		76	58						
32 **40**	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	101 to 124					80				
	125 to 200		53	51.5						
	201 to 500		70	60						

Dimensions: In-line Motor

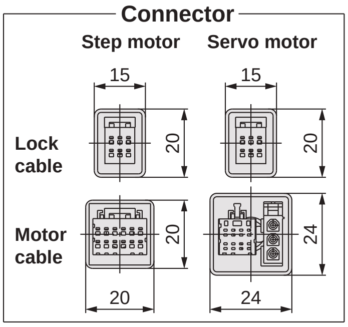
With motor cover: LEY$\begin{matrix}16\\25\\32\\40\end{matrix}$D□$\begin{matrix}A\\B\\C\end{matrix}$-□C

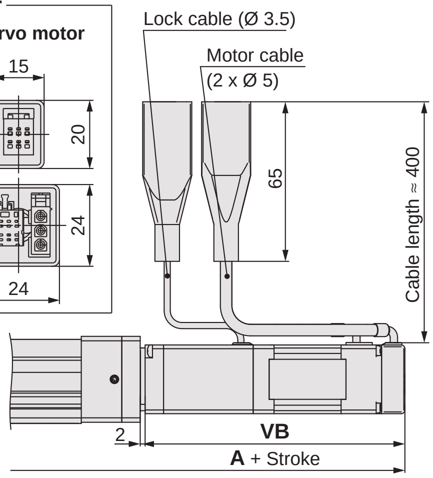

T2
X2
A + Stroke
CV
L

[mm]

Size	Stroke range	A	T2	X2	L	CV
16	100st or less	169	7.5	66.5	35	43
	101st or more, 200st or less	189				
25	100st or less	198.5	7.5	68.5	46	54.5
	101st or more, 400st or less	223.5				
32	100st or less	220	7.5	73.5	60	68.5
	101st or more, 500st or less	250				
40	100st or less	242	7.5	95.5	60	68.5
	101st or more, 500st or less	272				

With lock: LEY$\begin{matrix}16\\25\\32\\40\end{matrix}$D□$\begin{matrix}A\\B\\C\end{matrix}$-□B

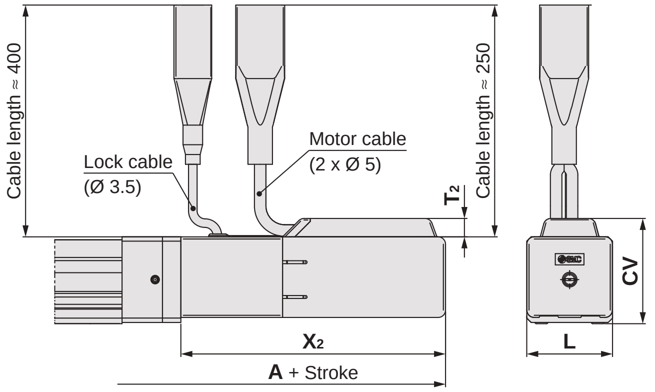

Connector
Step motor
Servo motor
15
15
Lock cable
20
20
Motor cable
20
24
20
24


Lock cable (Ø 3.5)
Motor cable (2 x Ø 5)
65
Cable length ≈ 400
2
VB
A + Stroke

[mm]

Size	Stroke range	Step motor	Servo motor	Step motor	Servo motor
		A		VB	
16	100st or less	207.8	208.5	103.3	104
	101st or more, 200st or less	227.8	228.5		
25	100st or less	235.9	232.1	103.9	100.1
	101st or more, 400st or less	260.9	257.1		
32	100st or less	259.9	—	111.4	—
	101st or more, 500st or less	289.9	—		
40	100st or less	281.9	—	133.4	—
	101st or more, 500st or less	311.9	—		

With lock/motor cover: LEY$\begin{matrix}16\\25\\32\\40\end{matrix}$D□$\begin{matrix}A\\B\\C\end{matrix}$-□W

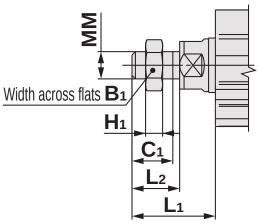

Cable length ≈ 400
Lock cable (Ø 3.5)
Motor cable (2 x Ø 5)
T2
Cable length ≈ 250
CV
X2
A + Stroke
L

[mm]

Size	Stroke range	A	T2	X2	L	CV
16	100st or less	210.5	7.5	108	35	43
	101st or more, 300st or less	230.5				
25	100st or less	239	7.5	109	46	54.4
	101st or more, 400st or less	264				
32	100st or less	263	7.5	116.5	60	68.5
	101st or more, 500st or less	293				
40	100st or less	285	7.5	138.5	60	68.5
	101st or more, 500st or less	315				

Dimensions

End male thread: LEY16/25/32/40□□A/B/C-□□M



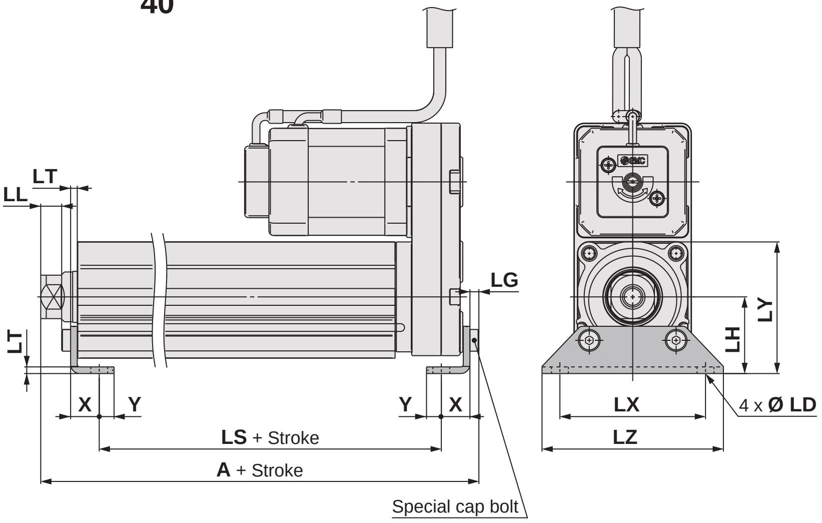
[mm]

Size	B_1	C_1	H_1	L_1	L_2	MM
16	13	12	5	24.5	14	M8 x 1.25
25	22	20.5	8	38	23.5	M14 x 1.5
32, 40	22	20.5	8	42.0	23.5	M14 x 1.5

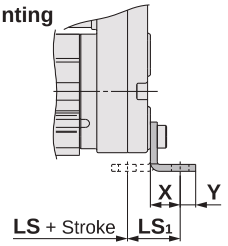
∗ The L_1 measurement is when the unit is in the original position. At this position, 2 mm at the end.

∗ Refer to page 97 for details on the rod end nut and mounting bracket.
∗ Refer to the “Handling” precautions on pages 185 to 187 when mounting end brackets such as knuckle joint or workpieces.

Foot: LEY16/25/32/40□□A/B/C-□□□L



Outward mounting



Included parts
• Foot bracket
• Body mounting bolt

Foot

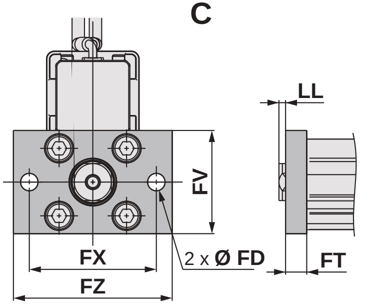
[mm]

Size	Stroke range [mm]	A	LS	LS_1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
16	10 to 100	106.1	76.7	16.1	5.4	6.6	2.8	24	2.3	48	40.3	62	9.2	5.8
	101 to 300	126.1	96.7											
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	123.8											
32 **40**	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	185.7	144											

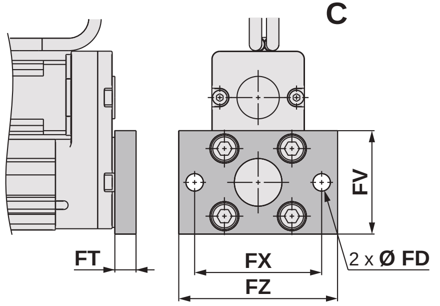
Material: Carbon steel (Chromate treated)
∗ The A measurement is when the unit is in the original position. At this position, 2 mm at the end.
∗ When the motor mounting is the right or left side parallel type, the head side foot bracket should be mounted outward.

Dimensions

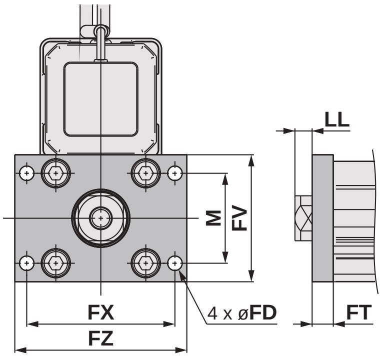
A
Rod flange: LEY16□□B-□□□F
C


LL
FV
FX
FZ
2 x Ø FD
FT

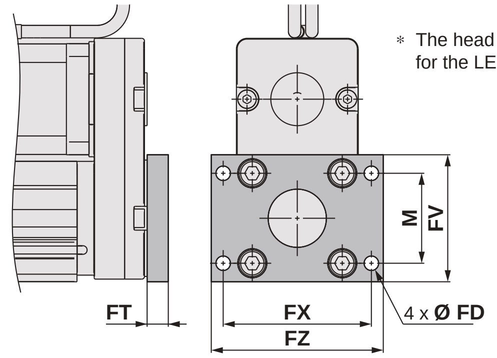
A
Head flange: LEY16□□B-□□□G
C


FV
FT
FX
FZ
2 x Ø FD

25 A
Rod flange: LEY32□□B-□□□F
40 C


LL
M
FV
FX
FZ
4 x øFD
FT

A
Head flange: LEY25□□B-□□□G
C


M
FV
FT
FX
FZ
4 x Ø FD

∗ The head flange type is not available for the LEY32/40.

Included parts
- Flange
- Body mounting bolt

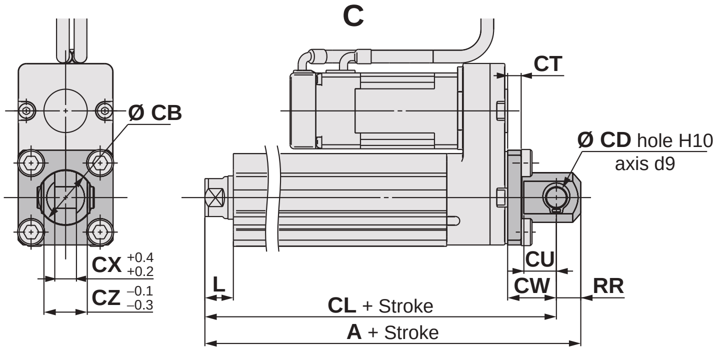
Rod/Head Flange

[mm]

Size	FD	FT	FV	FX	FZ	LL	M
16	6.6	8	39	48	60	2.5	—
25	5.5	8	48	56	65	6.5	34
32, 40	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plating)

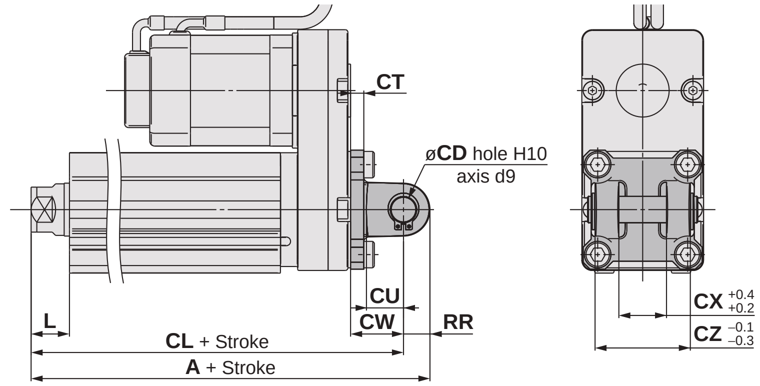
A
Double clevis: LEY16□□B-□□□D
C


Ø CB
CX +0.4 +0.2
CZ −0.1 −0.3
CT
Ø CD hole H10
axis d9
L
CU
CW
RR
CL + Stroke
A + Stroke

Included parts
- Double clevis
- Body mounting bolt
- Clevis pin
- Retaining ring

∗ Refer to page 97 for details on the rod end nut and mounting bracket.

25 A
Double clevis: LEY32□□B-□□□D
40 C


CT
øCD hole H10
axis d9
L
CU
CW
RR
CL + Stroke
A + Stroke
CX +0.4 +0.2
CZ −0.1 −0.3

Double Clevis

[mm]

Size	Stroke range [mm]	A	CL	CB	CD	CT
16	10 to 100	128	119	20	8	5
25	15 to 100	160.5	150.5	—	10	5
	101 to 200	185.5	175.5			
32 **40**	20 to 100	180.5	170.5	—	10	6
	101 to 200	210.5	200.5			

Size	Stroke range [mm]	CU	CW	CX	CZ	L	RR
16	10 to 100	12	18	8	16	10.5	9
25	15 to 100	14	20	18	36	14.5	10
	101 to 200						
32 **40**	20 to 100	14	22	18	36	18.5	10
	101 to 200						

Material: Cast iron (Coating)

∗ The A and CL measurements are when the unit is in the original position. At this position, 2 mm at the end.

AC Servo Motor **LECS□ Series**

Electric Actuator/ Rod Type

LEY Series LEY25, 32

Size 25, 32

∗ Refer to the table below.

RoHS

Dust-tight/Water-jet-proof ▶p. 163 **Secondary Battery Compatible ▶p. 181** **LECY□ Series ▶p. 87**

How to Order

LEY	H	25		S2	B	–	100				–	S	2	A1	
	❶	❷	❸	❹	❺		❻	❼	❽	❾		❿	⓫	⓬	⓭

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

❹ Motor type

Symbol	Type	Output [W]	Actuator size	Compatible drivers∗3	UL-compliant
S2∗1	AC servo motor (Incremental encoder)	100	25	LECSA□-S1	—
S3	AC servo motor (Incremental encoder)	200	32	LECSA□-S3	—
S6∗1	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5	—
S7	AC servo motor (Absolute encoder)	200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7	—
T6∗2	AC servo motor (Absolute encoder)	100	25	LECSS2-T5	●
T7		200	32	LECSS2-T7	●

∗1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
∗2 For motor type T6, the compatible driver part number suffix is T5.
∗3 For details on the driver, refer to page 246.

❺ Lead [mm]

Symbol	LEY25	LEY32∗1
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

∗1 The values shown in ( ) are the leads for the size 32 top mounting, right/left side parallel types.
(Equivalent leads which include the pulley ratio [1.25:1])

❻ Stroke [mm]

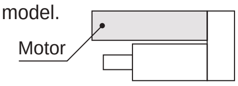
30	30
to	to
500	500

∗ For details, refer to the applicable stroke table below.

❼ Motor option

—	Without option
B	With lock∗1

∗1 When "With lock" is selected for the top mounting and right/left side parallel types, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



❽ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❾ Mounting∗1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/ Body bottom tapped∗2	●	●
L	Foot	●	—
F	Rod flange∗2	●∗4	●
G	Head flange∗2	●∗5	—
D	Double clevis∗3	●	—

∗1 The mounting bracket is shipped together with the product but does not come assembled.
∗2 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
- LEY25: 200 mm or less • LEY32: 100 mm or less

∗3 For the mounting of the double clevis type, use the actuator within the following stroke range.
- LEY25: 200 mm or less • LEY32: 200 mm or less

∗4 The rod flange type is not available for the LEY25 with a 30 mm stroke and motor option "With lock."
∗5 The head flange type is not available for the LEY32.

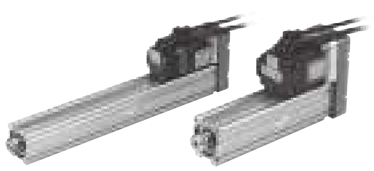
Applicable Stroke Table

●: Standard

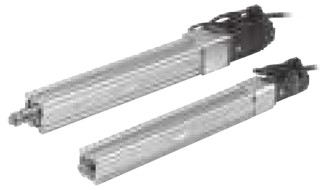
Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

∗ Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 101 to 103.



Motor mounting position: Top/Parallel



Motor mounting position: In-line

⑩ Cable type[*1] [*2]

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

[*1] The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
[*2] Standard cable entry direction is
- Top/Parallel: (A) Axis side
- In-line: (B) Counter axis side

(Refer to page 264 for details.)

⑪ Cable length[*1] [m]

—	Without cable
2	2
5	5
A	10

[*1] The length of the motor, encoder, and lock cables are the same.

⑫ Driver type[*1]

	Compatible driver	Power supply voltage [V]	UL-compliant
—	Without driver	—	—
A1	LECSA1-S□	100 to 120	—
A2	LECSA2-S□	200 to 230	—
B1	LECSB1-S□	100 to 120	—
B2	LECSB2-S□	200 to 230	—
C1	LECSC1-S□	100 to 120	—
C2	LECSC2-S□	200 to 230	—
S1	LECSS1-S□	100 to 120	—
S2	LECSS2-S□	200 to 230	—
	LECSS2-T□	200 to 240	●

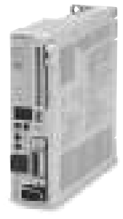
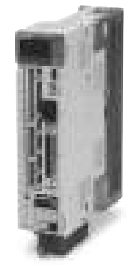
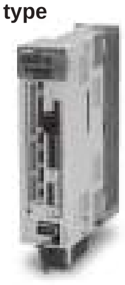
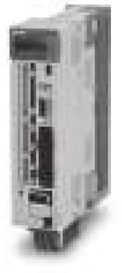
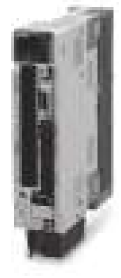
[*1] When a driver type is selected, a cable is included. Select the cable type and cable length.
Example)
S2S2: Standard cable (2 m) + Driver (LECSS2)
S2 : Standard cable (2 m)
— : Without cable and driver

⑬ I/O cable length [m][*1]

—	Without cable
H	Without cable (Connector only)
1	1.5

[*1] When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to page 265 if I/O cable is required.
(Options are shown on page 265.)

Compatible Driver

Driver type	**Pulse input type /Positioning type** 	**Pulse input type** 	**CC-Link direct input type** 	**SSCNET Ⅲ type** 	**SSCNET Ⅲ/H type** 
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**	**LECSS-T**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—	—
Pulse input	○	○	—	—	—
Applicable network	—	—	CC-Link	SSCNET Ⅲ	SSCNET Ⅲ/H
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 22-bit encoder
Communication function	USB communication	USB communication, RS422 communication		USB communication	
Power supply voltage [V]	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)				200 to 240 VAC (50/60 Hz)
Reference page	246				

Specifications: LECSA/LECSB/LECSC/LECSS

∗ Refer to the next page for the LECSS-T.

Model			LEY25S$^{2}_{6}$ (Top/Parallel)/LEY25DS$^{2}_{6}$ (In-line)			LEY32S$^{3}_{7}$ (Top/Parallel)			LEY32DS$^{3}_{7}$ (In-line)		
Actuator specifications	**Work load [kg]**	Horizontal*1	18	50	50	30	60	60	30	60	60
		Vertical	8	16	30	9	19	37	12	24	46
	Force [N]*2 (Set value: 15 to 30 %)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max.*3 speed [mm/s] **Stroke range**	**Up to 300**	900	450	225	1200	600	300	1000	500	250
		305 to 400	600	300	150						
		405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s]*4		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5000			5000					
	Positioning repeatability [mm]	**Basic type**	±0.02								
		High-precision type	±0.01								
	Lost motion [mm]*5	**Basic type**	0.1 or less								
		High-precision type	0.05 or less								
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²]*6		50/20			50/20					
	Actuation type		Ball screw + Belt (LEY☐)/Ball screw (LEY☐D)			Ball screw + Belt [1.25:1]			Ball screw		
	Guide type		Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Operating temperature range [°C]		5 to 40			5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)					
	Regeneration option		May be required depending on speed and work load (Refer to pages 43 and 44.)								
Electric specifications	**Motor output/Size**		100 W/☐40			200 W/☐60					
	Motor type		AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)					
	Encoder		Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)								
	Power consumption [W]*7	**Horizontal**	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W]*8	**Horizontal**	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W]*9		445			724			724		
Lock unit specifications	**Type*10**		Non-magnetising lock								
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20 °C*11		6.3			7.9			7.9		
	Rated voltage [V]		24 VDC $^{0}_{-10}$ %								

∗1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

∗2 The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph" on page 45. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.

∗3 The allowable speed changes according to the stroke. Set the number of rotations according to speed.

∗4 The allowable collision speed for collision with the workpiece with the torque control mode

∗5 A reference value for correcting an error in reciprocal operation

∗6 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

∗7 The power consumption (including the driver) is for when the actuator is operating.

∗8 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.

∗9 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

∗10 Only when motor option "With lock" is selected

∗11 For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series		LEY25S$^{2}_{6}$ (Motor mounting position: Top/Parallel)									LEY32S$^{3}_{7}$ (Motor mounting position: Top/Parallel)										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Incremental encoder	1.31	1.38	1.55	1.81	1.99	2.16	2.34	2.51	2.69	2.42	2.53	2.82	3.29	3.57	3.85	4.14	4.42	4.70	4.98	5.26
	Absolute encoder	1.37	1.44	1.61	1.87	2.05	2.22	2.40	2.57	2.75	2.36	2.47	2.76	3.23	3.51	3.79	4.08	4.36	4.64	4.92	5.20

Series		LEY25DS$^{2}_{6}$ (Motor mounting position: In-line)									LEY32DS$^{3}_{7}$ (Motor mounting position: In-line)										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Incremental encoder	1.34	1.41	1.58	1.84	2.02	2.19	2.37	2.54	2.72	2.44	2.55	2.84	3.31	3.59	3.87	4.16	4.44	4.72	5.00	5.28
	Absolute encoder	1.40	1.47	1.64	1.90	2.08	2.25	2.43	2.60	2.78	2.38	2.49	2.78	3.25	3.53	3.81	4.10	4.38	4.66	4.94	5.22

Additional Weight

[kg]

Size		**25**	**32**
Lock	**Incremental encoder**	0.20	0.40
	Absolute encoder [S6/S7]	0.30	0.66
Rod end male thread	**Male thread**	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring, and mounting bolt)		0.16	0.22

Specifications: LECSS-T

Model				LEY25T6 (Top/Parallel)/LEY25DT6 (In-line)			LEY32T7 (Top/Parallel)			LEY32DT7 (In-line)		
Actuator specifications	Work load [kg]	Horizontal*1		18	50	50	30	60	60	30	60	60
		Vertical		8	16	30	9	19	37	12	24	46
	Force [N]*2 (Set value: 15 to 30 %)			65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max.*3 speed [mm/s]	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s]*4			35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]			5000			5000					
	Positioning repeatability [mm]	Basic type		±0.02			±0.02					
		High-precision type		±0.01			±0.01					
	Lost motion [mm]*5	Basic type		0.1 or less								
		High-precision type		0.05 or less								
	Lead [mm] (including pulley ratio)			12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²]*6			50/20			50/20					
	Actuation type			Ball screw + Belt (LEY☐)/Ball screw (LEY☐D)			Ball screw + Belt [1.25:1]			Ball screw		
	Guide type			Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Operating temperature range [°C]			5 to 40			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)			90 or less (No condensation)					
	Regeneration option			May be required depending on speed and work load (Refer to pages 45 and 46.)								
Electric specifications	Motor output/Size			100 W/☐40			200 W/☐60					
	Motor type			AC servo motor (200 VAC)			AC servo motor (200 VAC)					
	Encoder			Motor type T6, T7: Absolute 22-bit encoder (Resolution: 4194304 p/rev)								
	Power consumption [W]*7	Horizontal		45			65			65		
		Vertical		145			175			175		
	Standby power consumption when operating [W]*8	Horizontal		2			2			2		
		Vertical		8			8			8		
	Max. instantaneous power consumption [W]*9			445			724			724		
Lock unit specifications	Type*10			Non-magnetising lock								
	Holding force [N]			131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20 °C*11			6.3			7.9			7.9		
	Rated voltage [V]			24 VDC $^{0}_{-10}$ %								

*1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

*2 The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph (Guide)" on page 48. When the control equivalent to the pushing operation of the controller LECP series is performed, combine the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.

*3 The allowable speed changes according to the stroke.

*4 The allowable collision speed for collision with the workpiece with the torque control mode

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

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

*7 The power consumption (including the driver) is for when the actuator is operating.

*8 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.

*9 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

*10 Only when motor option "With lock" is selected

*11 For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

Series		LEY25T6 (Motor mounting position: Top/Parallel)									LEY32T7 (Motor mounting position: Top/Parallel)										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Absolute encoder	1.4	1.5	1.6	1.9	2.0	2.2	2.4	2.6	2.7	2.3	2.4	2.7	3.2	3.5	3.8	4.1	4.3	4.6	4.9	5.2

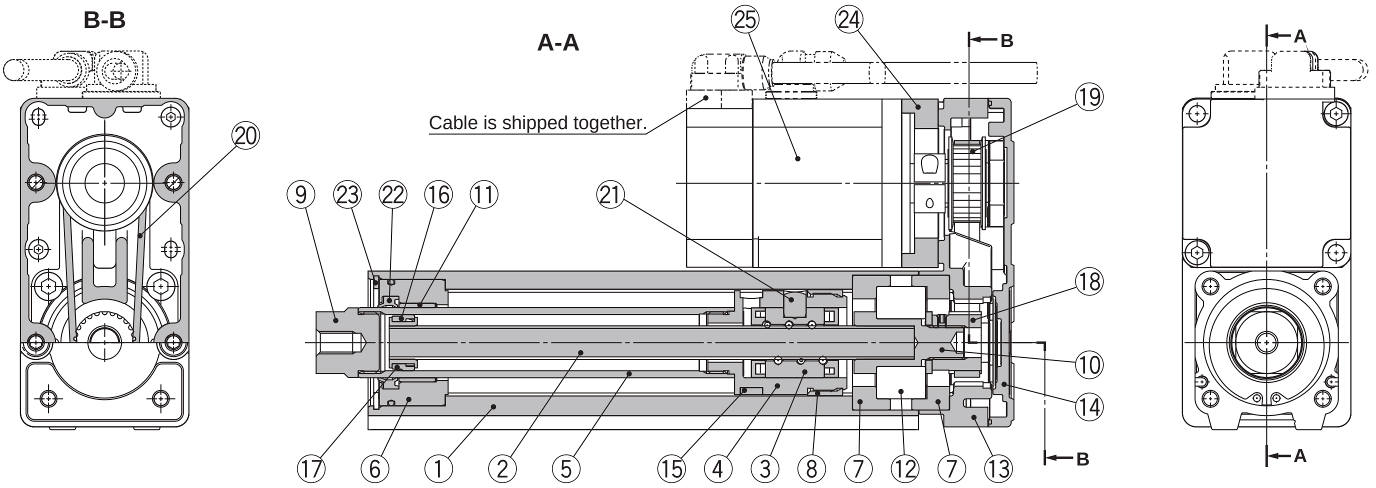
Series		LEY25DT6 (Motor mounting position: In-line)									LEY32DT7 (Motor mounting position: In-line)										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Absolute encoder	1.4	1.5	1.6	1.9	2.1	2.2	2.4	2.6	2.8	2.4	2.5	2.8	3.2	3.5	3.8	4.1	4.4	4.6	4.9	5.2

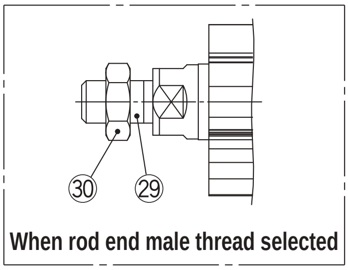
Additional Weight

Size		25	32
Lock	Absolute encoder [T6/T7]	0.3	0.4
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring, and mounting bolt)		0.16	0.22

Construction

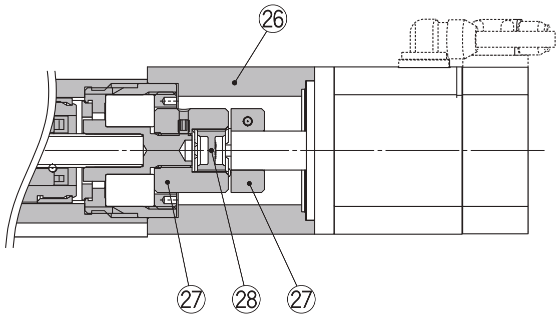
Motor top mounting type: LEY$^{25}_{32}$





When rod end male thread selected

In-line motor type: LEY$^{25}_{32}$D



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Synthetic resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	
24	**Motor adapter**	Aluminium alloy	Coating
25	**Motor**	—	
26	**Motor block**	Aluminium alloy	Coating
27	**Hub**	Aluminium alloy	
28	**Spider**	Urethane	
29	**Socket (Male thread)**	Free cutting carbon steel	Nickel plating
30	**Nut**	Alloy steel	Zinc chromated

Replacement Parts (Motor top/parallel only)/Belt

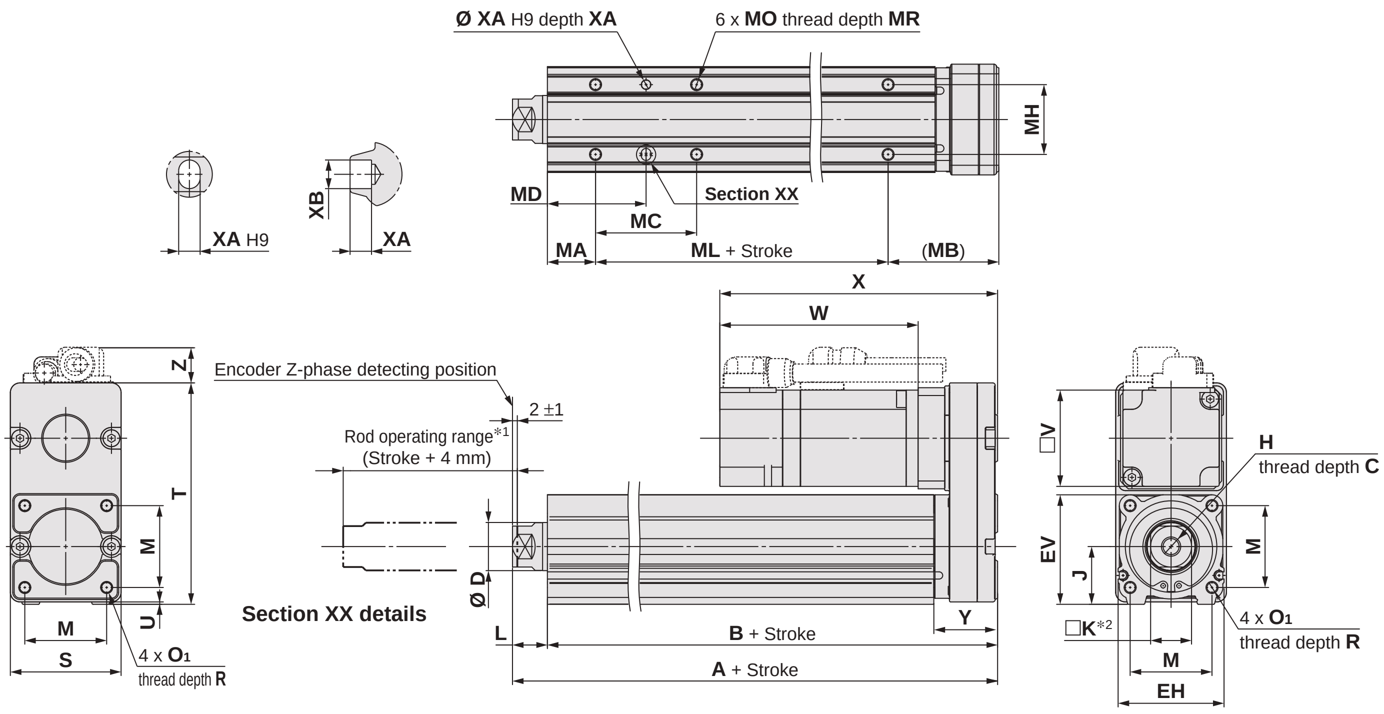
No.	Size	Order no.
20	**25**	LE-D-2-2
	32	LE-D-2-4

Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g) GR-S-020 (20 g)

∗ Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions: Motor Top/Parallel


Ø XA H9 depth XA
6 x MO thread depth MR
MH
MD
Section XX
MC
MA
ML + Stroke
(MB)
XA H9
XB
XA
X
W
Z
Encoder Z-phase detecting position
2 ±1
Rod operating range*1
(Stroke + 4 mm)
T
M
U
M
S
4 x O1
thread depth R
Section XX details
Ø D
L
B + Stroke
Y
A + Stroke
□V
H
thread depth C
EV
J
M
□K*2
4 x O1
thread depth R
M
EH

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	Y	V
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46	92	1	26.5	40
	105 to 400	155.5	141																
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	34	60
	105 to 500	178.5	160																

Size	Stroke range [mm]	Incremental encoder						Absolute encoder [S6/S7]						Absolute encoder [T6/T7]					
		Without lock			With lock			Without lock			With lock			Without lock			With lock		
		W	X	Z	W	X	Z	W	X	Z	W	X	Z	W	X	Z	W	X	Z
25	15 to 100	87	120	14.1	123.9	156.9	15.8	82.4	115.4	14.1	123.5	156.5	15.8	82.4	115.4	14.1	123	156	15.8
	105 to 400																		
32	20 to 100	88.2	128.2	17.1	116.8	156.8	17.1	76.6	116.6	17.1	116.1	156.1	17.1	76.6	116.6	17.1	113.4	153.4	17.1
	105 to 500																		

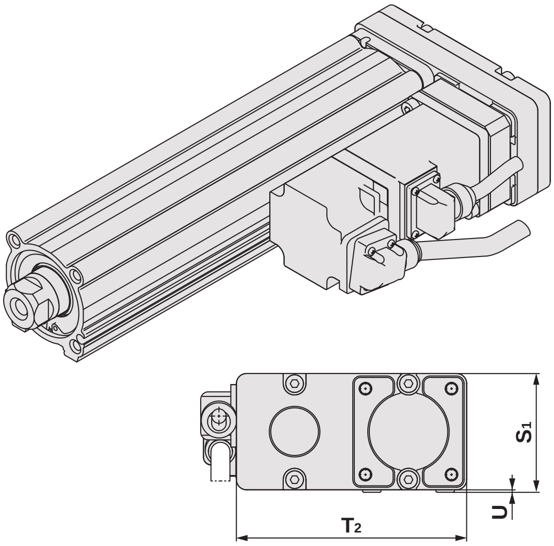
Body Bottom Tapped

[mm]

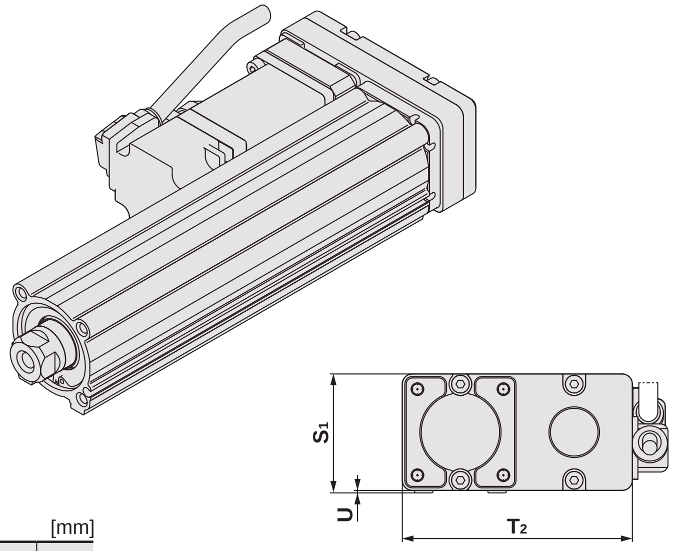
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125 to 200			53	51.5						
	201 to 500			70	60						

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY$^{25}_{32}$L



Motor right side parallel type: LEY$^{25}_{32}$R

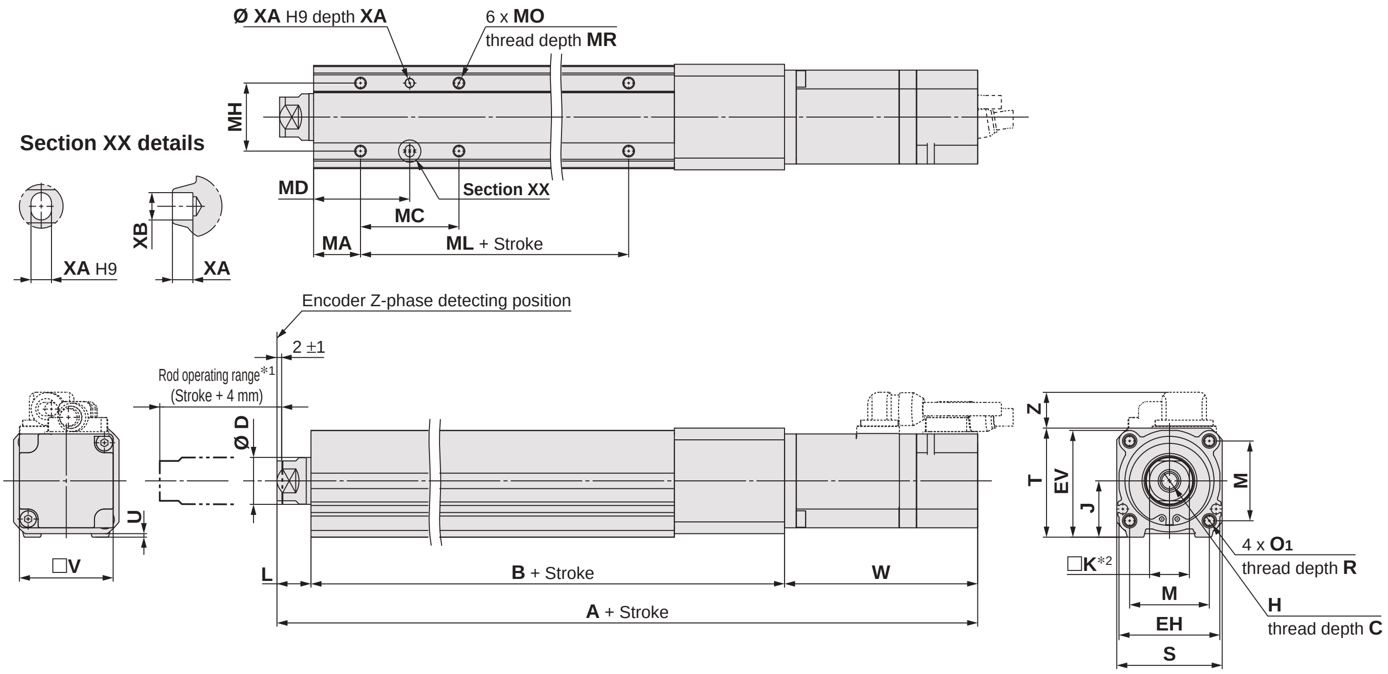


[mm]

Size	S_1	T_2	U
25	47	91	1
32	61	117	1

* When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

Dimensions: In-line Motor


Ø XA H9 depth XA
6 x MO
thread depth MR
MH
Section XX details
XA H9
XB
XA
MD
Section XX
MC
MA
ML + Stroke
Encoder Z-phase detecting position
2 ±1
Rod operating range*1
(Stroke + 4 mm)
Ø D
U
□V
L
B + Stroke
W
A + Stroke
Z
T
EV
J
M
□K*2
4 x O1
thread depth R
M
EH
S
H
thread depth C

∗1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
∗2 The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O_1	R	S	T	U	B	V
25	15 to 100	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5	136.5	40
	105 to 400															161.5	
32	20 to 100	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	61	1	156	60
	105 to 500															186	

Size	Stroke range [mm]	Incremental encoder						Absolute encoder [S6/S7]						Absolute encoder [T6/T7]					
		Without lock			With lock			Without lock			With lock			Without lock			With lock		
		A	**W**	**Z**	**A**	**W**	**Z**	**A**	**W**	**Z**	**A**	**W**	**Z**	**A**	**VB**	**VC**	**A**	**VB**	**VC**
25	15 to 100	238	87	14.6	274.9	123.9	16.3	233.4	82.4	14.6	274.5	123.5	16.3	233.4	82.4	14.6	274	123	16.3
	105 to 400	263			299.9			258.4			299.5			258.4			299		
32	20 to 100	262.7	88.2	17.1	291.3	116.8	17.1	251.1	76.6	17.1	290.6	116.1	17.1	251.1	76.6	17.1	287.9	113.4	17.1
	105 to 500	292.7			321.3			281.1			320.6			281.1			317.9		

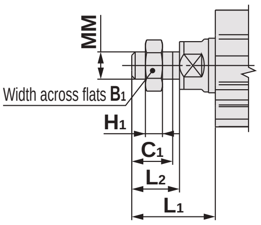
Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	101 to 124					75				
	125 to 200		59	49.5						
	201 to 400		76	58						
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	101 to 124					80				
	125 to 200		53	51.5						
	201 to 500		70	60						

Dimensions

End male thread: LEY$\begin{smallmatrix}25\\32\end{smallmatrix}$□□$\begin{smallmatrix}A\\B\\C\end{smallmatrix}$-□□M



* Refer to page 97 for details on the rod end nut and mounting bracket.
* Refer to the precautions on page 187 when mounting end brackets such as knuckle joint or workpieces.

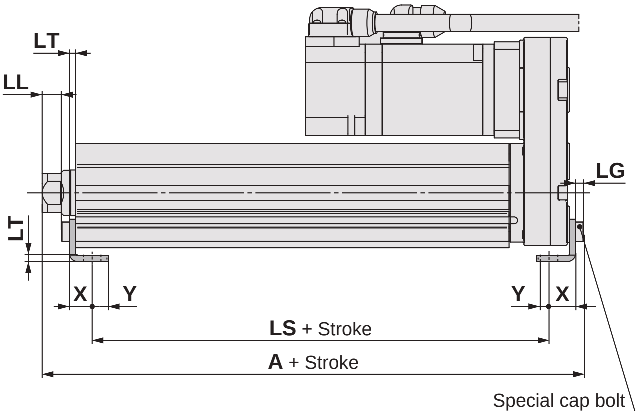
[mm]

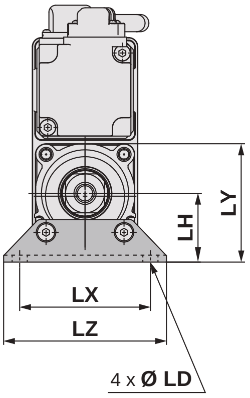
Size	B_1	C_1	H_1	L_1	L_2	MM
25	22	20.5	8	38	23.5	M14 x 1.5
32	22	20.5	8	42.0	23.5	M14 x 1.5

* The L_1 measurement is when the unit is in the original position. At this position, 2 mm at the end.

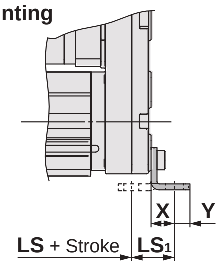
Foot: LEY$\begin{smallmatrix}25\\32\end{smallmatrix}$□□$\begin{smallmatrix}A\\B\\C\end{smallmatrix}$-□□□L

Included parts
- Foot bracket
- Body mounting bolt





Outward mounting



Foot

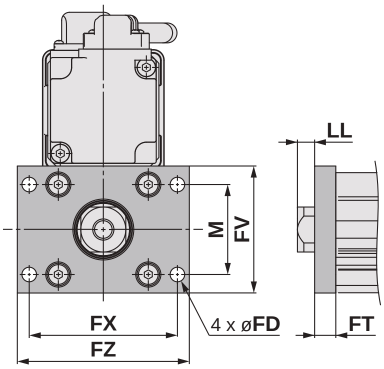
[mm]

Size	Stroke range [mm]	A	LS	LS_1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	123.8											
32	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	185.7	144											

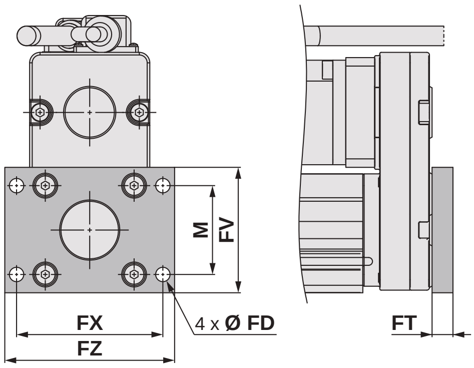
Material: Carbon steel (Chromate treated)
* The A measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end.
* When the motor mounting is the right or left side parallel type, the head side foot bracket should be mounted outward.

Dimensions

Rod flange: LEY$\begin{matrix}25\\32\end{matrix}$□□$\begin{matrix}A\\B\\C\end{matrix}$-□□□F



Head flange: LEY25□□$\begin{matrix}A\\B\\C\end{matrix}$-□□□G



* The head flange type is not available for the LEY32.

Included parts
- Flange
- Body mounting bolt

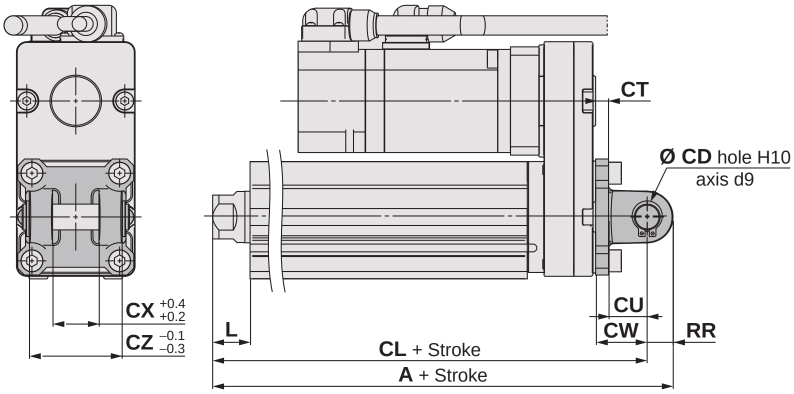
Rod/Head Flange

[mm]

Size	FD	FT	FV	FX	FZ	LL	M
25	5.5	8	48	56	65	6.5	34
32	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plating)

Double clevis: LEY$\begin{matrix}25\\32\end{matrix}$□□$\begin{matrix}A\\B\\C\end{matrix}$-□□□D



Included parts
- Double clevis
- Body mounting bolt
- Clevis pin
- Retaining ring

* Refer to page 97 for details on the rod end nut and mounting bracket.

Double Clevis

[mm]

Size	Stroke range [mm]	A	CL	CD	CT
25	15 to 100	160.5	150.5	10	5
	101 to 200	185.5	175.5		
32	20 to 100	180.5	170.5	10	6
	101 to 200	210.5	200.5		

Size	Stroke range [mm]	CU	CW	CX	CZ	L	RR
25	15 to 100	14	20	18	36	14.5	10
	101 to 200						
32	20 to 100	14	22	18	36	18.5	10
	101 to 200						

Material: Cast iron (Coating)

* The A and CL measurements are when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end.

Electric Actuator/ Rod Type

Dust-tight/Water-jet-proof (IP65 Equivalent)

* Option

LEY Series LEY63 Size 63

* Refer to tables ❹ and ⓭ below.

LECY□ Series ▶p. 87

Refer to page 41 for model selection.

How to Order

LEY **H** **63** □ **S4** **B** – **200** □ □ □ □ – **S** **2** **A2** □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭ ⓮

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

63

❸ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

❹ Motor type

Symbol	Type	Output [W]	Actuator size	Compatible driver	UL-compliant
S4	AC servo motor (Incremental encoder)	400	63	LECSA2-S4	—
S8	AC servo motor (Absolute encoder)	400	63	LECSB2-S8 LECSC2-S8 LECSS2-S8	—
T8				LECSS2-T8	●

❺ Lead [mm]

Symbol	LEY63
A	20
B	10
C	5
L	2.86[*1] [*2]

*1 Screw lead 5 mm, Pulley ratio [4:7] equivalent lead

*2 Only available for top mounting and right/left side parallel types

❻ Stroke [mm]

50	50
to	to
800	800

* For details, refer to the applicable stroke table below.

❼ Dust-tight/Water-jet-proof

—	IP5x equivalent (Dust-protected)
P	IP65 equivalent (Dust-tight/Water-jet-proof)/ With vent hole tap

* When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water.
* The fitting and tubing should be provided separately by the customer. Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].
* Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water. Take appropriate protective measures. For details on enclosure, refer to "Enclosure" on page 188.

❽ Motor option

—	Without option
B	With lock

❾ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❿ Mounting[*1]

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/ Body bottom tapped[*2]	●	●
L	Foot	●	—
F	Rod flange[*2]	●	●
D	Double clevis[*3]	●	—

*1 The mounting bracket is shipped together with the product but does not come assembled.

*2 For the horizontal cantilever mounting of the rod flange or ends tapped types, use the actuator within the following stroke range.
- LEY63: 400 mm or less

*3 For the mounting of the double clevis type, use the actuator within the following stroke range.
- LEY63: 300 mm or less

⓫ Cable type[*1]

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

*1 The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)

* Standard cable entry direction is
- Top/Parallel: (A) Axis side
- In-line: (B) Counter axis side

(Refer to page 264 for details.)

⓬ Cable length[*2] [m]

—	Without cable
2	2
5	5
A	10

*2 The length of the encoder, motor, and lock cables are the same.

⓭ Driver type

	Compatible driver	Power supply voltage	UL-compliant
—	Without driver		—
A2	LECSA2/Pulse input (Incremental encoder)	200 V to 230 V	—
B2	LECSB2/Pulse input (Absolute encoder)	200 V to 230 V	—
C2	LECSC2/CC-Link (Absolute encoder)	200 V to 230 V	—
S2	LECSS2-S/SSCNETⅢ (Absolute encoder)	200 V to 230 V	—
	LECSS2-T/SSCNETⅢ/H (Absolute encoder)	200 V to 240 V	●

* When a driver type is selected, a cable is included. Select the cable type and cable length.

Example) S2S2: Standard cable (2 m) + Driver (LECSS2)
S2 : Standard cable (2 m)
—: Without cable and driver

⓮ I/O cable length [m][*1]

—	Without cable
H	Without cable (Connector only)
1	1.5

*1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 265 if I/O cable is required. (Options are shown on page 265.)

Applicable Stroke Table

Model \ Stroke [mm]	50	100	150	200	250	300	350	400	450	500	600	700	800	Manufacturable stroke range
LEY63	●	●	●	●	●	●	●	●	●	●	●	●	●	50 to 800

* Please consult with SMC for non-standard strokes as they are produced as special orders.

Specifications

Model				LEY63S$^{4}_{8}$/T8 (Top/Parallel)				LEY63DS$^{4}_{8}$/T8 (In-line)		
Actuator specifications	Work load [kg]	Horizontal*1		40	70	80	200	40	70	80
		Vertical*14		19	38	72	115	19	38	72
	Force [N]/Set value*2 : 15 to 50 %*3 *4			156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910
	Max. speed*5 [mm/s]	Stroke range	Up to 500	1000	500	250	70	1000	500	250
			505 to 600	800	400	200		800	400	200
			605 to 700	600	300	150		600	300	150
			705 to 800	500	250	125		500	250	125
	Pushing speed [mm/s]*6			30 or less						
	Max. acceleration/deceleration [mm/s²]			5000			3000	5000		
	Positioning repeatability [mm]	Basic type		±0.02						
		High-precision type		±0.01						
	Lost motion [mm]*7	Basic type		0.1 or less						
		High-precision type		0.05 or less						
	Screw lead [mm] (including pulley ratio)			20	10	5	5 (2.86)	20	10	5
	Impact/Vibration resistance [m/s²]*8			50/20						
	Actuation type			Ball screw + Belt			Ball screw + Belt [Pulley ratio 4:7]	Ball screw		
	Guide type			Sliding bushing (Piston rod)						
	Operating temperature range [°C]			5 to 40						
	Operating humidity range [%RH]			90 or less (No condensation)						
	Regeneration option			May be required depending on speed and work load (Refer to pages 43 and 44.)						
Electric specifications	Motor output/Size			400 W/□60						
	Motor type			AC servo motor (200 VAC)						
	Encoder			Motor type S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S8: Absolute 18-bit encoder (Resolution: 262144 p/rev) Motor type T8: Absolute 22-bit encoder (Resolution: 4194304 p/rev)						
	Power consumption [W]*9	Horizontal		210						
		Vertical		230						
	Standby power consumption when operating [W]*10	Horizontal		2						
		Vertical		18						
	Max. instantaneous power consumption [W]*11			1275						
Lock unit specifications	Type*12			Non-magnetising lock						
	Holding force [N]			313	607	1146	2006	313	607	1146
	Power consumption [W] at 20 °C*13			7.9						
	Rated voltage [V]			24 VDC $^{0}_{-10}$ %						

*1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.
*2 Set values for the driver
*3 The force setting range (set values for the driver) for the force control with the torque control mode. The force and duty ratio change according to the set value. Set it with reference to “Force Conversion Graph” on page 45. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.
*4 For the motor type T8, the set value is from 12 to 40 %.
*5 The allowable speed changes according to the stroke. Set the number of rotations according to speed.
*6 The allowable collision speed for collision with the workpiece with the torque control mode
*7 A reference value for correcting an error in reciprocal operation
*8 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
*9 The power consumption (including the driver) is for when the actuator is operating.
*10 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
*11 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
*12 Only when motor option “With lock” is selected
*13 For an actuator with lock, add the power consumption for the lock.
*14 When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

Weight

Product Weight

[kg]

Series		LEY63S$^{4}_{8}$ (Motor mounting position: Top/Parallel)												
Stroke [mm]		50	100	150	200	250	300	350	400	450	500	600	700	800
Motor type	Incremental encoder	4.9	5.4	6.0	6.6	7.8	8.3	8.9	9.4	10.0	10.5	12.2	13.4	14.5
	Absolute encoder (Motor type S8)	5.0	5.5	6.1	6.7	7.9	8.4	9.0	9.5	10.1	10.6	12.3	13.5	14.6
	Absolute encoder (Motor type T8)	4.9	5.4	6.0	6.6	7.8	8.3	8.9	9.4	10.0	10.5	12.2	13.4	14.5

Series		LEY63DS$^{4}_{8}$ (Motor mounting position: In-line)												
Stroke [mm]		50	100	150	200	250	300	350	400	450	500	600	700	800
Motor type	Incremental encoder	5.1	5.6	6.2	6.7	7.9	8.4	9.0	9.6	10.2	10.7	12.4	13.5	14.7
	Absolute encoder (Motor type S8)	5.2	5.7	6.3	6.8	8.0	8.5	9.1	9.7	10.3	10.8	12.5	13.6	14.8
	Absolute encoder (Motor type T8)	5.1	5.6	6.2	6.7	7.9	8.4	9.0	9.6	10.2	10.7	12.4	13.5	14.7

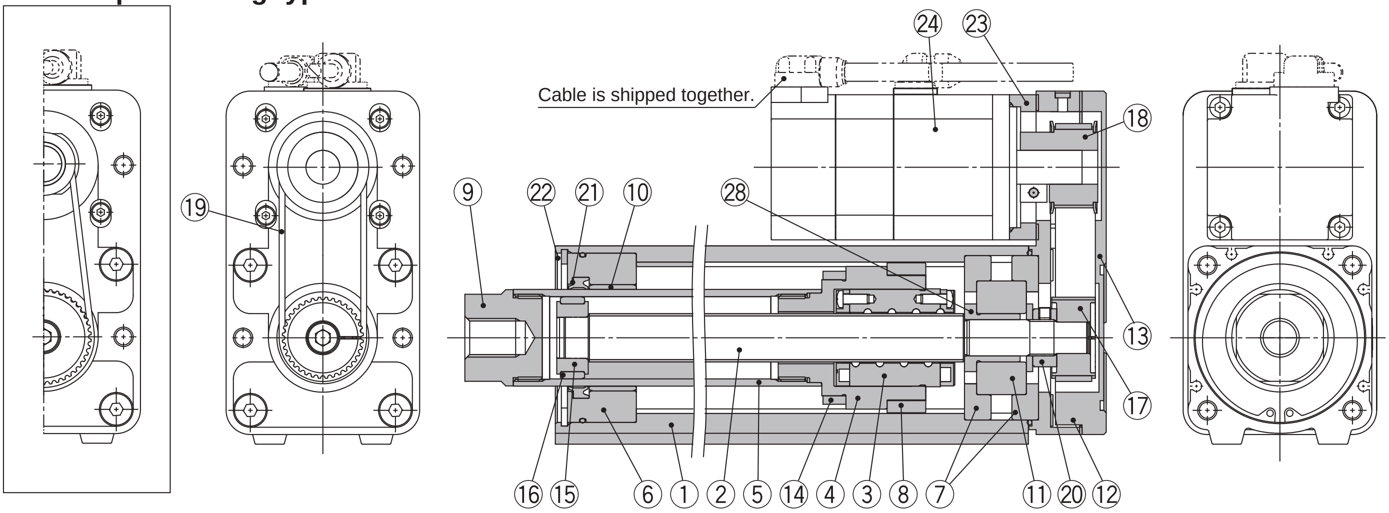
Additional Weight

[kg]

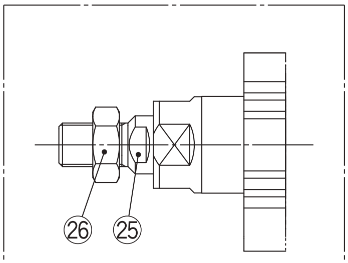
Size		63
Lock	Incremental encoder	0.4
	Absolute encoder (Motor type S8)	0.6
	Absolute encoder (Motor type T8)	0.4
Rod end male thread	Male thread	0.12
	Nut	0.04
Foot bracket (2 sets including mounting bolt)		0.26
Rod flange (including mounting bolt)		0.51
Double clevis (including pin, retaining ring, and mounting bolt)		0.58

Construction

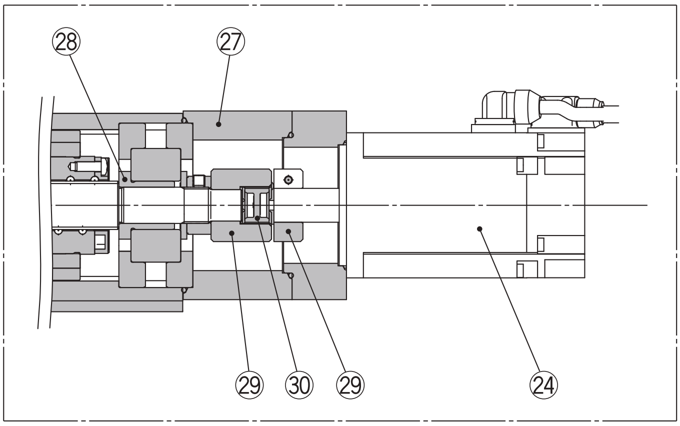
Motor top mounting type: LEY63



In-line motor type: LEY63D



When rod end male thread selected



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	Resin	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Bushing**	Lead bronze cast	
11	**Bearing**	—	
12	**Return box**	Aluminium alloy	Coating
13	**Return plate**	Aluminium alloy	Coating
14	**Magnet**	—	
15	**Wear ring holder**	Stainless steel	

No.	Description	Material	Note
16	**Wear ring**	Resin	
17	**Screw shaft pulley**	Aluminium alloy	
18	**Motor pulley**	Aluminium alloy	
19	**Belt**	—	
20	**Lock nut**	Alloy steel	Black dyed
21	**Seal**	NBR	
22	**Retaining ring**	Steel for spring	
23	**Motor adapter**	Aluminium alloy	Coating
24	**Motor**	—	
25	**Socket (Male thread)**	Free cutting carbon steel	Nickel plating
26	**Nut**	Alloy steel	Trivalent chromated
27	**Motor block**	Aluminium alloy	Coating
28	**Spacer A**	Stainless steel	
29	**Hub**	Aluminium alloy	
30	**Spider**	Urethane	

Replacement Parts (Motor top/parallel only)/Belt

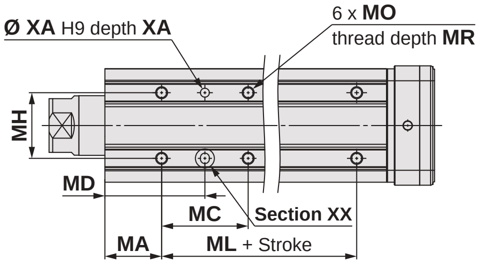
No.	Size	Lead	Order no.
19	63	A/B/C	LE-D-2-5
		L	LE-D-2-6

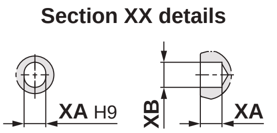
Replacement Parts/Grease Pack

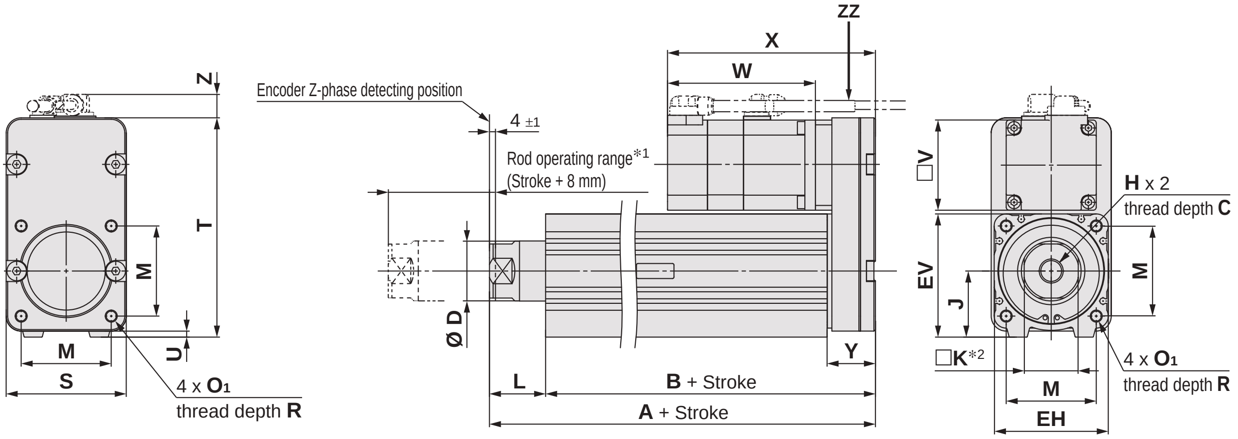
Applied portion	Order no.
Piston rod	GR-S-010 (10 g) GR-S-020 (20 g)

∗ Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions: Motor Top/Parallel


Ø XA H9 depth XA
6 x MO
thread depth MR
MH
MD
MC
Section XX
MA
ML + Stroke

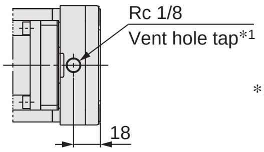

Section XX details
XA H9
XB
XA


Z
T
M
U
M
S
4 x O1
thread depth R
Encoder Z-phase detecting position
4 ±1
Rod operating range*1
(Stroke + 8 mm)
ZZ
X
W
Ø D
L
B + Stroke
A + Stroke
Y
□V
EV
J
□K*2
H x 2
thread depth C
M
4 x O1
thread depth R
M
EH

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 The direction of rod end width across flats (□K) differs depending on the products.

IP65 equivalent (Dust-tight/Water-jet-proof): LEY63□□□-□P
(View ZZ)


Rc 1/8
Vent hole tap*1
18

∗1 When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	Y	T	U	V
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	32.2	146	4	60
	205 to 500	227.6	190.2																
	505 to 800	262.6	225.2																

Size	Stroke range [mm]	Incremental encoder						Absolute encoder [S8]						Absolute encoder [T8]					
		Without lock			With lock			Without lock			With lock			Without lock			With lock		
		W	X	Z	W	X	Z	W	X	Z	W	X	Z	W	X	Z	W	X	Z
63	Up to 200	110.2	150.2	15.6 (16.6)∗1	138.8	178.8	15.6 (16.6)∗1	98.5	138.5	15.6 (16.6)∗1	138	178	15.6 (16.6)∗1	98.3	138.3	15.6 (16.6)∗1	135.1	175.1	15.6 (16.6)∗1
	205 to 500																		
	505 to 800																		

∗1 The values in ( ) are the dimensions when L is selected for screw lead.

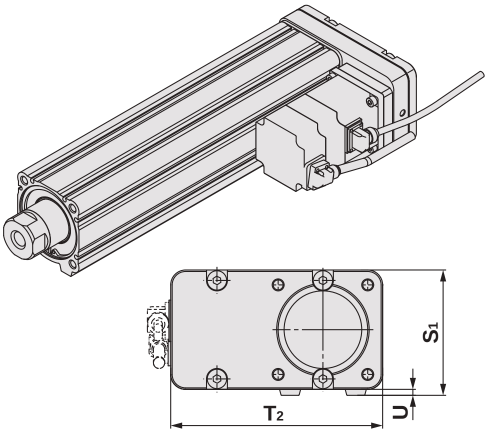
Body Bottom Tapped

[mm]

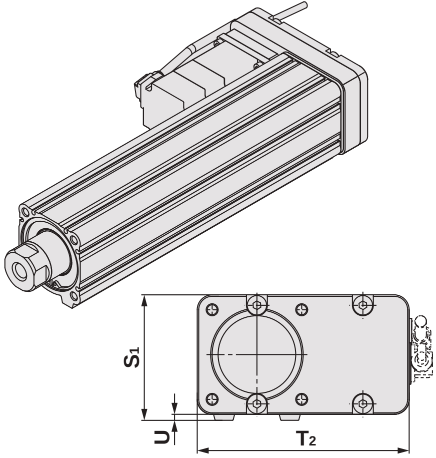
Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124		45	60.5						
	125 to 200		58	67						
	201 to 500		86	81		100				
	501 to 800					135				

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY63L



Motor right side parallel type: LEY63R



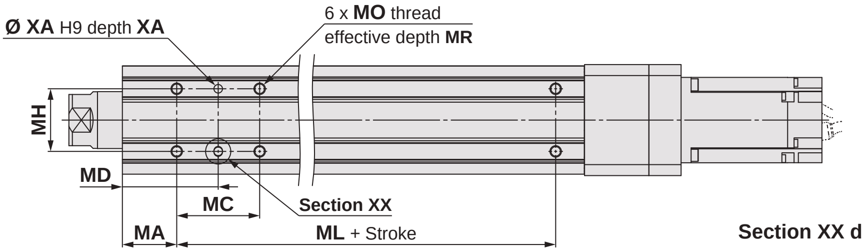
[mm]

Size	S_1	T_2	U
63	84	142	4

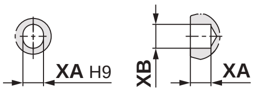
∗ When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

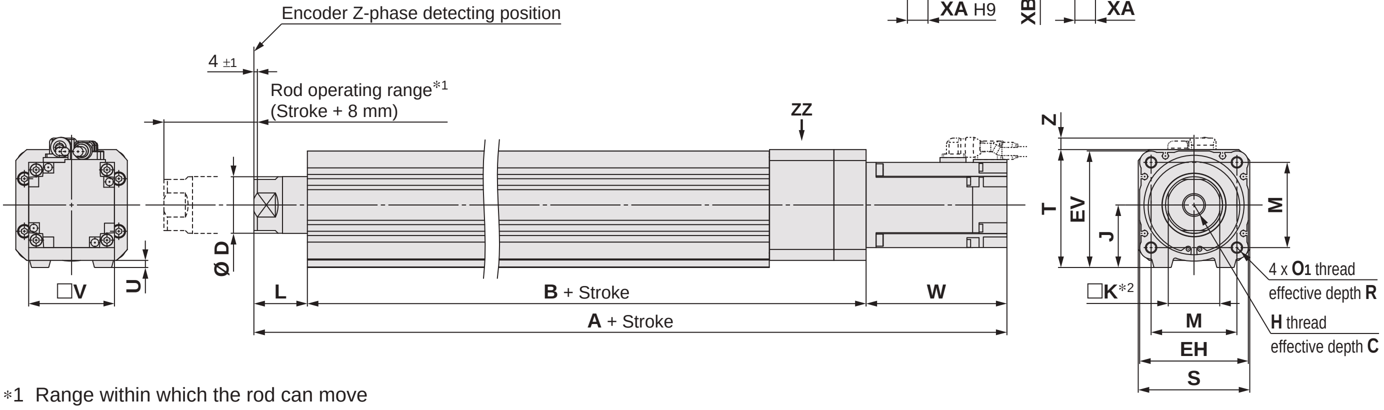
Dimensions: In-line Motor

LEY63D□


Ø XA H9 depth XA
6 x MO thread
effective depth MR
MH
MD
MC
Section XX
MA
ML + Stroke

Section XX details




Encoder Z-phase detecting position
4 ±1
Rod operating range∗1
(Stroke + 8 mm)
ZZ
□V
U
Ø D
L
B + Stroke
W
A + Stroke
Z
T
EV
J
M
□K∗2
4 x O1 thread
effective depth R
H thread
effective depth C
M
EH
S

∗1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

∗2 The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	B	V
63	Up to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5	190.7	60
	205 to 500															225.7	
	505 to 800															260.7	

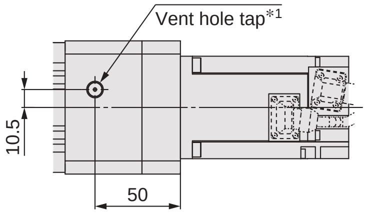
Size	Stroke range [mm]	Incremental encoder						Absolute encoder [S8]						Absolute encoder [T8]					
		Without lock			With lock			Without lock			With lock			Without lock			With lock		
		A	W	Z	A	W	Z	A	W	Z	A	W	Z	A	W	Z	A	W	Z
63	Up to 200	338.3	110.2	8.1	366.9	138.8	8.1	326.6	98.5	8.1	366.1	138	8.1	326.4	98.3	8.1	363.2	135.1	8.1
	205 to 500	373.3			401.9			361.6			401.1			361.4			398.2		
	505 to 800	408.3			436.9			396.6			436.1			396.4			433.2		

Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
63	50 to 74	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 124		45	60.5						
	125 to 200		58	67						
	201 to 500		86	81		100				
	501 to 800					135				

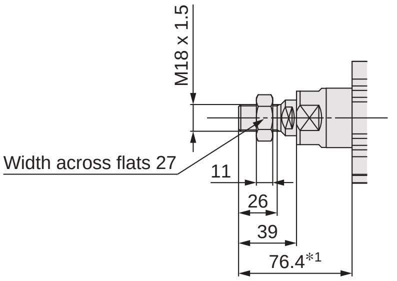
IP65 equivalent (Dust-tight/Water-jet-proof): LEY63D□□-□P (View ZZ)


Rc 1/8
Vent hole tap∗1
10.5
50

∗1 When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

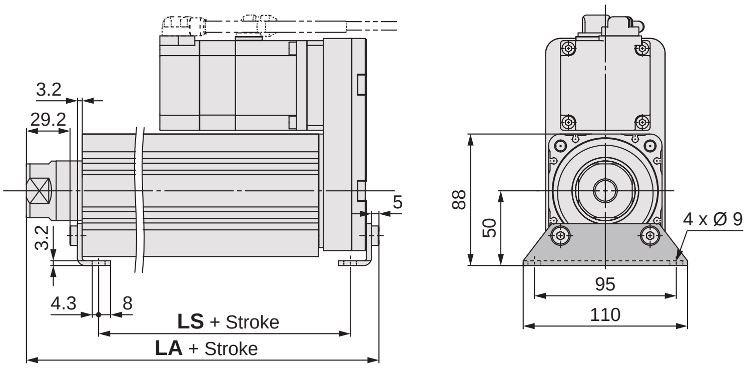
Dimensions

End male thread: LEY63□□□-□□M

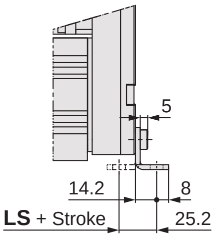

M18 x 1.5
Width across flats 27
11
26
39
76.4＊1

＊1 The measurement 76.4 is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Foot: LEY63□□□-□□L


3.2
29.2
3.2
5
4.3
8
LS + Stroke
LA + Stroke
88
50
4 x Ø 9
95
110

Outward mounting


5
14.2
8
LS + Stroke
25.2

Included parts
- Foot bracket
- Body mounting bolt

Material: Carbon steel (Chromate treated)

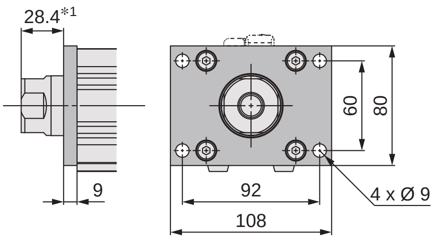
＊ The overall length is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

＊ When the motor mounting is the right or left side parallel type, the head side foot bracket should be mounted outward.

[mm]

Stroke range [mm]	LA	LS
50 to 200	200.8	133.2
201 to 500	235.8	168.2
501 to 800	270.8	203.2

Rod flange: LEY63□□□-□□F

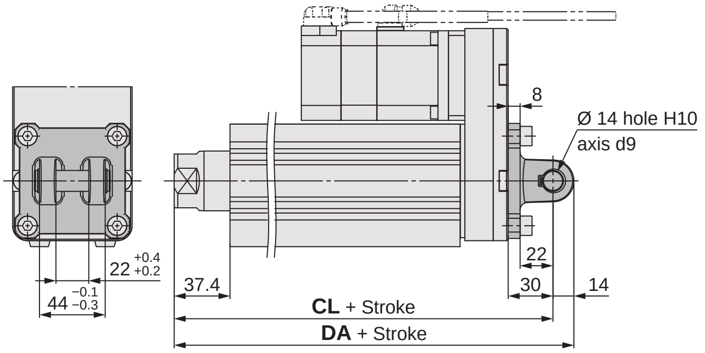

28.4＊1
9
60
80
92
108
4 x Ø 9

Included parts
- Flange
- Body mounting bolt

Material: Carbon steel (Nickel plating)

＊1 When the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

Double clevis: LEY63□□□-□□D


8
Ø 14 hole H10
axis d9
22
30
14
37.4
CL + Stroke
DA + Stroke
22 +0.4 +0.2
44 −0.1 −0.3

Included parts
- Double clevis
- Body mounting bolt
- Clevis pin
- Retaining ring

[mm]

Stroke range [mm]	DA	CL
50 to 200	236.6	222.6
201 to 500	271.6	257.6
501 to 800	306.6	292.6

Material: Cast iron (Coating)

＊ The overall length is when the unit is in the Z-phase detecting position. At this position, 4 mm from the end of the operating range.

AC Servo Motor *LECY□ Series*

Electric Actuator/ Rod Type

LEY Series LEY25, 32, 63

CE RoHS

Dust-tight/Water-jet-proof (IP65 Equivalent)▶p. 169 **Secondary Battery Compatible▶p. 183**

LECS□ Series▶p. 69, 79

How to Order

LEY H 25 □ V6 B − 200 □ □ □ □ − S 3 M2 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭ ⓮

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

25
32
63

❸ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

❹ Motor type

Symbol	Type	Output [W]	Size	Compatible driver
V6*1	AC servo motor (Absolute encoder)	100	25	LECYM2-V5 LECYU2-V5
V7		200	32	LECYM2-V7 LECYU2-V7
V8		400	63	LECYM2-V8 LECYU2-V8

*1 For motor type V6, the compatible driver part number suffix is V5.

❺ Lead [mm]

Symbol	LEY25	LEY32*1	LEY63
A	12	16 (20)	20
B	6	8 (10)	10
C	3	4 (5)	5
L	—	—	2.86*2

*1 The values shown in ( ) are the leads for the top mounting, right/left side parallel types. (Equivalent leads which include the pulley ratio [1.25:1])

*2 Only available for top mounting and right/left side parallel types (Equivalent leads which include the pulley ratio [4:7])

❻ Stroke [mm]

30	30
to	to
800	800

* For details, refer to the applicable stroke table below.

❼ Dust-tight/Water-jet-proof (Only available for LEY63)

Symbol	LEY25/32	LEY63
—	IP4x equivalent	IP5x equivalent (Dust-protected)
P	—	IP65 equivalent (Dust-tight/ Water-jet-proof)/With vent hole tap

* When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water.

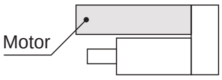
* The fitting and tubing should be provided separately by the customer. Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

* Cannot be used in environments exposed to cutting oil, etc. Take appropriate protective measures. For details on enclosure, refer to “Enclosure” on page 188.

❽ Motor option

—	Without option
B	With lock

* When “With lock” is selected for the top mounting and right/left side parallel types, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



❾ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

Applicable Stroke Table

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	600	700	800	Manufacturable stroke range
LEY25	●	●	●	●	●	●	●	●	●	—	—	—	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	—	—	—	20 to 500
LEY63	—	●	●	●	●	●	●	●	●	●	●	●	●	●	50 to 800

* Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 101 to 103.

Motor mounting position: Top/Parallel

Motor mounting position: In-line

❿ Mounting*1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/ Body bottom tapped*2	●	●
L	Foot	●	—
F	Rod flange*2	●*4	●
G	Head flange*2	●*5	—
D	Double clevis*3	●	—

*1 The mounting bracket is shipped together with the product but does not come assembled.

*2 For the horizontal cantilever mounting of the ends tapped, rod flange, or head flange types, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 100 mm or less · LEY63: 400 mm or less

*3 For the mounting of the double clevis type, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 200 mm or less · LEY63: 300 mm or less

*4 The rod flange type is not available for the LEY25 with a 30 mm stroke and motor option "With lock."

*5 The head flange type is not available for the LEY32/LEY63.

⓫ Cable type*1

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

*1 The motor and encoder cables are included. The motor cable for lock option is included when the motor with lock option is selected.

⓬ Cable length [m]*1

—	Without cable
3	3
5	5
A	10
C	20

*1 The length of the motor and encoder cables are the same. (For with lock)

⓭ Driver type

	Compatible driver	Power supply voltage [V]
—	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

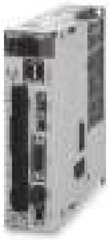
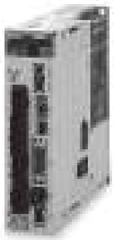
* When a driver type is selected, a cable is included. Select the cable type and cable length.

⓮ I/O cable length [m]*1

—	Without cable
H	Without cable (Connector only)
1	1.5

*1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 278 if I/O cable is required. (Options are shown on page 278.)

Compatible Driver

Driver type	MECHATROLINK-Ⅱ type 	MECHATROLINK-Ⅲ type 
Series	**LECYM**	**LECYU**
Applicable network	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	271	

Specifications

Model				LEY25V6 (Top/Parallel)/LEY25DV6 (In-line)			LEY32V7 (Top/Parallel)			LEY32DV7 (In-line)		
Actuator specifications	Work load [kg]	Horizontal[1]		18	50	50	30	60	60	30	60	60
		Vertical		8	16	30	9	19	37	12	24	46
	Force [N][2] (Set value: 45 to 90 %)			65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max.[3] speed [mm/s]	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s][4]			35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]			5000			5000					
	Positioning repeatability [mm]	Basic type		±0.02			±0.02					
		High-precision type		±0.01			±0.01					
	Lost motion[5] [mm]	Basic type		0.1 or less			0.1 or less					
		High-precision type		0.05 or less			0.05 or less					
	Lead [mm] (including pulley ratio)			12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²][6]			50/20			50/20					
	Actuation type			Ball screw + Belt (LEY☐)/Ball screw (LEY☐D)			Ball screw + Belt [1.25:1]			Ball screw		
	Guide type			Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Operating temperature range [°C]			5 to 40			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)			90 or less (No condensation)					
	Conditions for[7] "Regenerative resistor" [kg]	Horizontal		Not required			Not required					
		Vertical		6 or more			4 or more					
Electric specifications	Motor output/Size			100 W/☐40			200 W/☐60					
	Motor type			AC servo motor (200 VAC)			AC servo motor (200 VAC)					
	Encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)								
	Power consumption [W][8]	Horizontal		45			65			65		
		Vertical		145			175			175		
	Standby power consumption when operating [W][9]	Horizontal		2			2			2		
		Vertical		8			8			8		
	Max. instantaneous power consumption [W][10]			445			724			724		
Lock unit specifications	Type[11]			Non-magnetising lock								
	Holding force [N]			131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20 °C[12]			5.5			6			6		
	Rated voltage [V]			24 VDC $^{+10}_{0}$ %								

[1] This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

[2] The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to "Force Conversion Graph (Guide)" on page 52.

[3] The allowable speed changes according to the stroke.

[4] The allowable collision speed for collision with the workpiece with the torque control mode

[5] A reference value for correcting an error in reciprocal operation

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

[7] The work load conditions which require "Regenerative resistor" when operating at the maximum speed (Duty ratio: 100 %). Order the regenerative resistor separately. For details, refer to "Conditions for Regenerative Resistor (Guide)" on pages 50 and 51.

[8] The power consumption (including the driver) is for when the actuator is operating.

[9] The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.

[10] The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

[11] Only when motor option "With lock" is selected

[12] For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series	LEY25V6 (Motor mounting position: Top/Parallel)									LEY32V7 (Motor mounting position: Top/Parallel)										
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Weight [kg]	1.2	1.3	1.6	1.7	1.9	2.1	2.2	2.4	2.6	2.3	2.4	2.7	3.2	3.5	3.8	4.0	4.3	4.6	4.9	5.2

Series	LEY25DV6 (Motor mounting position: In-line)									LEY32DV7 (Motor mounting position: In-line)										
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Weight [kg]	1.2	1.3	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.3	2.4	2.7	3.2	3.5	3.8	4.1	4.3	4.6	4.9	5.2

Additional Weight

[kg]

Size		25	32
Lock		0.30	0.60
Rod end male thread	**Male thread**	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring, and mounting bolt)		0.16	0.22

Specifications

Model				LEY63V8 (Top/Parallel)				LEY63DV8 (In-line)		
Actuator specifications	Work load [kg]		Horizontal*1	40	70	80	200	40	70	80
			Vertical	19	38	72	115	19	38	72
	Force [N]/Set value*2 : 45 to 150 %*3			156 to 521	304 to 1012	573 to 1910	1003 to 3343	156 to 521	304 to 1012	573 to 1910
	Max. speed*4 [mm/s]	Stroke range	Up to 500	1000	500	250	70	1000	500	250
			505 to 600	800	400	200		800	400	200
			605 to 700	600	300	150		600	300	150
			705 to 800	500	250	125		500	250	125
	Pushing speed [mm/s]*5			30 or less						
	Max. acceleration/deceleration [mm/s²]			5000			3000	5000		
	Positioning repeatability [mm]		Basic type	±0.02						
			High-precision type	±0.01						
	Lost motion [mm]*6		Basic type	0.1 or less						
			High-precision type	0.05 or less						
	Screw lead [mm] (including pulley ratio)			20	10	5	5 (2.86)	20	10	5
	Impact/Vibration resistance [m/s²]*7			50/20						
	Actuation type			Ball screw			Ball screw + Belt [Pulley ratio 4:7]	Ball screw		
	Guide type			Sliding bushing (Piston rod)						
	Operating temperature range [°C]			5 to 40						
	Operating humidity range [%RH]			90 or less (No condensation)						
	Conditions for*8 “Regenerative resistor” [kg]		Horizontal	Not required						
			Vertical	2.5 or more						
Electric specifications	Motor output/Size			400 W/□60						
	Motor type			AC servo motor (200 VAC)						
	Encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)						
	Power consumption [W]*9		Horizontal	210						
			Vertical	230						
	Standby power consumption when operating [W]*10		Horizontal	2						
			Vertical	18						
	Max. instantaneous power consumption [W]*11			1275						
Lock unit specifications	Type*12			Non-magnetising lock						
	Holding force [N]			313	607	1146	2006	313	607	1146
	Power consumption [W] at 20 °C*13			6						
	Rated voltage [V]			24 VDC $^{+10}_{\ 0}$ %						

*1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.
*2 Set values for the driver
*3 The force setting range (set values for the driver) for the force control with the torque control mode. The force and duty ratio change according to the set value. Set it with reference to “Force Conversion Graph (Guide)” on page 52.
*4 The allowable speed changes according to the stroke.
*5 The allowable collision speed for collision with the workpiece with the torque control mode
*6 A reference value for correcting an error in reciprocal operation
*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. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
*8 The work load conditions which require “Regenerative resistor” when operating at the maximum speed (Duty ratio: 100 %)
*9 The power consumption (including the driver) is for when the actuator is operating.
*10 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
*11 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
*12 Only when motor option “With lock” is selected
*13 For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series	LEY63V8 (Motor mounting position: Top/Parallel)												
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	600	700	800
Weight [kg]	4.8	5.3	6.0	6.5	7.7	8.2	8.8	9.3	9.9	10.4	12.1	13.3	14.4

Series	LEY63DV8 (Motor mounting position: In-line)												
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	600	700	800
Weight [kg]	5.0	5.5	6.1	6.6	7.8	8.3	9.0	9.5	10.1	10.6	12.3	13.4	14.6

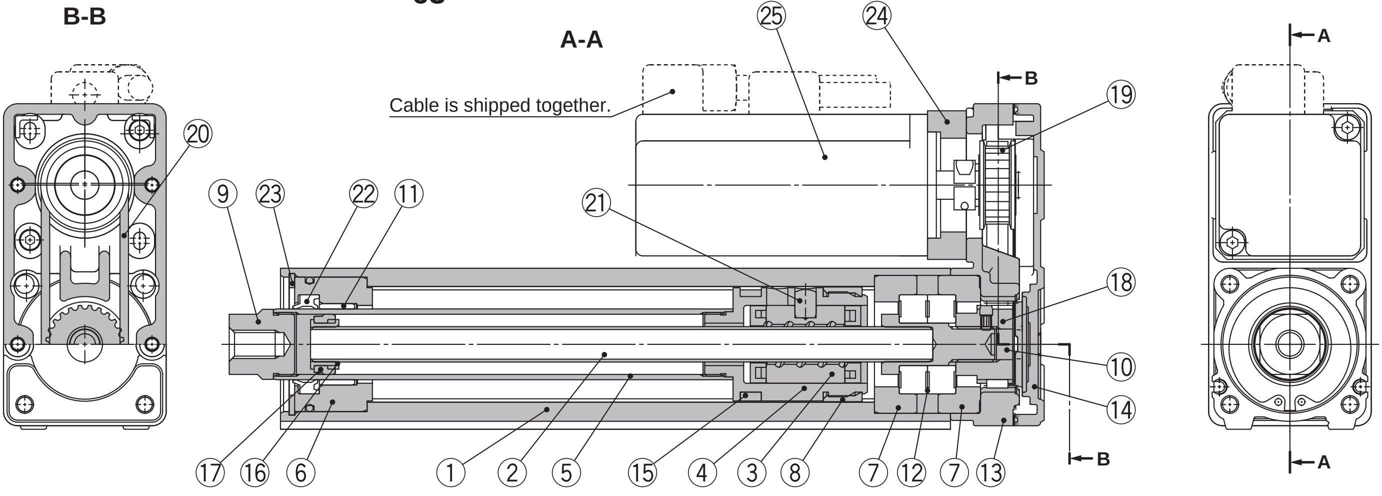
Additional Weight

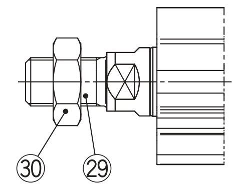
[kg]

Size		63
Lock		0.6
Rod end male thread	Male thread	0.12
	Nut	0.04
Foot bracket (2 sets including mounting bolt)		0.26
Rod flange (including mounting bolt)		0.51
Double clevis (including pin, retaining ring, and mounting bolt)		0.58

Construction

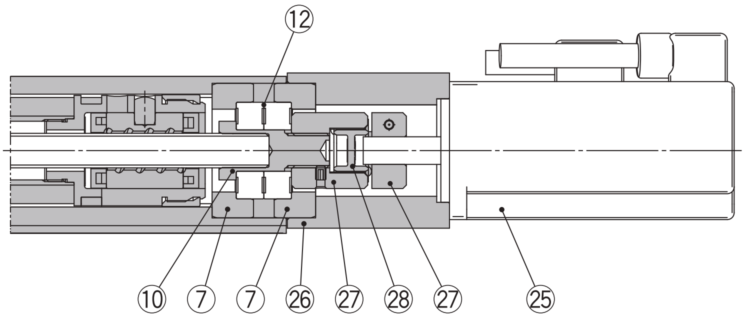
Motor top mounting type: LEY 25 32 63





When rod end male thread selected

In-line motor type: LEY 25 32D 63



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	

No.	Description	Material	Note
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor adapter**	Aluminium alloy	Coating
25	**Motor**	—	
26	**Motor block**	Aluminium alloy	Coating
27	**Hub**	Aluminium alloy	
28	**Spider**	Urethane	
29	**Socket (Male thread)**	Free cutting carbon steel	Nickel plating
30	**Nut**	Alloy steel	Zinc chromated

Replacement Parts (Motor top/parallel only)/Belt

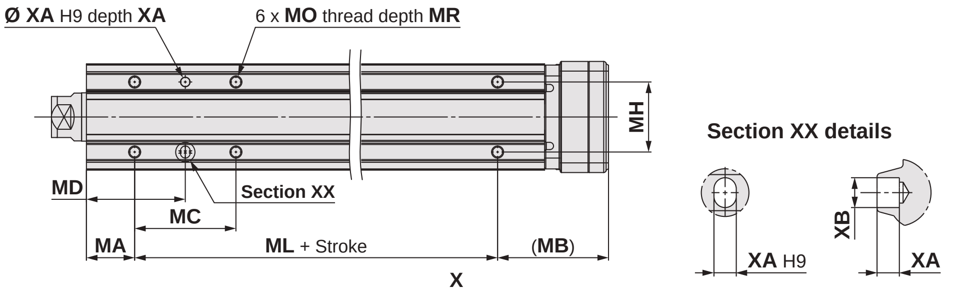
No.	Size	Order no.
20	**25**	LE-D-2-2
	32	LE-D-2-4

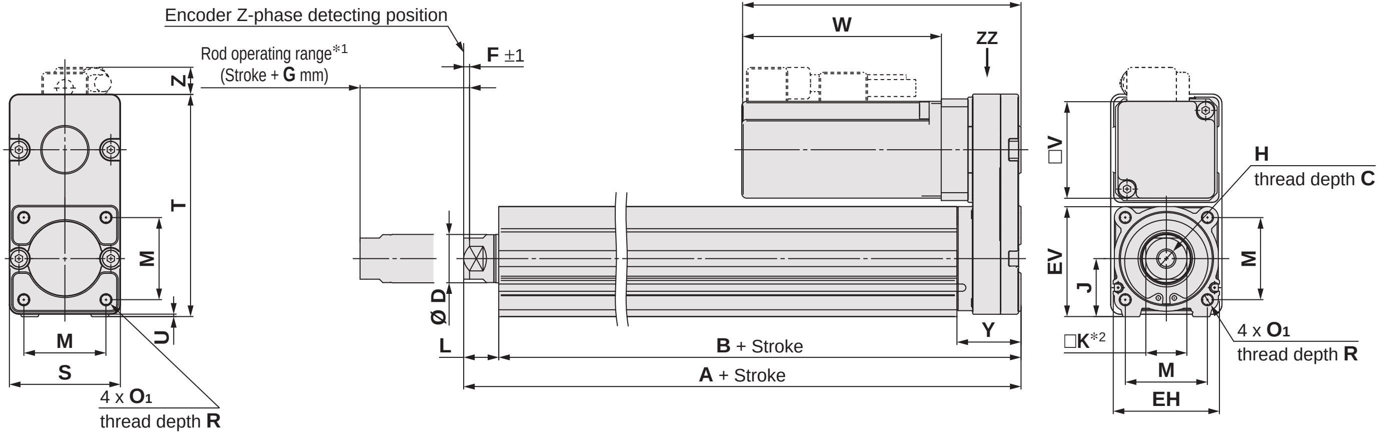
No.	Size	Lead	Order no.
20	63	A/B/C	LE-D-2-5
		L	LE-D-2-6

Dimensions: Motor Top/Parallel

∗1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

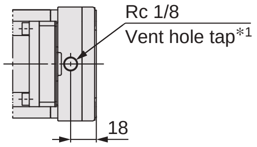
∗2 The direction of rod end width across flats (□K) differs depending on the products.


Ø XA H9 depth XA
6 x MO thread depth MR
MH
MD
MC
Section XX
MA
ML + Stroke
(MB)
Section XX details
XB
XA H9
XA


Encoder Z-phase detecting position
Rod operating range∗1 (Stroke + G mm)
F ±1
Z
T
M
U
M
S
4 x O1 thread depth R
X
W
ZZ
Ø D
L
B + Stroke
A + Stroke
Y
□V
H thread depth C
EV
J
M
□K∗2
M
EH
4 x O1 thread depth R

IP65 equivalent (Dust-tight/Water-jet-proof): LEY63□□□-□P

(View ZZ)


Rc 1/8
Vent hole tap∗1
18

∗1 When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	Y	V
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	46	92	1	26.5	40
	105 to 400	155.5	141																
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	118	1	34	60
	105 to 500	178.5	160																
63	Up to 200	192.6	155.2	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	80	146	4	32.2	60
	205 to 500	227.6	190.2																
	505 to 800	262.6	225.2																

Size	Stroke range [mm]	Without lock			With lock			F	G
		W	X	Z	W	X	Z		
25	15 to 100	82.5	115.5	11	127.5	160.5	11	2	4
	105 to 400								
32	20 to 100	80	120	14	120	160	14	2	4
	105 to 500								
63	50 to 200	98.5	138.5	12.5 (13.5)∗1	138.5	178.5	12.5 (13.5)∗1	4	8
	205 to 500								
	505 to 800								

∗1 L lead

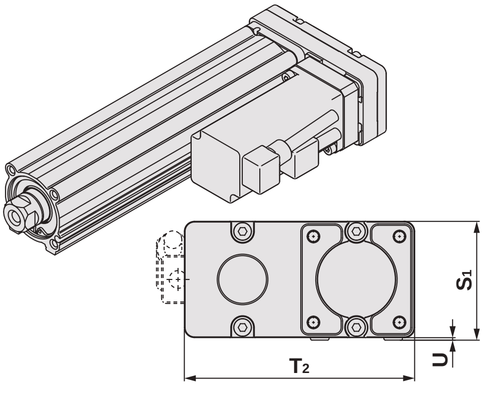
Body Bottom Tapped

[mm]

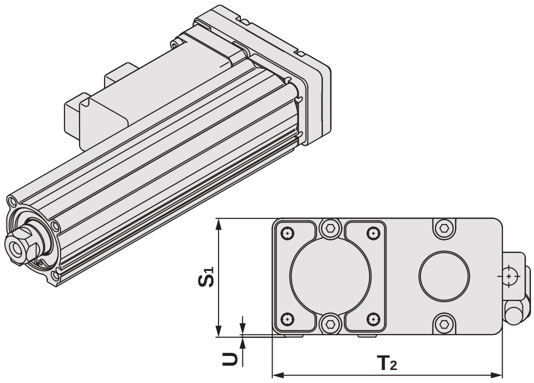
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 35	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	105 to 120						75				
	125 to 200			59	49.5						
	205 to 400			76	58						
32	20 to 35	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	105 to 120						80				
	125 to 200			53	51.5						
	205 to 500			70	60						
63	50 to 70	38	52.2	24	50	44	65	M8 x 1.25	10	6	7
	75 to 120			45	60.5						
	125 to 200			58	67						
	205 to 500			86	81		100				
	505 to 800						135				

Dimensions: Motor Top/Parallel

Motor left side parallel type: LEY$\begin{matrix}25\\32\\63\end{matrix}$L



Motor right side parallel type: LEY$\begin{matrix}25\\32\\63\end{matrix}$R

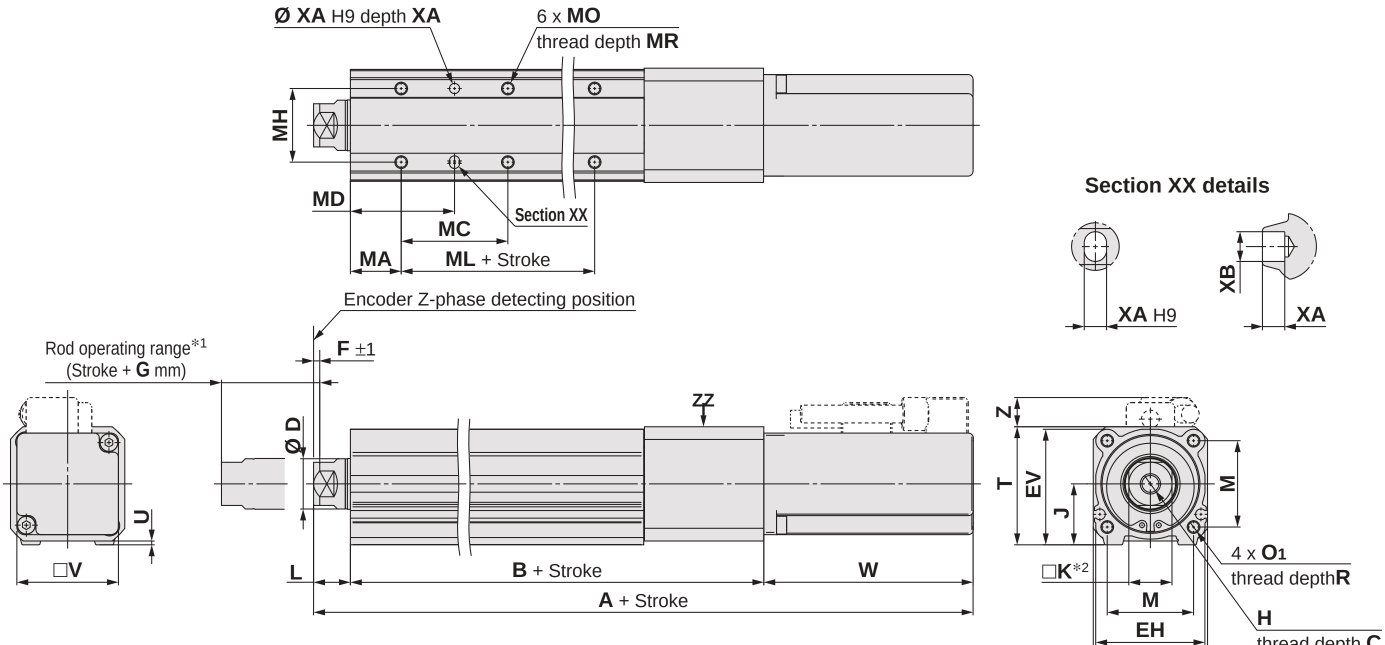


[mm]

Size	S_1	T_2	U
25	47	91	1
32	61	117	1
63	84	142	4

* When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

Dimensions: In-line Motor


Ø XA H9 depth XA
6 x MO
thread depth MR
MH
MD
MC
Section XX
MA
ML + Stroke
Section XX details
XB
XA H9
XA
Encoder Z-phase detecting position
Rod operating range*1
(Stroke + G mm)
F ±1
Ø D
ZZ
U
□V
L
B + Stroke
W
A + Stroke
Z
T
EV
J
M
□K*2
M
EH
S
4 x O1
thread depthR
H
thread depth C

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 The direction of rod end width across flats (□K) differs depending on the products.

[mm]

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O_1	R	S	T	U	B	V
25	15 to 100	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	45	46.5	1.5	136.5	40
	105 to 400															161.5	
32	20 to 100	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	60	61	1	156	60
	105 to 500															186	
63	50 to 200	21	40	76	82	M16 x 2	44	36	37.4	60	M8 x 1.25	16	78	83	5	190.7	60
	205 to 500															225.7	
	505 to 800															260.7	

Size	Stroke range [mm]	Without lock			With lock			F	G
		A	W	Z	A	W	Z		
25	15 to 100	233.5	82.5	11.5	278.5	127.5	11.5	2	4
	105 to 400	258.5			303.5				
32	20 to 100	254.5	80	14	294.5	120	14	2	4
	105 to 500	284.5			324.5				
63	50 to 200	326.6	98.5	5	366.6	138.5	5	4	8
	205 to 500	361.6			401.6				
	505 to 800	396.6			436.6				

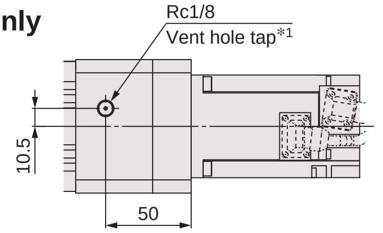
Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 35	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	105 to 120					75				
	125 to 200		59	49.5						
	205 to 400		76	58						
32	20 to 35	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	105 to 120					80				
	125 to 200		53	51.5						
	205 to 500		70	60						
63	50 to 70	38	24	50	44	65	M8 x 1.25	10	6	7
	75 to 120		45	60.5						
	125 to 200		58	67						
	205 to 500		86	81		100				
	505 to 800					135				

IP65 equivalent (Dust-tight/Water-jet-proof): LEY63D□□-□P (View ZZ)

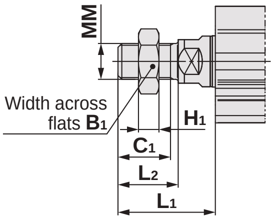
∗ **LEY63 only**


Rc1/8
Vent hole tap*1
10.5
50

*1 When using the dust-tight/water-jet-proof (IP65 equivalent), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by the customer.
Select [Applicable tubing O.D.: Ø 4 or more, Connection thread: Rc1/8].

Dimensions

End male thread: LEY$\begin{matrix}25\\32\\63\end{matrix}$□□$\begin{matrix}A\\B\\C\\L\end{matrix}$-□□M



- ∗ Refer to page 97 for details on the rod end nut and mounting bracket.
- ∗ Refer to the precautions on page 187 when mounting end brackets such as knuckle joint or workpieces.

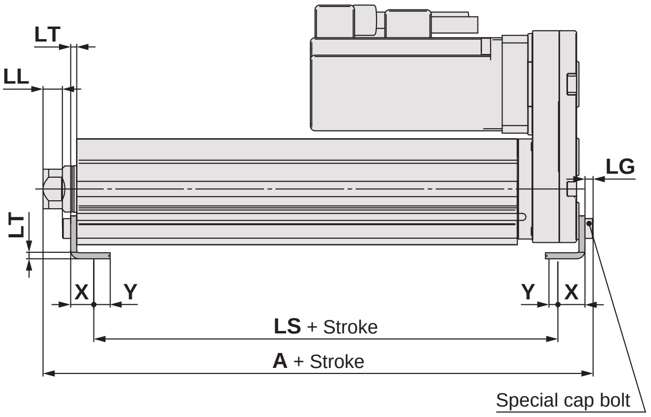
[mm]

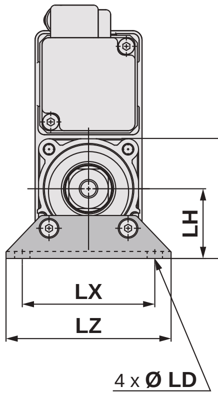
Size	B_1	C_1	H_1	L_1∗1	L_2	MM
25	22	20.5	8	38	23.5	M14 x 1.5
32	22	20.5	8	42.0	23.5	M14 x 1.5
63	27	26	11	76.4	39	M18 x 1.5

∗1 The L_1 measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).

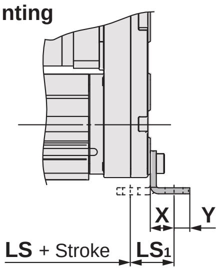
Foot: LEY$\begin{matrix}25\\32\\63\end{matrix}$□□$\begin{matrix}A\\B\\C\\L\end{matrix}$-□□□L

Included parts
·Foot bracket
·Body mounting bolt





Outward mounting



Foot

[mm]

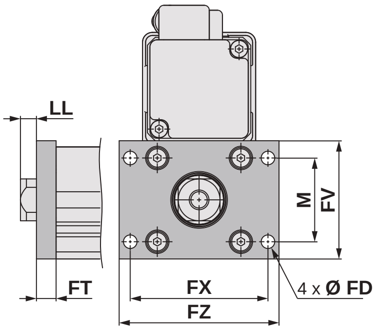
Size	Stroke range [mm]	A	LS	LS_1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	105 to 400	161.6	123.8											
32	20 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	105 to 500	185.7	144											
63	50 to 200	200.8	133.2	25.2	29.2	8.6	5	50	3.2	95	88	110	14.2	8
	205 to 500	235.8	168.2											
	505 to 800	270.8	203.2											

Material: Carbon steel (Chromate treated)

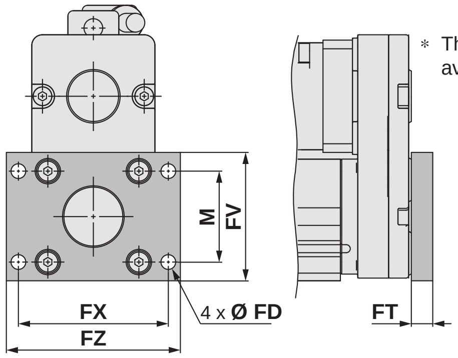
- ∗ The A measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).
- ∗ When the motor mounting is the right or left side parallel type, the head side foot bracket should be mounted outward.

Dimensions

Rod flange: LEY $\begin{matrix}25\\32\\63\end{matrix}$ □□ $\begin{matrix}A\\B\\C\\L\end{matrix}$ -□□□F



Head flange: LEY $\begin{matrix}25\\32\\63\end{matrix}$ □□ $\begin{matrix}A\\B\\C\\L\end{matrix}$ -□□□G



∗ The head flange type is not available for the LEY32/LEY63.

Included parts
·Flange
·Body mounting bolt

Rod/Head Flange

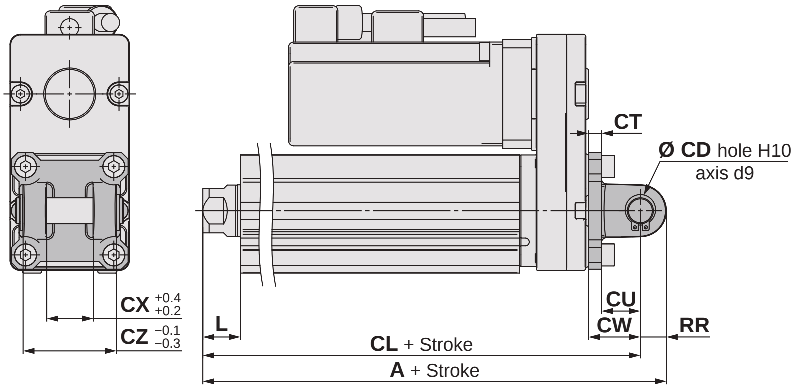
[mm]

Size	FD	FT	FV	FX	FZ	LL	M
25	5.5	8	48	56	65	6.5	34
32	5.5	8	54	62	72	10.5	40
63	9	9	80	92	108	28.4	60

Material: Carbon steel (Nickel plating)

∗ The LL measurement is when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).

Double clevis: LEY $\begin{matrix}25\\32\\63\end{matrix}$ □□ $\begin{matrix}A\\B\\C\\L\end{matrix}$ -□□□D



∗ Refer to page 97 for details on the rod end nut and mounting bracket.

Included parts
· Double clevis
· Body mounting bolt
· Clevis pin
· Retaining ring

Double Clevis

[mm]

Size	Stroke range [mm]	A	CL	CD	CT	CU	CW	CX	CZ	L	RR
25	15 to 100	160.5	150.5	10	5	14	20	18	36	14.5	10
	105 to 200	185.5	175.5								
32	20 to 100	180.5	170.5	10	6	14	22	18	36	18.5	10
	105 to 200	210.5	200.5								
63	50 to 200	236.6	222.6	14	8	22	30	22	44	37.4	14
	205 to 500	271.6	257.6	—	—						
	505 to 800	306.6	292.6	—	—						

Material: Cast iron (Coating)

∗ The A and CL measurements are when the unit is in the Z-phase first detecting position. At this position, 2 mm at the end (size 25, 32) and 4 mm at the end (size 63).

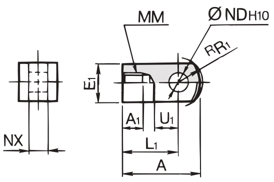
LEY Series
Accessory Mounting Brackets

Accessory Brackets/Support Brackets

Single Knuckle Joint

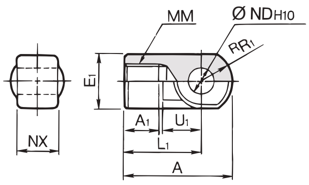
∗ If a knuckle joint is used, select the body option [end male thread].

I-G02



Material: Carbon steel

I-G04



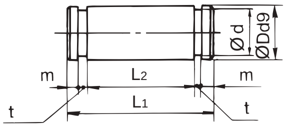
Material: Cast iron

[mm]

Part no.	Applicable size	A	A_1	E_1	L_1	MM	R_1	U_1	ND_{H10}	NX
I-G02	**16**	34	8.5	□16	25	M8 x 1.25	10.3	11.5	$8^{+0.058}_{0}$	$8^{-0.2}_{-0.4}$
I-G04	**25, 32, 40**	42	14	Ø 22	30	M14 x 1.5	12	14	$10^{+0.058}_{0}$	$18^{-0.3}_{-0.5}$
I-G05	**63**	56	18	Ø 28	40	M18 x 1.5	16	20	$14^{+0.070}_{0}$	$22^{-0.3}_{-0.5}$

Knuckle Pin

∗ Common with double clevis pin



Material: Carbon steel

[mm]

Part no.	Applicable size	Dd9	L_1	L_2	d	m	t	Retaining ring
IY-G02	**16**	$8^{-0.040}_{-0.076}$	21	16.2	7.6	1.5	0.9	Type C retaining ring 8
IY-G04	**25, 32, 40**	$10^{-0.040}_{-0.076}$	41.6	36.2	9.6	1.55	1.15	Type C retaining ring 10
IY-G05	**63**	$14^{-0.050}_{-0.093}$	50.6	44.2	13.4	2.05	1.15	Type C retaining ring 14

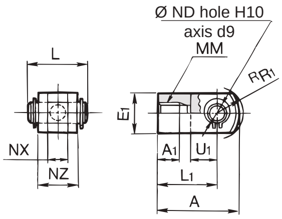
Mounting Bracket Part Nos.

Mounting bracket	Order qty.	Applicable size				Contents
		16	**25**	**32, 40**	**63**	
Foot	2[∗1]	LEY-L016	LEY-L025	LEY-L032	LEY-L063	Foot bracket x 2 Mounting bolt x 4
Flange	1	LEY-F016	LEY-F025	LEY-F032	LEY-F063	Flange x 1 Mounting bolt x 4
Double clevis	1	LEY-D016	LEY-D025	LEY-D032	LEY-D063	Clevis x 1 Mounting bolt x 4 Clevis pin x 1 Type C retaining ring for axis x 2

∗1 When ordering foot brackets, order 2 pieces per actuator.

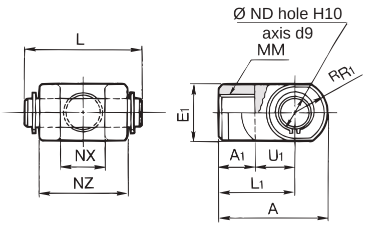
Double Knuckle Joint

Y-G02



Material: Carbon steel

Y-G04



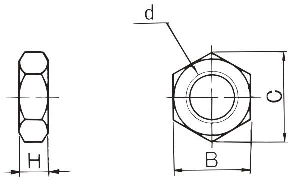
Material: Cast iron

∗ Knuckle pin and retaining ring are included. [mm]

Part no.	Applicable size	A	A_1	E_1	L_1	MM	R_1
Y-G02	**16**	34	8.5	□16	25	M8 x 1.25	10.3
Y-G04	**25, 32, 40**	42	16	Ø 22	30	M14 x 1.5	12
Y-G05	**63**	56	20	Ø 28	40	M18 x 1.5	16

Part no.	Applicable size	U_1	ND_{H10}	NX	NZ	L	Applicable pin part no.
Y-G02	**16**	11.5	$8^{+0.058}_{0}$	$8^{+0.4}_{+0.2}$	16	21	**IY-G02**
Y-G04	**25, 32, 40**	14	$10^{+0.058}_{0}$	$18^{+0.5}_{+0.3}$	36	41.6	**IY-G04**
Y-G05	**63**	20	$14^{+0.070}_{0}$	$22^{+0.5}_{+0.3}$	44	50.6	**IY-G05**

Rod End Nut



Material: Carbon steel

[mm]

Part no.	Applicable size	d	H	B	C
NT-02	**16**	M8 x 1.25	5	13	15.0
NT-04	**25, 32, 40**	M14 x 1.5	8	22	25.4
NT-05	**63**	M18 x 1.5	11	27	31.2

Simple Joint Brackets

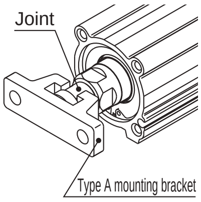
∗ The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

Joint and Mounting Bracket (Type A/B)/Part No.

Joint **LEY−U025**

Applicable size

025	25, 32, 40



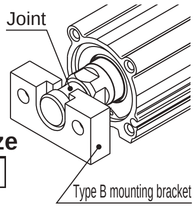
Mounting bracket **YA−03**

Mounting bracket

YA	Type A mounting bracket
YB	Type B mounting bracket

Applicable size

03	25, 32, 40



Allowable Eccentricity [mm]

Applicable size	25	32	40
Eccentricity tolerance	±1		
Backlash	0.5		

<How to Order>

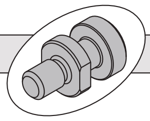
- The joint is not included in type A and type B mounting brackets. Therefore, it must be ordered separately.

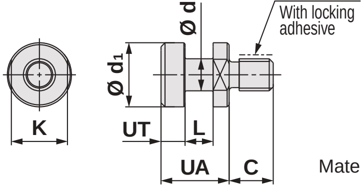
Example) Order no.
- Joint....................................... LEY-U025
- Type A mounting bracket YA-03

Joint and Mounting Bracket (Type A/B)/Part No.

Applicable size	Joint part no.	Applicable mounting bracket part no.	
		Type A mounting bracket	Type B mounting bracket
25, 32, 40	LEY-U025	YA-03	YB-03

Joint



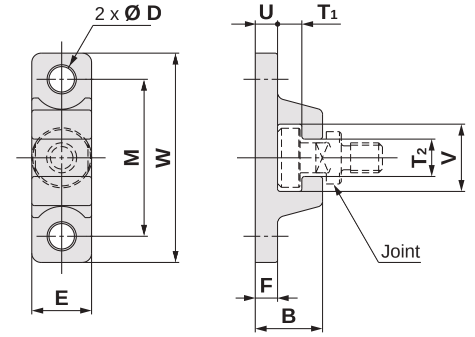


Material: Stainless steel

[mm]

Part no.	Applicable size	UA	C	d_1	d_2	H	K	L	UT	Weight [g]
LEY-U025	**25, 32, 40**	17	11	16	8	M8 x 1.25	14	7	6	22

Type A Mounting Bracket



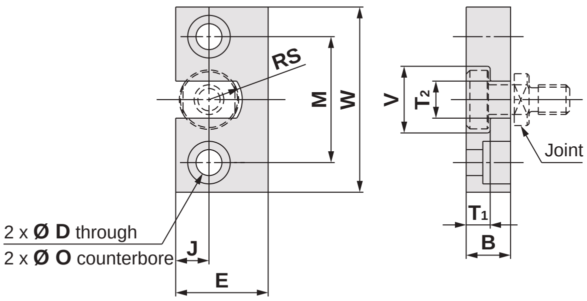
Material: Chromium molybdenum steel

[mm]

Part no.	Applicable size	B	D	E	F	M	T_1	T_2	U
YA-03	**25, 32, 40**	18	6.8	16	6	42	6.5	10	6

Part no.	Applicable size	V	W	Weight [g]
YA-03	**25, 32, 40**	18	56	55

Type B Mounting Bracket



Material: Stainless steel

[mm]

Part no.	Applicable size	B	D	E	J	M	Ø O
YB-03	**25, 32, 40**	12	7	25	9	34	11.5 depth 7.5

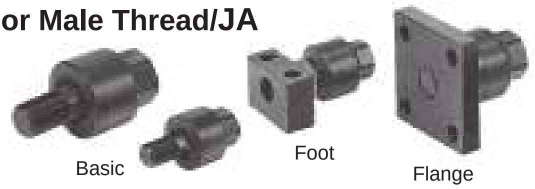
Part no.	Applicable size	T_1	T_2	V	W	RS	Weight [g]
YB-03	**25, 32, 40**	6.5	10	18	50	9	80

Floating Joints (Refer to the **Web Catalogue** for details.)

●For Male Thread/JC (Light weight type)

- **With the aluminium case**

●For Male Thread/JA



●For Male Thread/JS (Stainless steel)

- **Stainless steel 304 (Appearance)**
- **Dust cover**
  Fluororubber/Silicone rubber

Applicable size	Thread size
16	M8 x 1.25
25, 32, 40	M14 x 1.5
63	M18 x 1.5

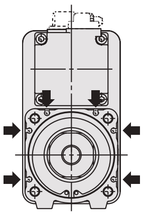
●For Female Thread/JB

Applicable size	Thread size
16	M5 x 0.8
25, 32, 40	M8 x 1.25
63	M16 x 2

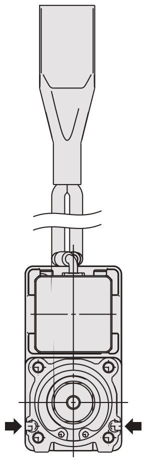
LEY Series
Auto Switch Mounting

Proper Auto Switch Mounting Position

Applicable auto switches: D-M9□(V), D-M9□E(V), D-M9□W(V), D-M9□A(V)

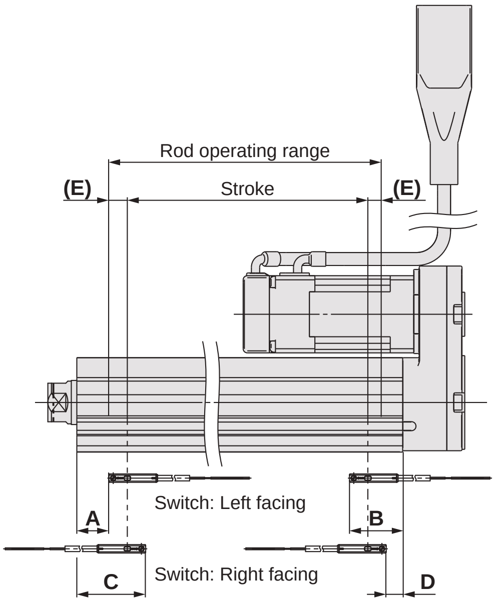


LEY63



LEY16, 25, 32, 40

➡ Auto switch groove



[mm]

Size	Stroke range	Auto switch position				Return to origin distance	Operating range
		Mounting: Left facing		Mounting: Right facing			
		A	B	C	D	E	—
16	10 to 100	21.5	46.5	33.5	34.5	(2)	2.9
	105 to 300	41.5		53.5			
25	15 to 100	27	62.5	39	50.5	(2)	4.2
	105 to 400	52		64			
32/40	20 to 100	30.5	65.5	42.5	53.5	(2)	4.9
	105 to 500	60.5		72.5			
63	50 to 200	37	86	49	74	(4)	9.8
	205 to 500	72		84			
	505 to 800	107		119			

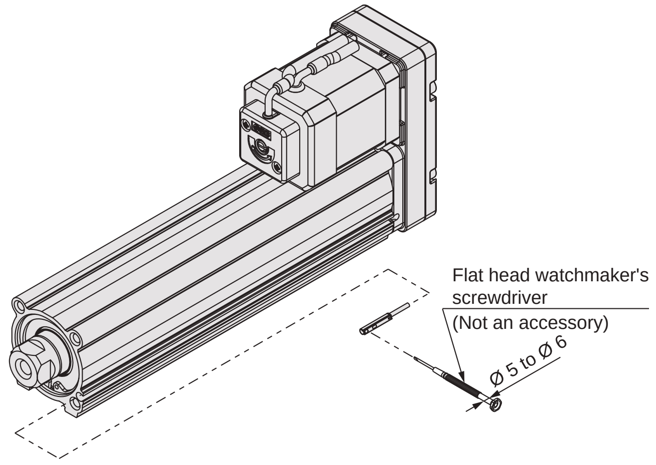
∗1 Figures in the table above are used as a reference when mounting the auto switches for stroke end detection. Adjust the auto switch after confirming the operating condition in the actual setting.

∗2 Switches cannot be mounted on the motor mounting side surface.

∗3 For the LEYG with a guide, switches cannot be mounted on the guide attachment side (rod side).

∗4 Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may change substantially depending on the ambient environment.

Auto Switch Mounting



Auto Switch Mounting Screw Tightening Torque

[N·m]

Auto switch model	Tightening torque
D-M9□(V) **D-M9□E(V)** **D-M9□W(V)**	0.05 to 0.15
D-M9□A(V)	0.05 to 0.10

∗ When tightening the auto switch mounting screw (included with auto switch), use a watchmaker's screwdriver with a handle diameter of about 5 to 6 mm.

Solid State Auto Switch Direct Mounting Type

D-M9N(V)/D-M9P(V)/D-M9B(V) CE RoHS

Refer to the SMC website for details on products that are compliant with international standards.

Grommet

- **2-wire load current is reduced (2.5 to 40 mA).**
- **Using flexible cable as standard spec.**

⚠Caution

Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	**D-M9N**	**D-M9NV**	**D-M9P**	**D-M9PV**	**D-M9B**	**D-M9BV**
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 µA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standard	CE marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		**D-M9N(V)**	**D-M9P(V)**	**D-M9B(V)**
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm^2]	0.15		
	Strand diameter [mm]	0.05		
Minimum bending radius [mm] (Reference values)		17		

∗ Refer to the **Web Catalogue** for solid state auto switch common specifications.
∗ Refer to the **Web Catalogue** for lead wire lengths.

Weight

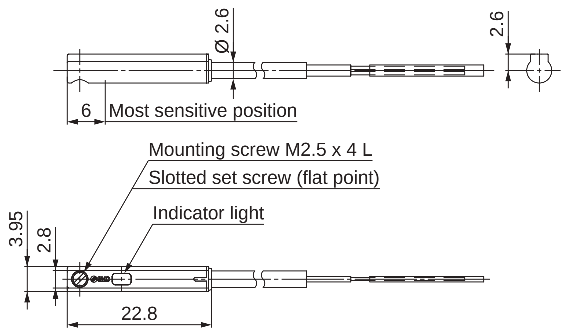
[g]

Auto switch model		**D-M9N(V)**	**D-M9P(V)**	**D-M9B(V)**
Lead wire length	0.5 m (—)	8		7
	1 m (**M**)	14		13
	3 m (**L**)	41		38
	5 m (**Z**)	68		63

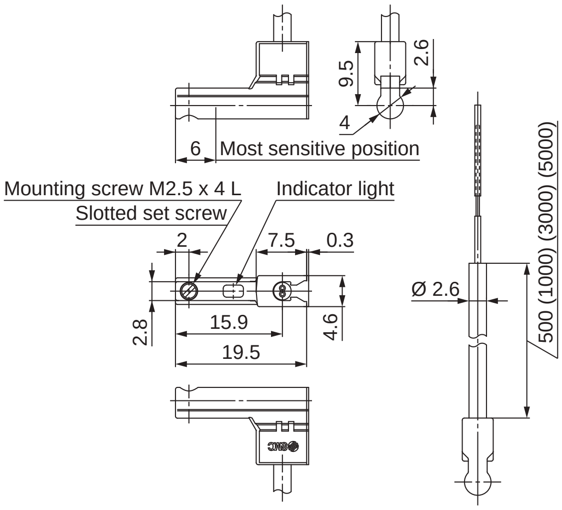
Dimensions

[mm]

D-M9□


Ø 2.6
2.6
6
Most sensitive position
Mounting screw M2.5 x 4 L
Slotted set screw (flat point)
Indicator light
3.95
2.8
22.8

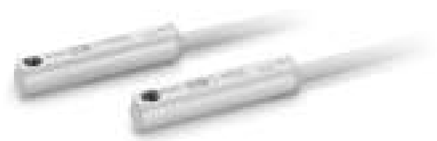
D-M9□V


9.5
2.6
4
6
Most sensitive position
Mounting screw M2.5 x 4 L
Slotted set screw
Indicator light
2
7.5
0.3
Ø 2.6
2.8
15.9
19.5
4.6
500 (1000) (3000) (5000)

Normally Closed Solid State Auto Switch Direct Mounting Type
D-M9NE(V)/D-M9PE(V)/D-M9BE(V) CE RoHS

Grommet

- Output signal turns on when no magnetic force is detected.
- Can be used for the actuator adopted by the solid state auto switch D-M9 series (excluding special order products)



⚠Caution

Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Specifications

Refer to the SMC website for details on products that are compliant with international standards.

PLC: Programmable Logic Controller

D-M9□E, D-M9□EV (With indicator light)

Auto switch model	D-M9NE	D-M9NEV	D-M9PE	D-M9PEV	D-M9BE	D-M9BEV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 µA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standard	CE marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum bending radius [mm] (Reference values)		17		

* Refer to the **Web Catalogue** for solid state auto switch common specifications.
* Refer to the **Web Catalogue** for lead wire lengths.

Weight

[g]

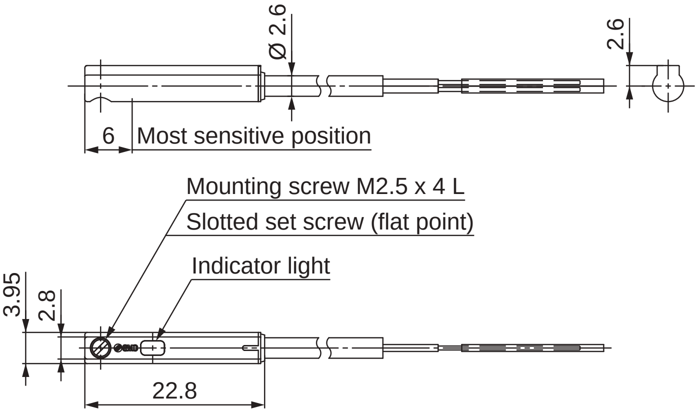
Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Lead wire length	0.5 m (—)	8		7
	1 m (**M**)*1	14		13
	3 m (**L**)	41		38
	5 m (**Z**)*1	68		63

*1 The 1 m and 5 m options are produced upon receipt of order.

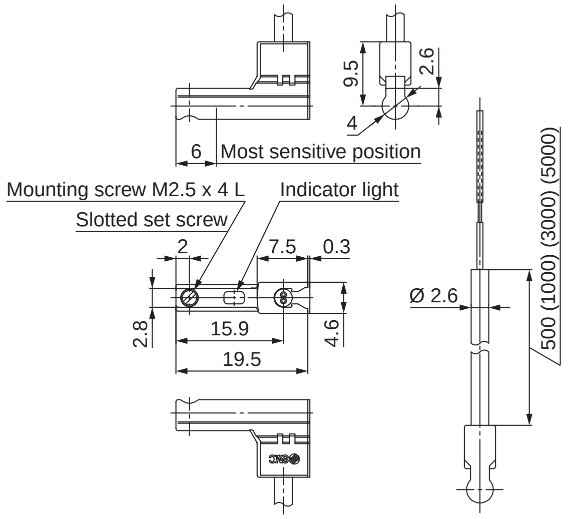
Dimensions

[mm]

D-M9□E


Ø 2.6
2.6
6
Most sensitive position
Mounting screw M2.5 x 4 L
Slotted set screw (flat point)
Indicator light
3.95
2.8
22.8

D-M9□EV


9.5
2.6
4
6
Most sensitive position
Mounting screw M2.5 x 4 L
Slotted set screw
Indicator light
2
7.5
0.3
2.8
15.9
19.5
4.6
Ø 2.6
500 (1000) (3000) (5000)

2-Colour Indicator Solid State Auto Switch Direct Mounting Type

D-M9NW(V)/D-M9PW(V)/D-M9BW(V) CE RoHS

Refer to the SMC website for details on products that are compliant with international standards.

Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.
- The proper operating range can be determined by the colour of the light. (Red → Green ← Red)

⚠Caution

Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)

Auto switch model	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 µA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating range ·········· Red LED illuminates. Proper operating range ·········· Green LED illuminates.					
Standard	CE marking, RoHS					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm^2]	0.15		
	Strand diameter [mm]	0.05		
Minimum bending radius [mm] (Reference values)		17		

∗ Refer to the **Web Catalogue** for solid state auto switch common specifications.
∗ Refer to the **Web Catalogue** for lead wire lengths.

Weight

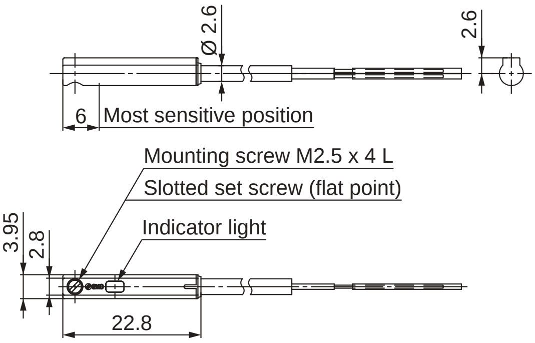
[g]

Auto switch model		D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Lead wire length	0.5 m (—)	8		7
	1 m (**M**)	14		13
	3 m (**L**)	41		38
	5 m (**Z**)	68		63

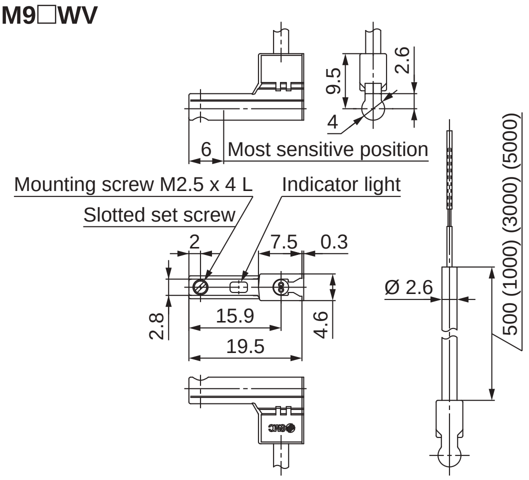
Dimensions

[mm]

D-M9□W


Ø 2.6
2.6
6
Most sensitive position
Mounting screw M2.5 x 4 L
Slotted set screw (flat point)
Indicator light
3.95
2.8
22.8

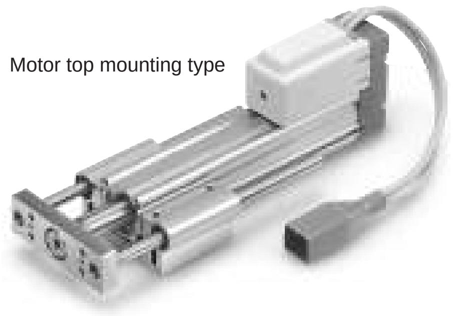
D-M9□WV


9.5
2.6
4
6
Most sensitive position
Mounting screw M2.5 x 4 L
Slotted set screw
Indicator light
2
7.5
0.3
2.8
15.9
19.5
4.6
Ø 2.6
500 (1000) (3000) (5000)

Guide Rod Type LEYG Series

Step Motor (Servo/24 VDC) **Servo Motor** (24 VDC)

p. 121

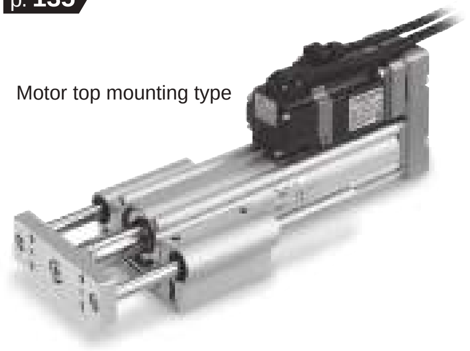


Motor top mounting type

In-line motor type

AC Servo Motor

p. 135



Motor top mounting type

In-line motor type

Step Motor/Servo Motor Controller/Driver p. 190

AC Servo Motor Driver p. 246

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

Electric Actuator/Guide Rod Type

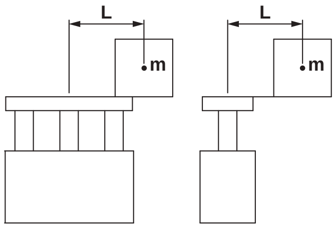
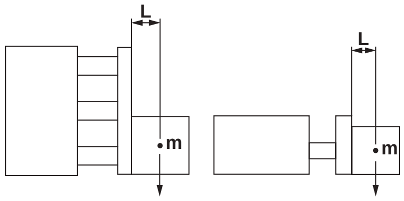
LEYG Series

Model Selection

LEYG Series ▶p. 121

Moment Load Graph

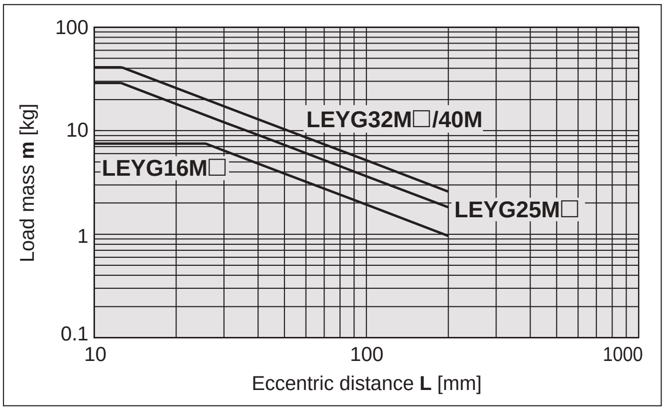
Selection conditions

		Vertical	Horizontal	
Mounting position				
Max. speed [mm/s]		"Speed–Work Load Graph"	200 or less	Over 200
Bearing	Sliding bearing	Graphs ①, ②	Graphs ⑤, ⑥[*1]	—
	Ball bushing bearing	Graphs ③, ④	Graphs ⑦, ⑧	Graphs ⑨, ⑩

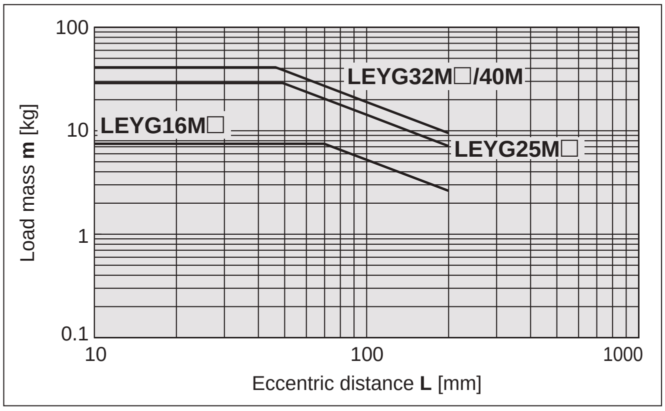
[*1] For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① **70 mm stroke or less**



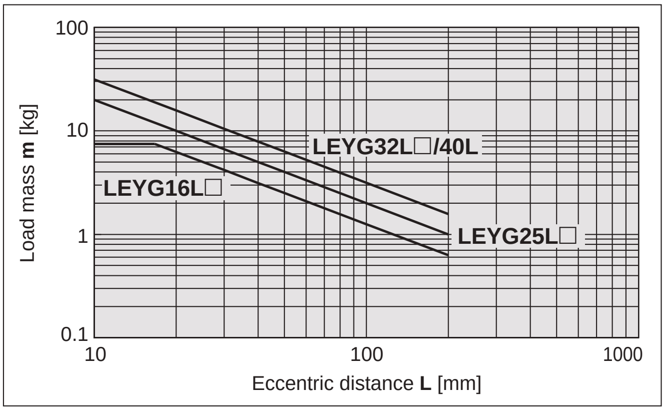
② **Over 75 mm stroke**



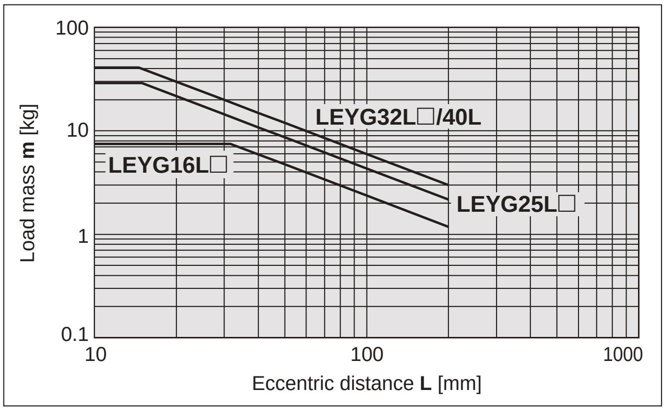
∗ The limit of vertical load mass varies depending on "lead" and "speed."
Check "Speed–Work Load Graph" on pages 107 to 109.

Vertical Mounting, Ball Bushing Bearing

③ **35 mm stroke or less**



④ **Over 40 mm stroke**

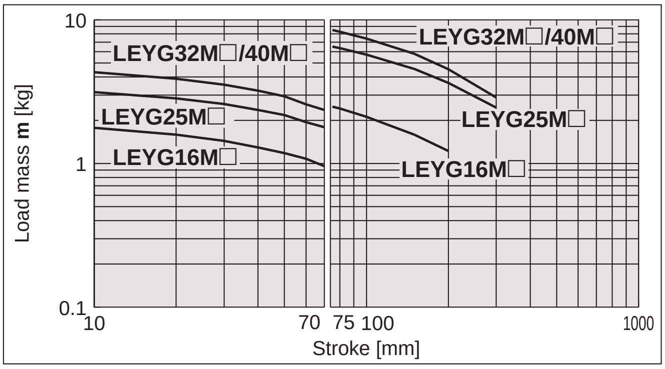


∗ The limit of vertical load mass varies depending on "lead" and "speed."
Check "Speed–Work Load Graph" on pages 107 to 109.

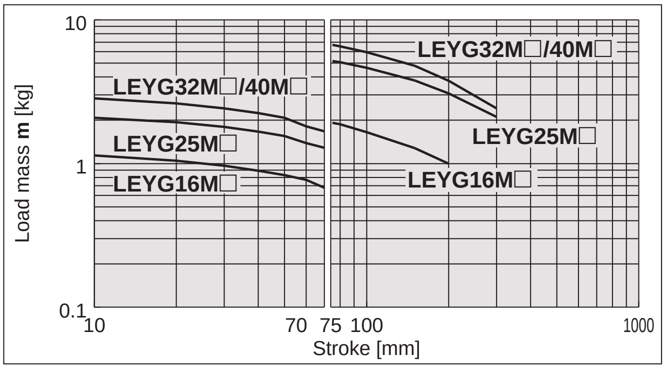
Moment Load Graph

Horizontal Mounting, Sliding Bearing

⑤ L = 50 mm



⑥ L = 100 mm



＊ Set the speed to less than or equal to the values shown below.

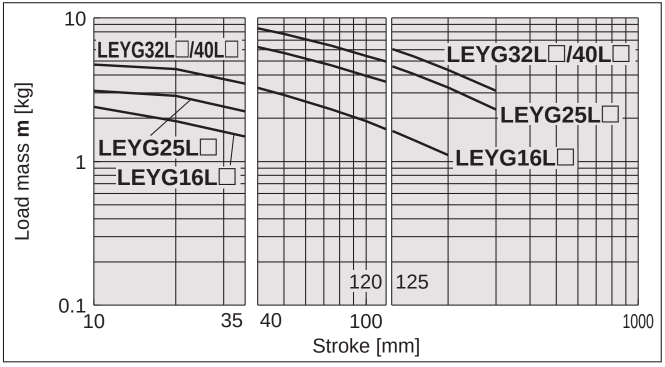
Motor type	LEYG□M□A	LEYG□M□B	LEYG□M□C
Step motor (Servo/24 VDC)	200 mm/s	125 mm/s	75 mm/s
Servo motor (24 VDC)	200 mm/s	200 mm/s	125 mm/s

＊ For the specifications below, operate the system at the "load mass" shown in the graph x 80 %.

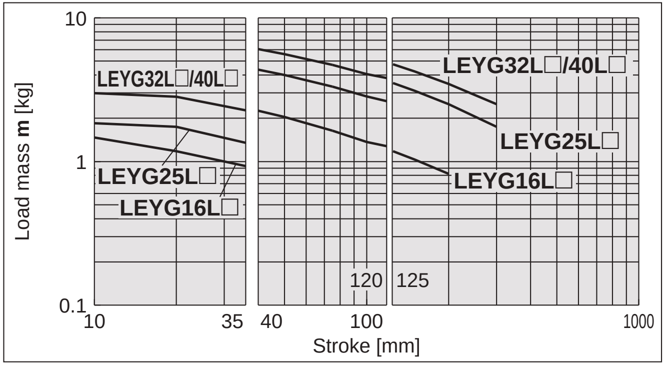
- LEYG25MAA/Servo motor (24 VDC), Lead 12

Horizontal Mounting, Ball Bushing Bearing

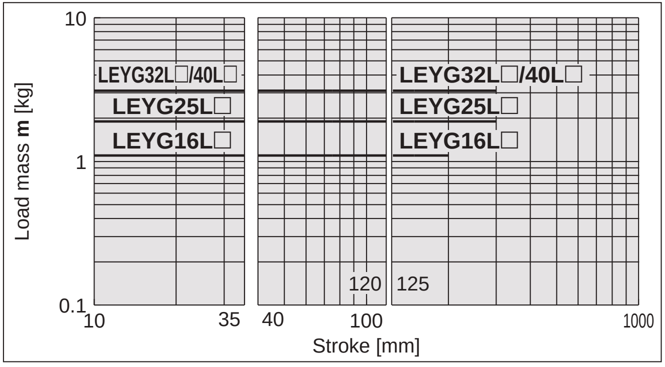
⑦ L = 50 mm Max. speed = 200 mm/s or less



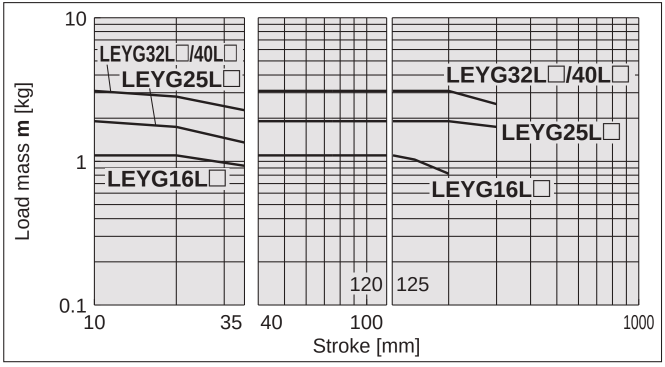
⑧ L = 100 mm Max. speed = 200 mm/s or less



⑨ L = 50 mm Max. speed = Over 200 mm/s

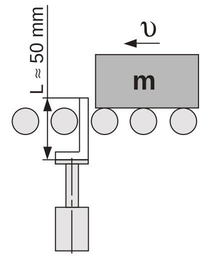


⑩ L = 100 mm Max. speed = Over 200 mm/s



Operating Range when Used as a Stopper

LEYG□M (Sliding bearing)



⚠Caution

Handling Precautions

- ＊ When used as a stopper, select a model with a stroke of 30 mm or less.
- ＊ LEYG□L (ball bushing bearing) cannot be used as a stopper.
- ＊ Workpiece collision in series with guide rod cannot be permitted (**Fig. a**).
- ＊ The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).

Fig. a

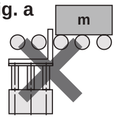
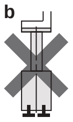
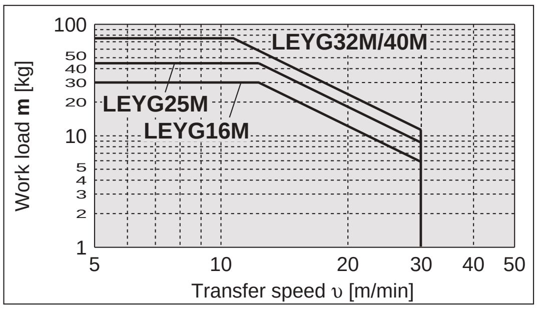


Fig. b





Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECP1, LECPMJ, JXC□1

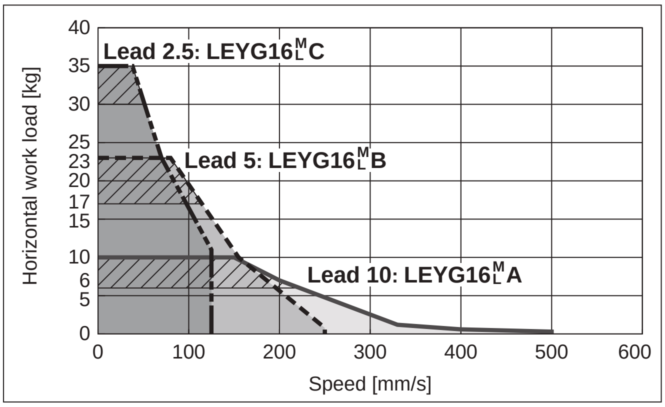
∗ These graphs show the work load when the external guide is used together. When using the LEYG alone, refer to pages 105 and 106.

Refer to page 108 for the LECPA, JXC□$^{2}_{3}$ and page 109 for the LECA6.

Horizontal

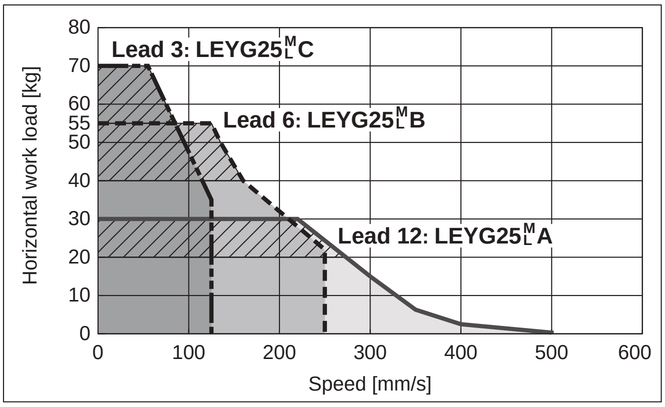
LEYG16$^{\text{M}}_{\text{L}}$□

▨ for acceleration/deceleration: 2000 mm/s^2



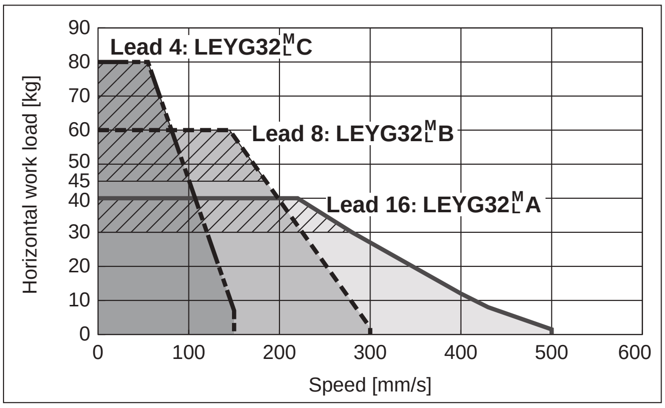
LEYG25$^{\text{M}}_{\text{L}}$□

▨ for acceleration/deceleration: 2000 mm/s^2



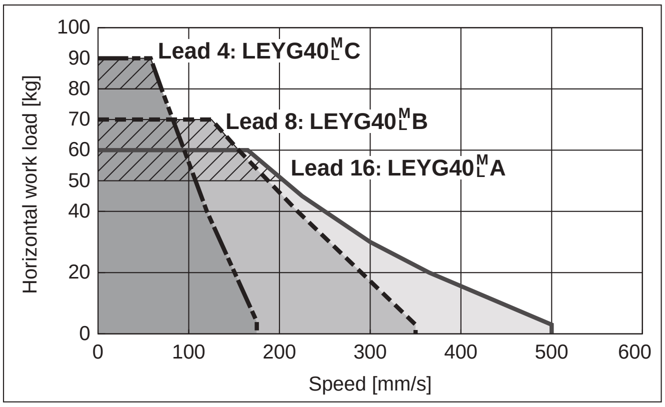
LEYG32$^{\text{M}}_{\text{L}}$□

▨ for acceleration/deceleration: 2000 mm/s^2



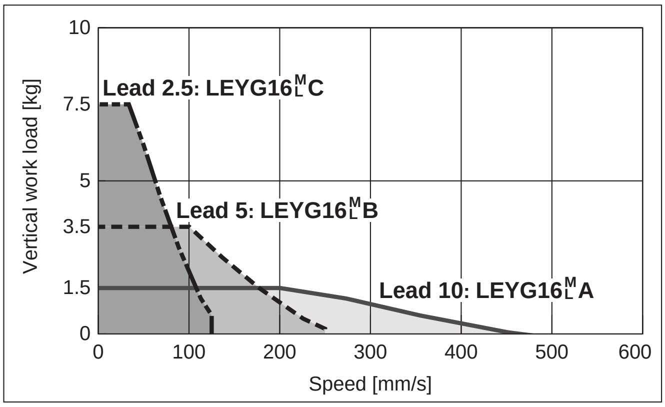
LEYG40$^{\text{M}}_{\text{L}}$□

▨ for acceleration/deceleration: 2000 mm/s^2

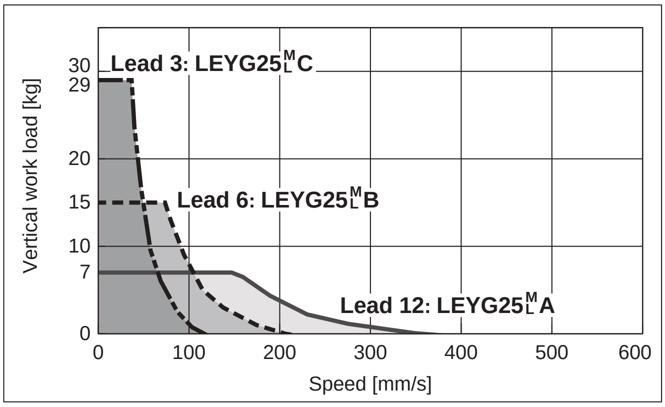


Vertical

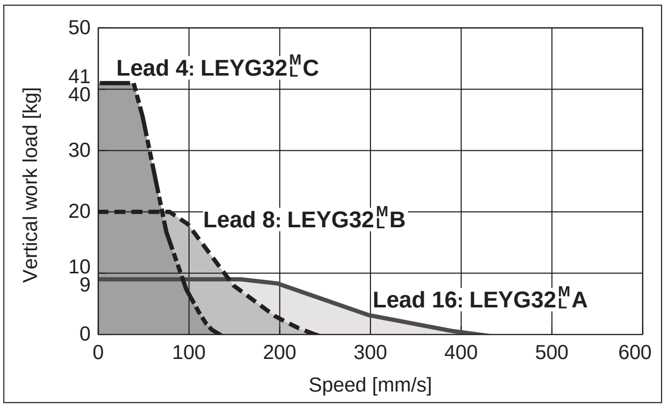
LEYG16$^{\text{M}}_{\text{L}}$□



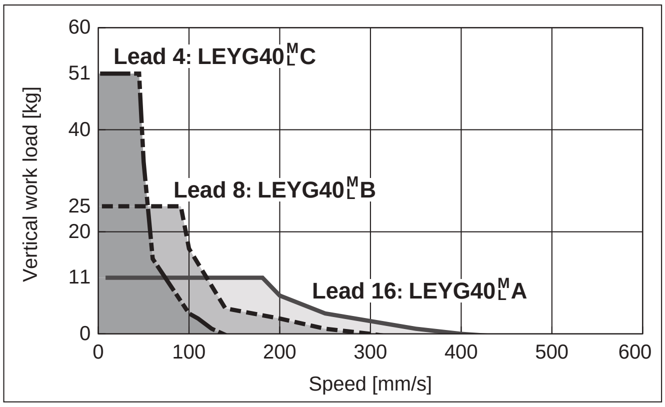
LEYG25$^{\text{M}}_{\text{L}}$□



LEYG32$^{\text{M}}_{\text{L}}$□



LEYG40$^{\text{M}}_{\text{L}}$□



Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA, JXC□$^{2}_{3}$

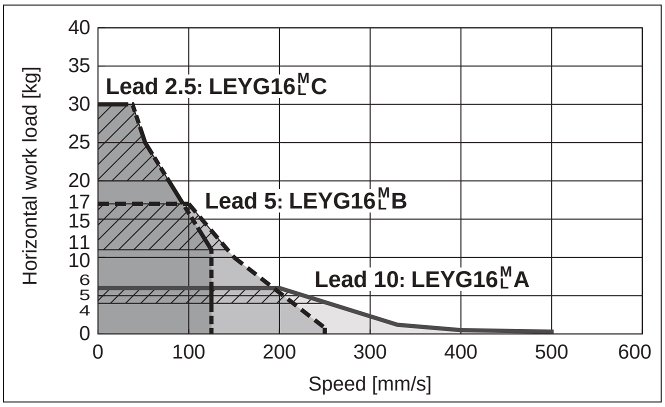
* These graphs show the work load when the external guide is used together. When using the LEYG alone, refer to pages 105 and 106.

Refer to page 107 for the LECP6, JXC□1 and page 109 for the LECA6.

Horizontal

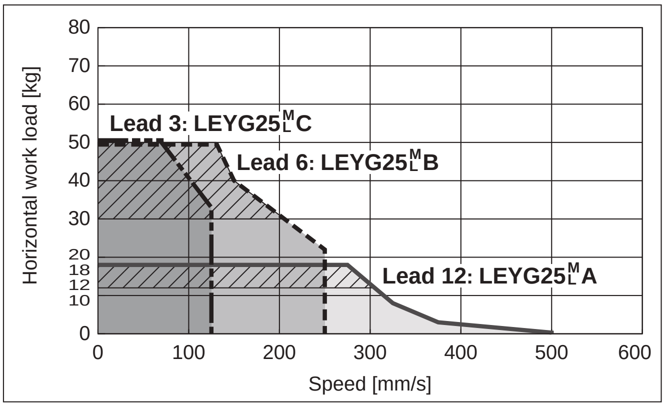
LEYG16$^{M}_{L}$□

▨ for acceleration/deceleration: 2000 mm/s²



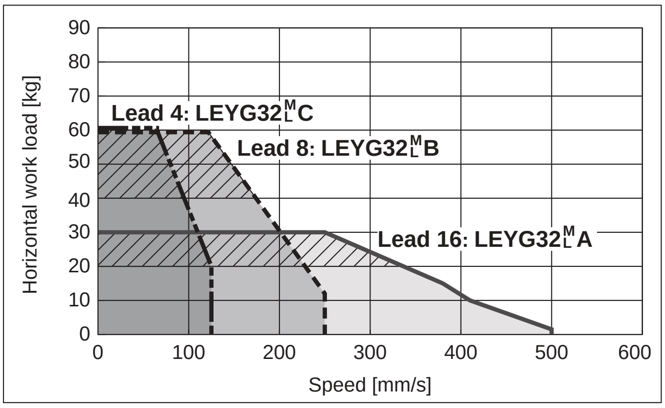
LEYG25$^{M}_{L}$□

▨ for acceleration/deceleration: 2000 mm/s²

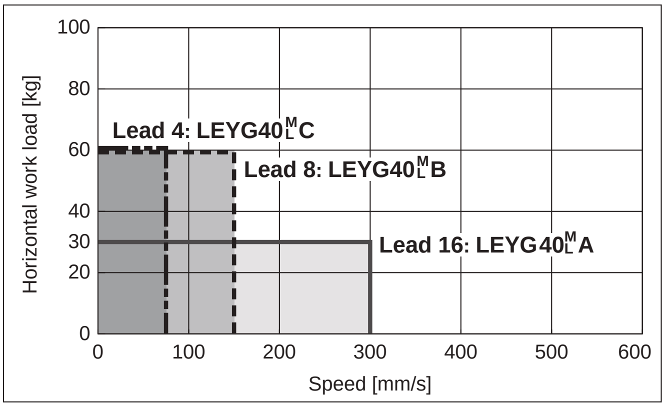


LEYG32$^{M}_{L}$□

▨ for acceleration/deceleration: 2000 mm/s²

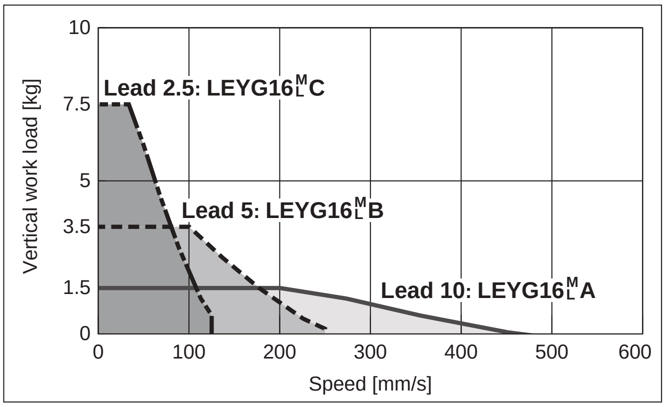


LEYG40$^{M}_{L}$□

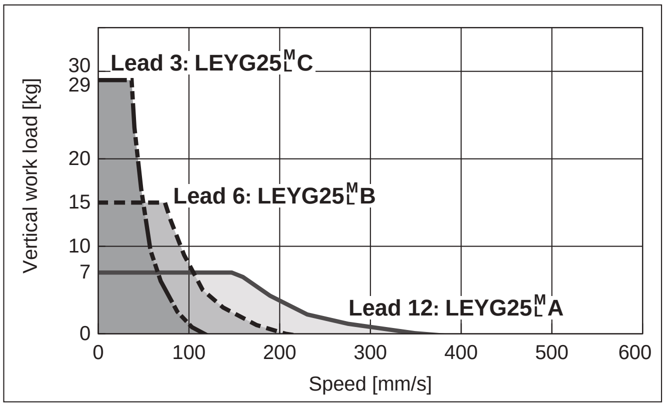


Vertical

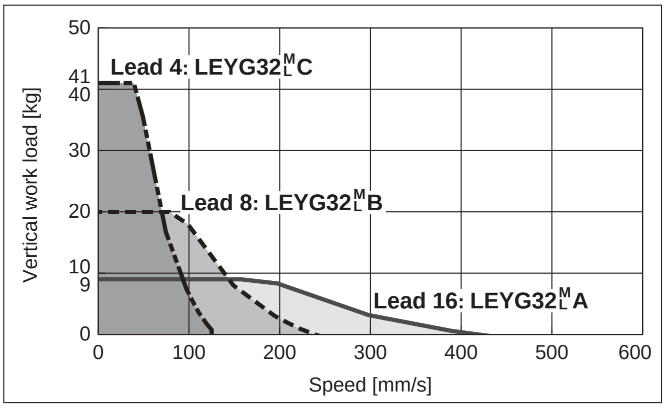
LEYG16$^{M}_{L}$□



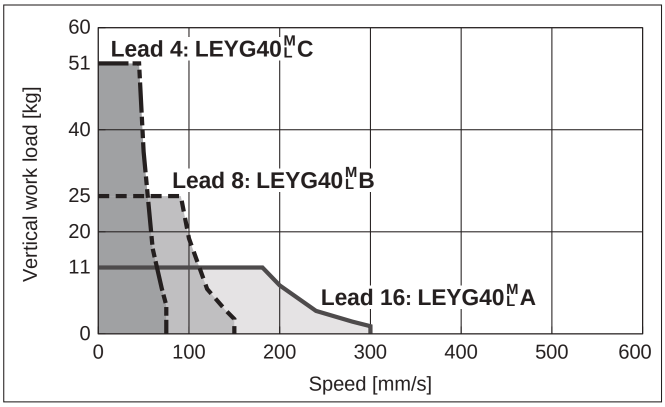
LEYG25$^{M}_{L}$□



LEYG32$^{M}_{L}$□



LEYG40$^{M}_{L}$□

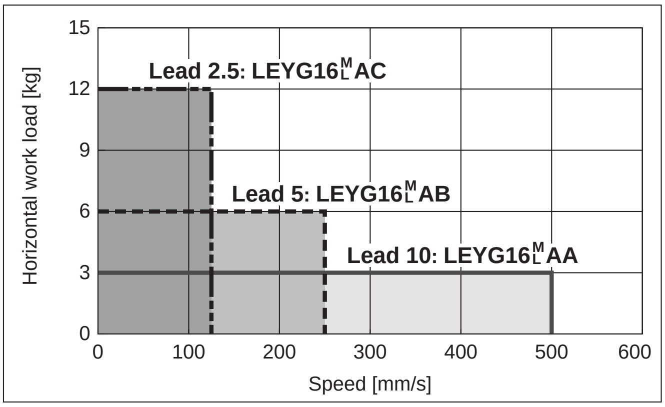


Speed–Work Load Graph (Guide)
For Servo Motor (24 VDC) LECA6

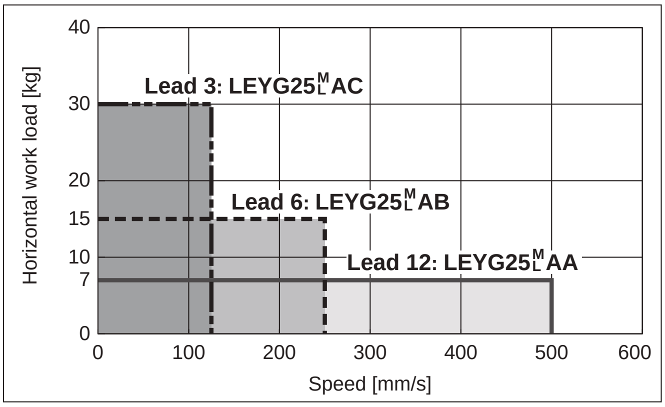
Refer to page 107 for the LECP1, JXC□1 and page 108 for the LECPA, JXC□$^{2}_{3}$.

Horizontal

LEYG16$^{M}_{L}$□A

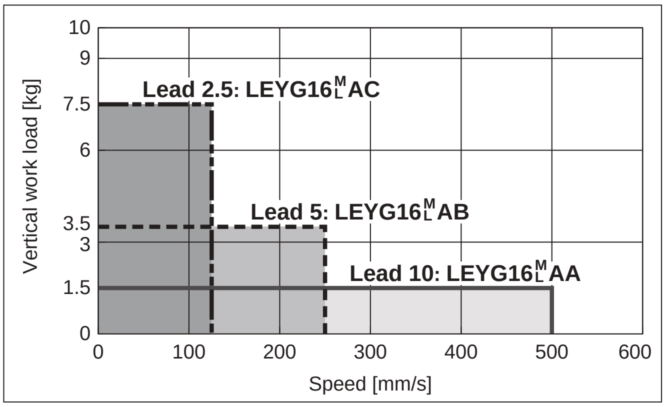


LEYG25$^{M}_{L}$□A

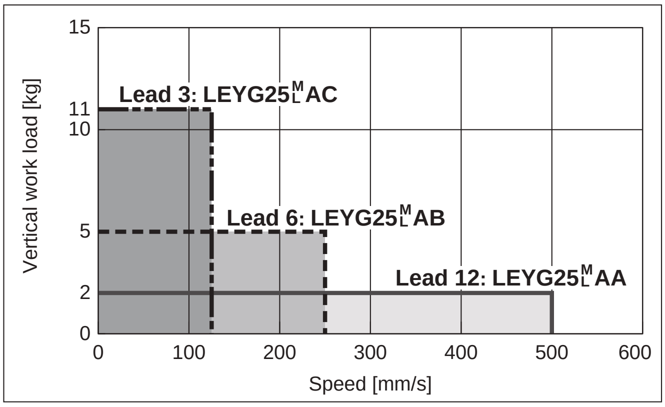


Vertical

LEYG16$^{M}_{L}$□A



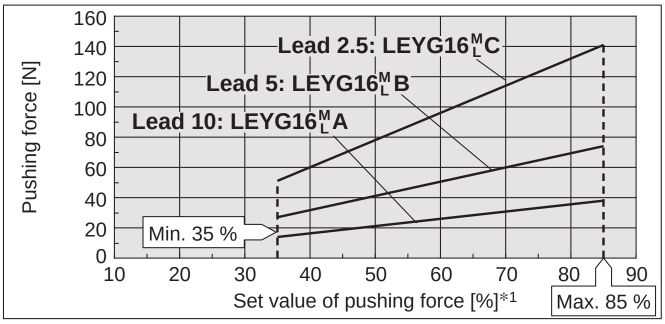
LEYG25$^{M}_{L}$□A



Force Conversion Graph (Guide)

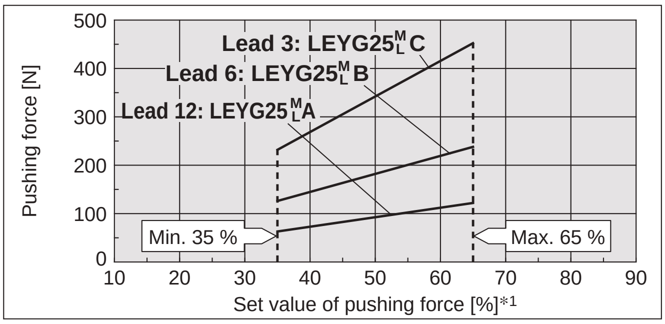
Step Motor (Servo/24 VDC)

LEYG16$_{L}^{M}$□



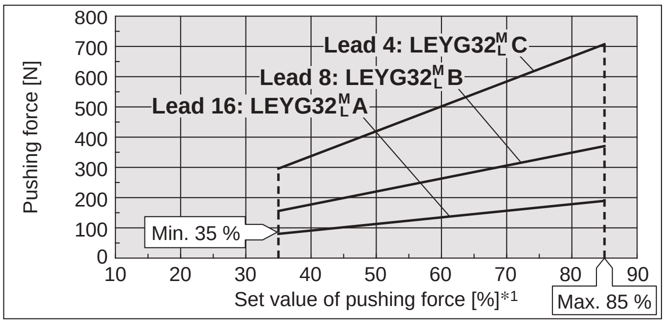
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	40 or less	100	—
	50	70	12
	70	20	1.3
	85	15	0.8

LEYG25$_{L}^{M}$□



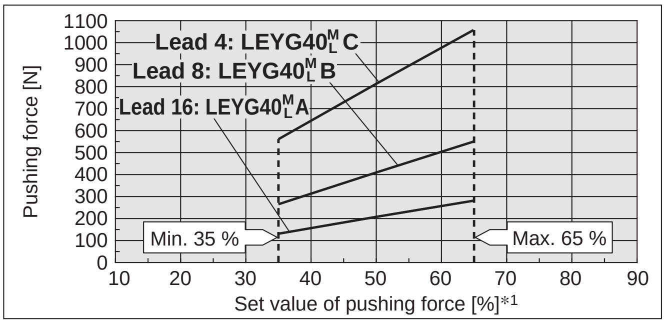
Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

LEYG32$_{L}^{M}$□



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	65 or less	100	—
	85	50	15

LEYG40$_{L}^{M}$□

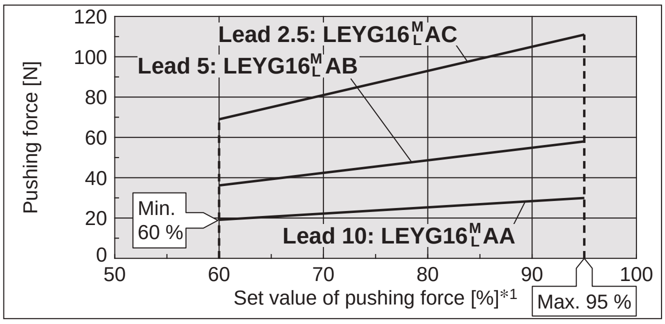


Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

*1 Set values for the controller

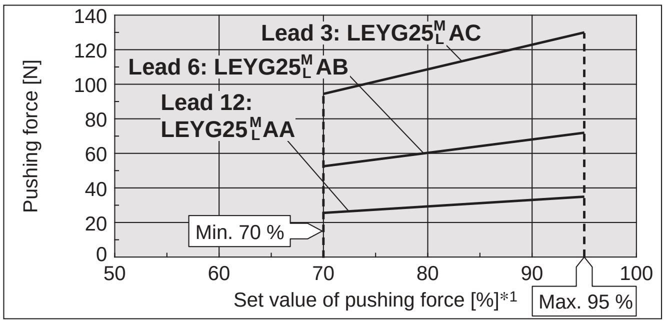
Servo Motor (24 VDC)

LEYG16$_{L}^{M}$A□



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	95 or less	100	—

LEYG25$_{L}^{M}$A□



Ambient temperature	Set value of pushing force [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	95 or less	100	—

<Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed>

Without Load

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEYG16$_{L}^{M}$	A/B/C	21 to 50	60 to 85 %
LEYG25$_{L}^{M}$	A/B/C	21 to 35	50 to 65 %
LEYG32$_{L}^{M}$	A	24 to 30	60 to 85 %
	B/C	21 to 30	
LEYG40$_{L}^{M}$	A	24 to 30	50 to 65 %
	B/C	21 to 30	

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEYG16$_{L}^{M}$□A	A/B/C	21 to 50	80 to 95 %
LEYG25$_{L}^{M}$□A	A/B/C	21 to 35	80 to 95 %

There is a limit to the pushing force in relation to the pushing speed. If the product is operated outside of the range (low pushing force), the completion signal [INP] may be output before the pushing operation has been completed (during the moving operation).
If operating with the pushing speed below the min. speed, please check for operating problems before using the product.

<Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	LEYG16$_{L}^{M}$□			LEYG25$_{L}^{M}$□			LEYG32$_{L}^{M}$□			LEYG40$_{L}^{M}$□			LEYG16$_{L}^{M}$□A			LEYG25$_{L}^{M}$□A		
Lead	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**
Work load [kg]	0.5	1	2.5	1.5	4	9	2.5	7	16	5	12	26	0.5	1	2.5	0.5	1.5	4
Pushing force	85 %			65 %			85 %			65 %			95 %			95 %		

AC Servo Motor *LECS□ Series*

Electric Actuator/Guide Rod Type

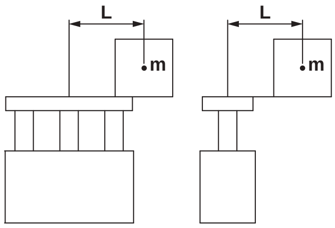
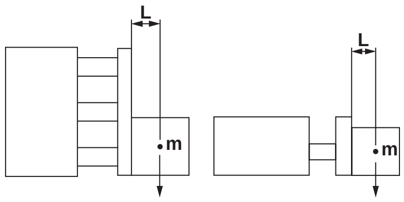
LEYG Series

Model Selection

LEYG Series ▸p. 135 LECY□ Series ▸p. 143

Moment Load Graph

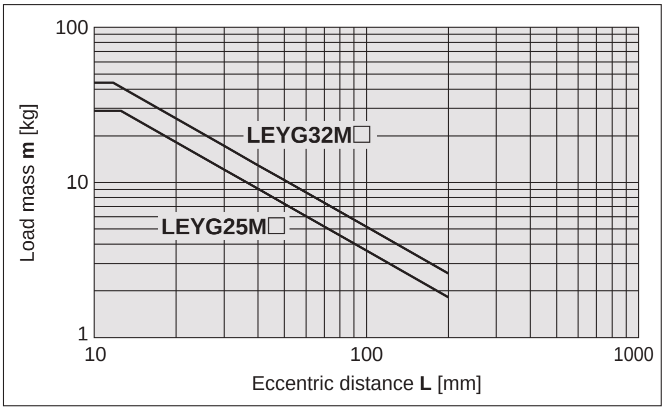
Selection conditions

		Vertical	Horizontal	
Mounting position				
Max. speed [mm/s]		“Speed–Vertical Work Load Graph”	200 or less	Over 200
Bearing	Sliding bearing	Graphs ①, ②	Graphs ⑤, ⑥[*1]	Graphs ⑦, ⑧
	Ball bushing bearing	Graphs ③, ④	Graphs ⑨, ⑩	Graphs ⑪, ⑫

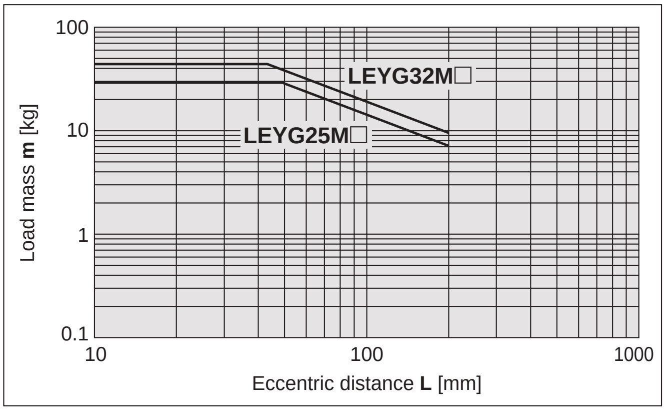
[*1] For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 mm stroke or less



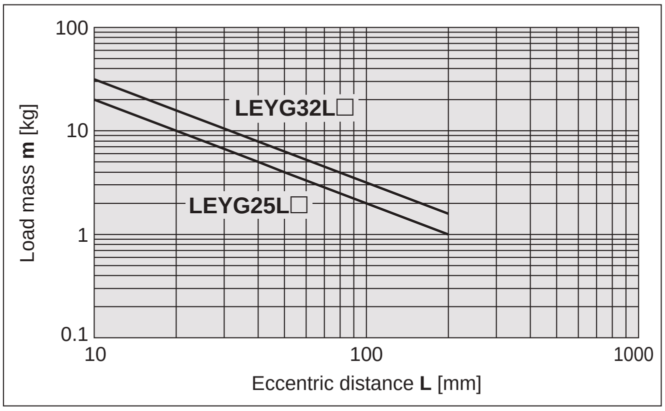
② Over 75 mm stroke



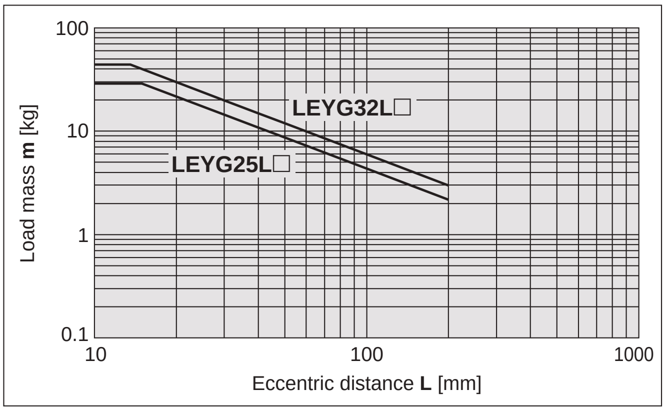
* The limit of vertical load mass varies depending on “lead” and “speed.”
Check “Speed–Vertical Work Load Graph” on page 113.

Vertical Mounting, Ball Bushing Bearing

③ 35 mm stroke or less



④ Over 40 mm stroke

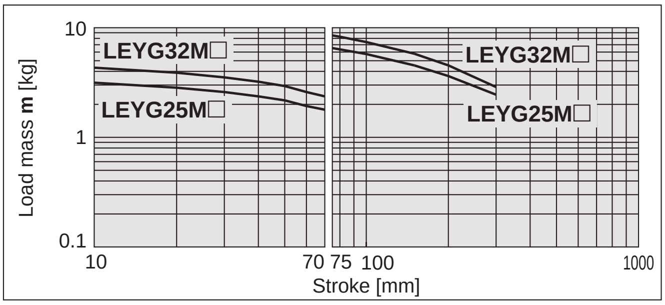


* The limit of vertical load mass varies depending on “lead” and “speed.”
Check “Speed–Vertical Work Load Graph” on page 113.

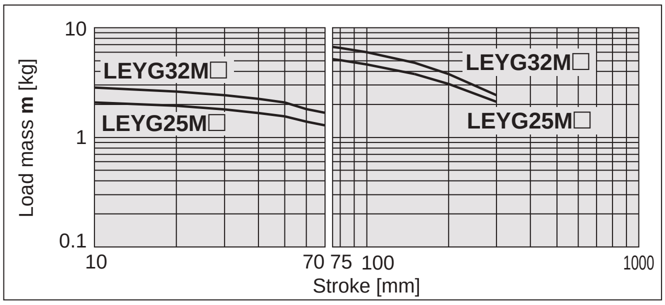
Moment Load Graph

Horizontal Mounting, Sliding Bearing

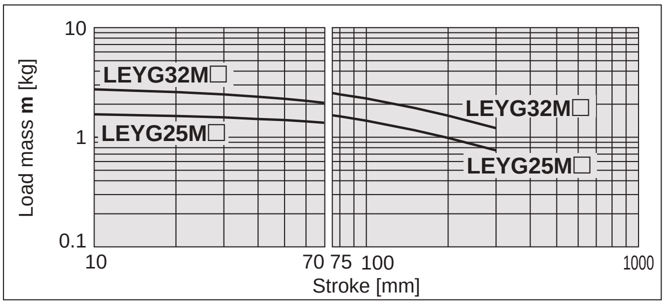
⑤ **L = 50 mm Max. speed = 200 mm/s or less**



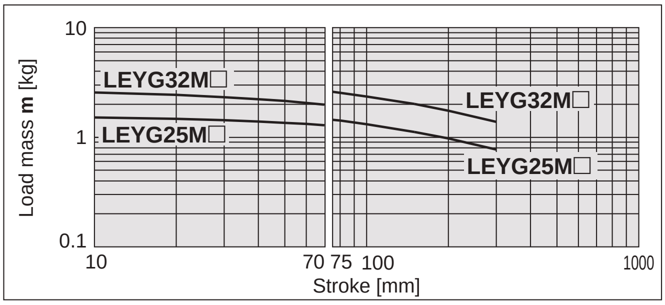
⑥ **L = 100 mm Max. speed = 200 mm/s or less**



⑦ **L = 50 mm Max. speed = Over 200 mm/s**

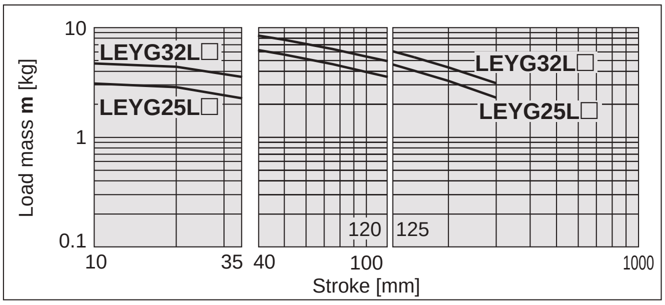


⑧ **L = 100 mm Max. speed = Over 200 mm/s**

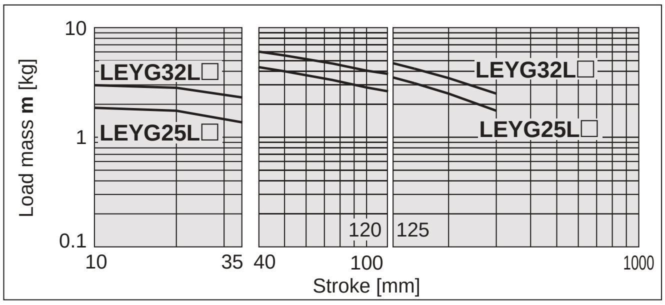


Horizontal Mounting, Ball Bushing Bearing

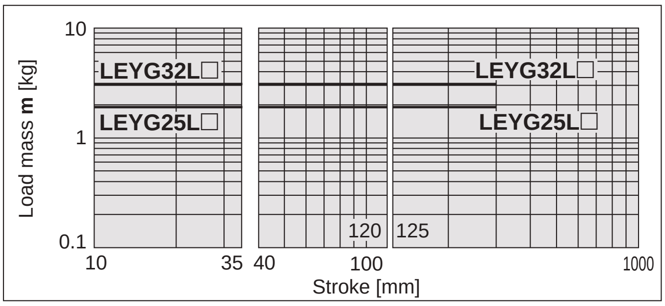
⑨ **L = 50 mm Max. speed = 200 mm/s or less**



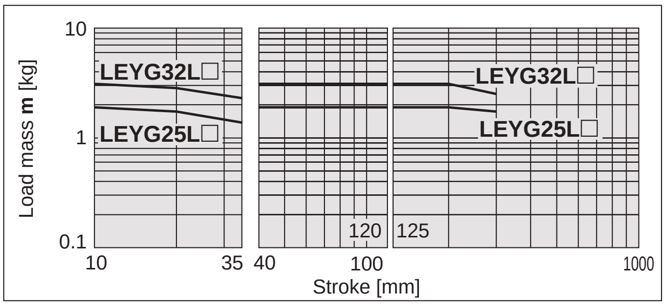
⑩ **L = 100 mm Max. speed = 200 mm/s or less**



⑪ **L = 50 mm Max. speed = Over 200 mm/s**

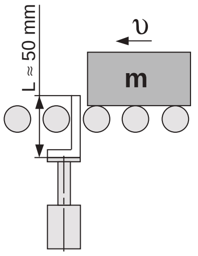


⑫ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as a Stopper

LEYG□M (Sliding bearing)



⚠Caution

Handling Precautions

- ∗ When used as a stopper, select a model with a stroke of 30 mm or less.
- ∗ LEYG□L (ball bushing bearing) cannot be used as a stopper.
- ∗ Workpiece collision in series with guide rod cannot be permitted (**Fig. a**).
- ∗ The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).

Fig. a

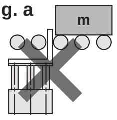
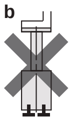
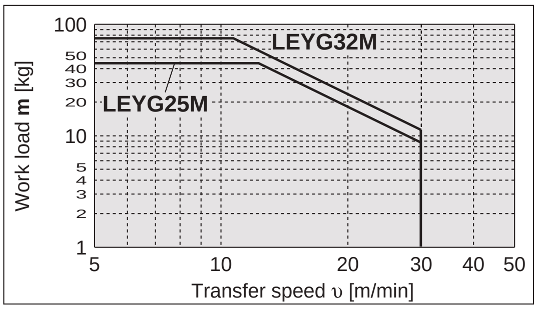


Fig. b

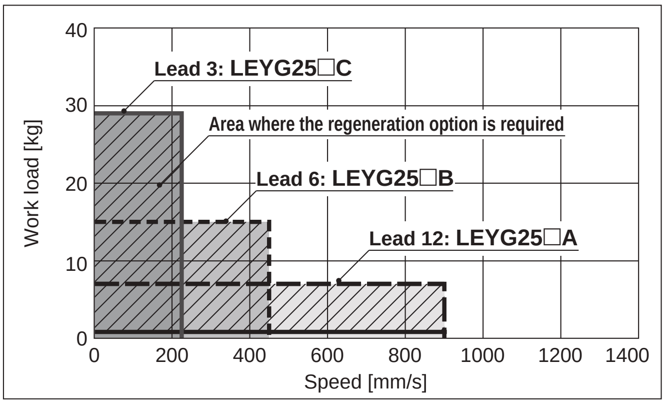




Speed–Vertical Work Load Graph/Required Conditions for “Regeneration Option”

∗ These graphs show the work load when the external guide is used together. When using the LEYG alone, refer to pages 111 and 112.

LEYG25□S$^{2}_{6}$/T6 (Motor mounting position: Top mounting/In-line)



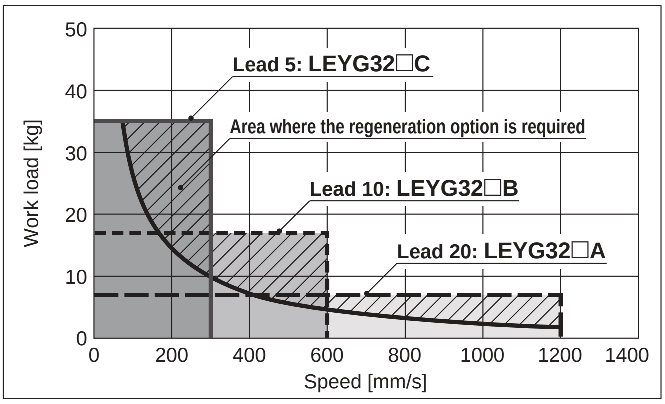
Required conditions for “Regeneration option”

∗ Regeneration option is required when using product above regeneration line in graph. (Order separately.)

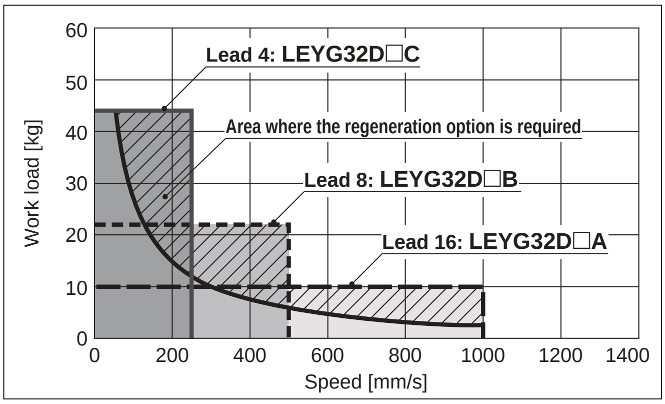
“Regeneration Option” Models

Size	Model
LEYG25□	LEC-MR-RB-032
LEYG32□	LEC-MR-RB-032

LEYG32S$^{3}_{7}$/T7 (Motor mounting position: Top mounting)



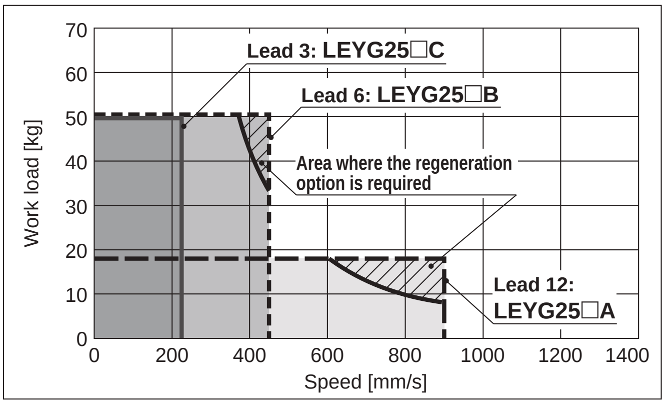
LEYG32DS$^{3}_{7}$/T7 (Motor mounting position: In-line)



Speed–Horizontal Work Load Graph/Required Conditions for “Regeneration Option”

∗ These graphs show the work load when the external guide is used together. When using the LEYG alone, refer to pages 111 and 112.

LEYG25□S$^{2}_{6}$/T6 (Motor mounting position: Top mounting/In-line)



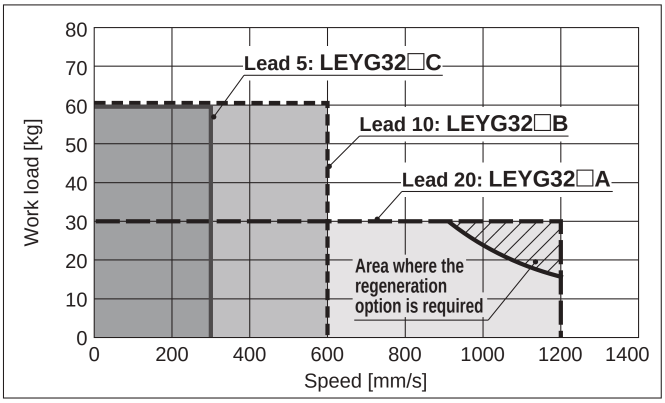
Required conditions for “Regeneration option”

∗ Regeneration option is required when using product above regeneration line in graph. (Order separately.)

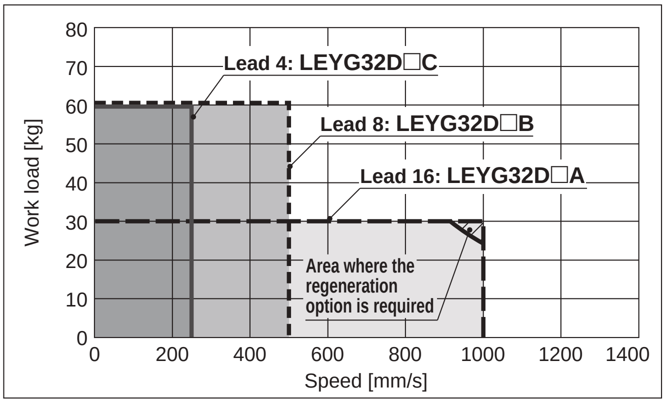
“Regeneration Option” Models

Size	Model
LEYG25□	LEC-MR-RB-032
LEYG32□	LEC-MR-RB-032

LEYG32S$^{3}_{7}$/T7 (Motor mounting position: Top mounting)

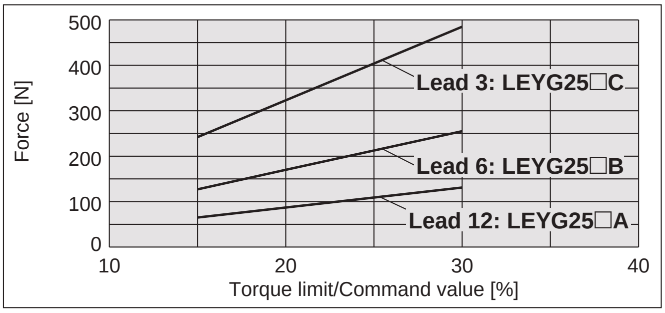


LEYG32DS$^{3}_{7}$/T7 (Motor mounting position: In-line)



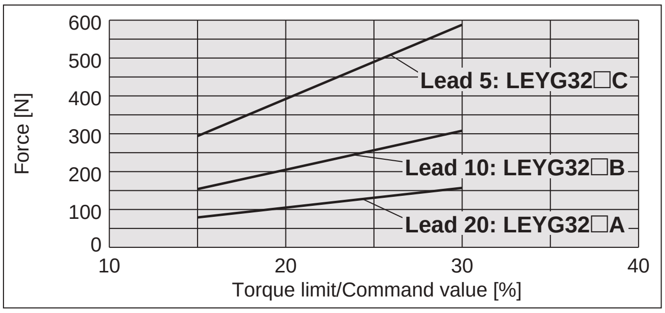
Force Conversion Graph: LECSA, LECSB, LECSC, LECSS

LEYG25□S$_{6}^{2}$ (Motor mounting position: Top mounting/In-line)



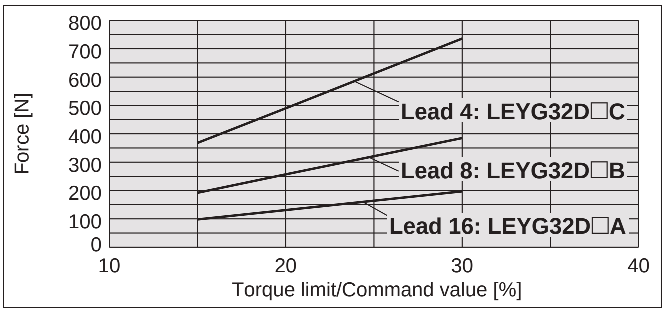
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

LEYG32S$_{7}^{3}$ (Motor mounting position: Top mounting)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

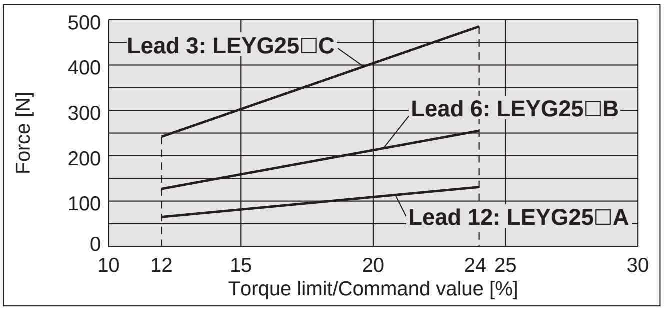
LEYG32DS$_{7}^{3}$ (Motor mounting position: In-line)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
25 or less	100	—
30	60	1.5

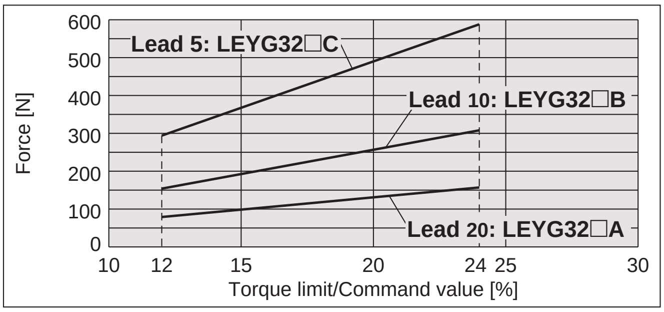
Force Conversion Graph: LECSS-T

LEYG25□T6 (Motor mounting position: Top mounting/In-line)



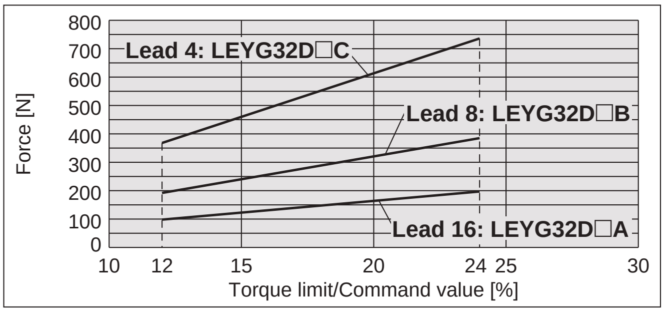
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5

LEYG32T7 (Motor mounting position: Top mounting)



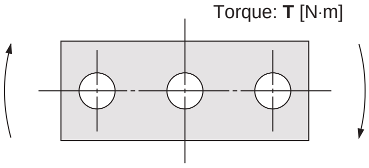
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5

LEYG32DT7 (Motor mounting position: In-line)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
20 or less	100	—
24	60	1.5

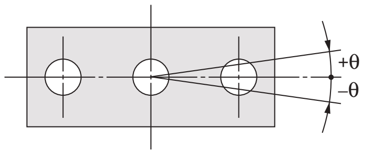
Allowable Rotational Torque of Plate



T [N·m]

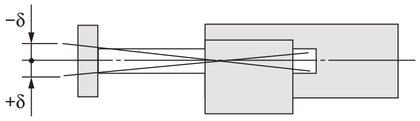
Model	Stroke [mm]				
	30	50	100	200	300
LEYG16M	0.70	0.57	1.05	0.56	—
LEYG16L	0.82	1.48	0.97	0.57	—
LEYG25M	1.56	1.29	3.50	2.18	1.36
LEYG25L	1.52	3.57	2.47	2.05	1.44
LEYG32M	2.55	2.09	5.39	3.26	1.88
LEYG32L	2.80	5.76	4.05	3.23	2.32
LEYG40M	2.55	2.09	5.39	3.26	1.88
LEYG40L	2.80	5.76	4.05	3.23	2.32

Non-rotating Accuracy of Plate



Size	Non-rotating accuracy θ	
	LEYG☐M	**LEYG☐L**
16	0.06°	0.05°
25		0.04°
32	0.05°	
40		

Plate Displacement: δ



[mm]

Model	Stroke [mm]				
	30	**50**	**100**	**200**	**300**
LEYG16M	±0.20	±0.25	±0.24	±0.27	—
LEYG16L	±0.13	±0.12	±0.17	±0.19	—
LEYG25M	±0.26	±0.31	±0.25	±0.38	±0.36
LEYG25L	±0.13	±0.13	±0.17	±0.20	±0.23
LEYG32M	±0.23	±0.29	±0.23	±0.36	±0.34
LEYG32L	±0.11	±0.11	±0.15	±0.19	±0.22

AC Servo Motor **LECY□ Series**

Electric Actuator/Guide Rod Type

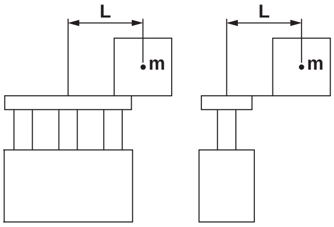
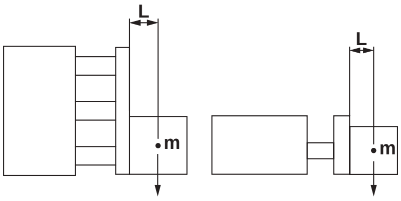
***LEYG* Series**

Model Selection

LEYG Series ▶p. 143 LECS□ Series ▶p. 135

Moment Load Graph

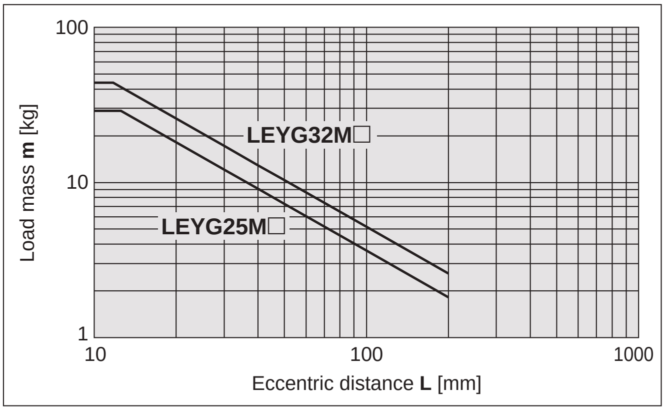
Selection conditions

		Vertical	Horizontal	
Mounting position				
Max. speed [mm/s]		"Speed–Work Load Graph"	200 or less	Over 200
Bearing	Sliding bearing	Graphs ①, ②	Graphs ⑤, ⑥⁎1	Graphs ⑦, ⑧
	Ball bushing bearing	Graphs ③, ④	Graphs ⑨, ⑩	Graphs ⑪, ⑫

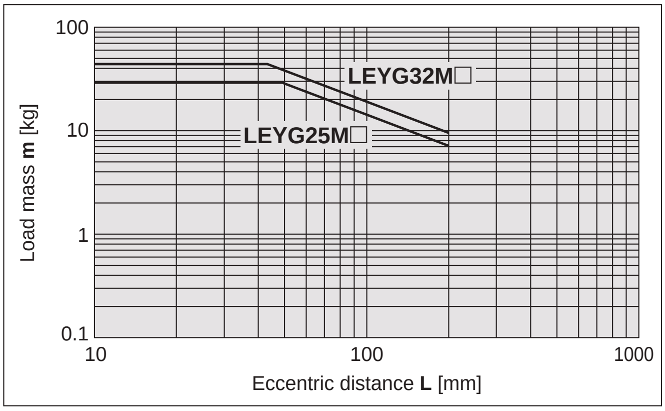
⁎1 For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① 70 mm stroke or less



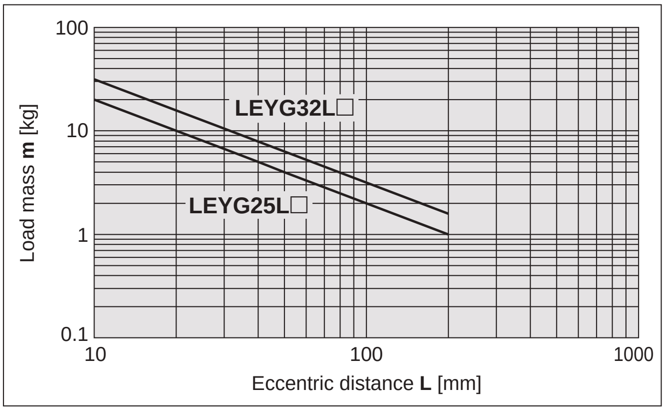
② Over 75 mm stroke



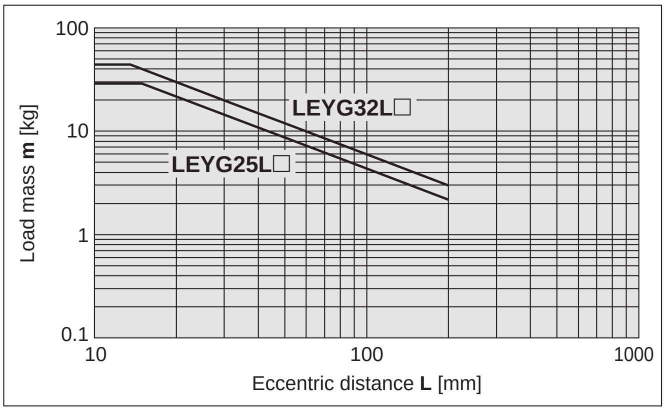
⁎ The limit of vertical load mass varies depending on "lead" and "speed." Check "Speed–Work Load Graph" on page 118.

Vertical Mounting, Ball Bushing Bearing

③ 35 mm stroke or less



④ Over 40 mm stroke

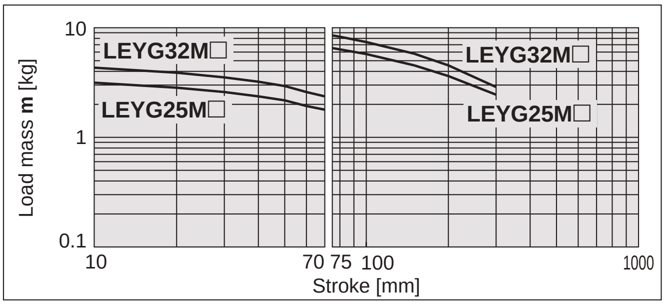


⁎ The limit of vertical load mass varies depending on "lead" and "speed." Check "Speed–Work Load Graph" on page 118.

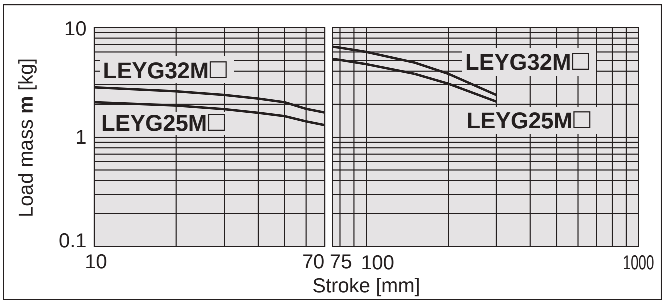
Moment Load Graph

Horizontal Mounting, Sliding Bearing

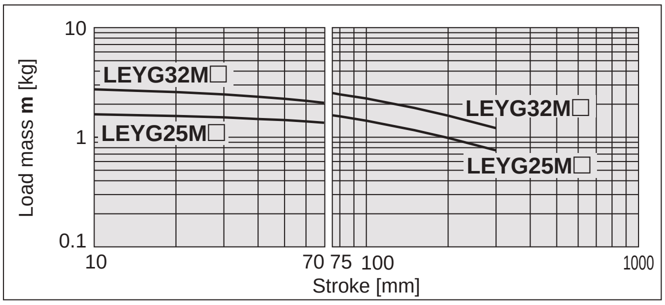
⑤ L = 50 mm Max. speed = 200 mm/s or less



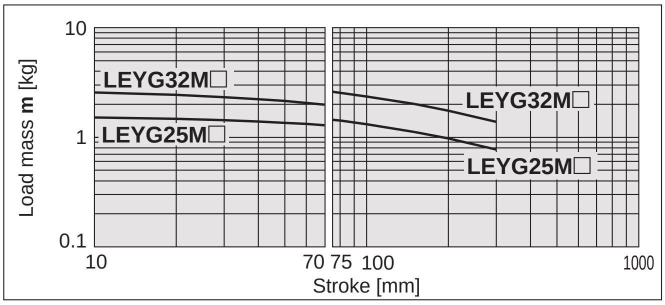
⑥ L = 100 mm Max. speed = 200 mm/s or less



⑦ L = 50 mm Max. speed = Over 200 mm/s

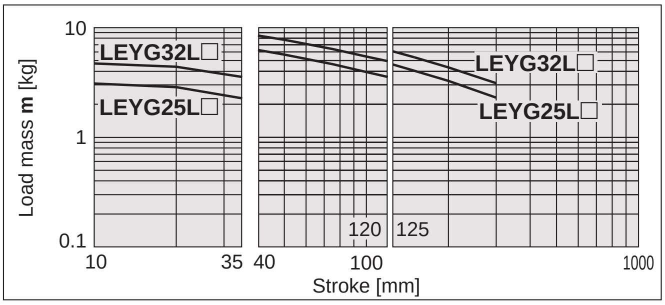


⑧ L = 100 mm Max. speed = Over 200 mm/s

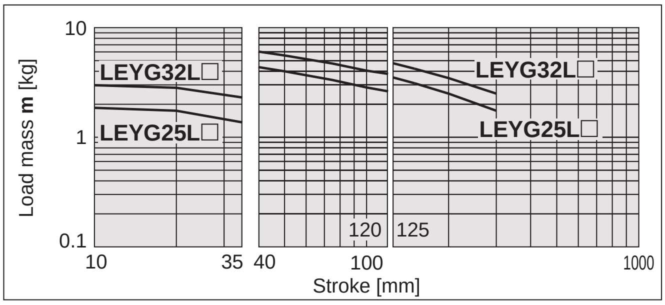


Horizontal Mounting, Ball Bushing Bearing

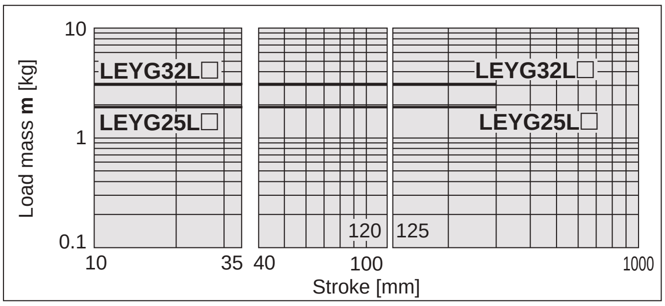
⑨ L = 50 mm Max. speed = 200 mm/s or less



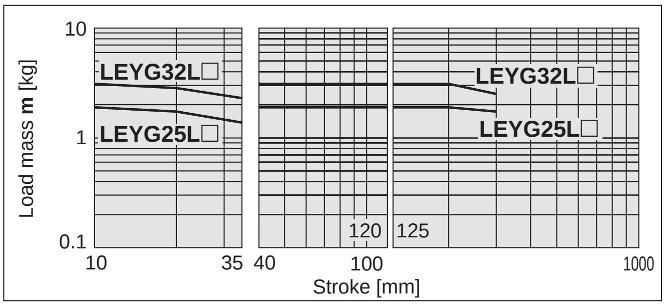
⑩ L = 100 mm Max. speed = 200 mm/s or less



⑪ L = 50 mm Max. speed = Over 200 mm/s

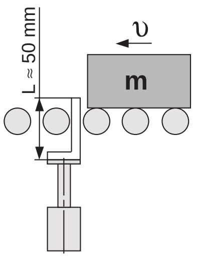


⑫ L = 100 mm Max. speed = Over 200 mm/s



Operating Range when Used as a Stopper

LEYG☐M (Sliding bearing)



⚠Caution

Handling Precautions

- ∗ When used as a stopper, select a model with a stroke of 30 mm or less.
- ∗ LEYG☐L (ball bushing bearing) cannot be used as a stopper.
- ∗ Workpiece collision in series with guide rod cannot be permitted (**Fig. a**).
- ∗ The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).

Fig. a

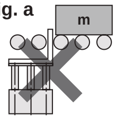
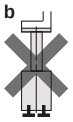
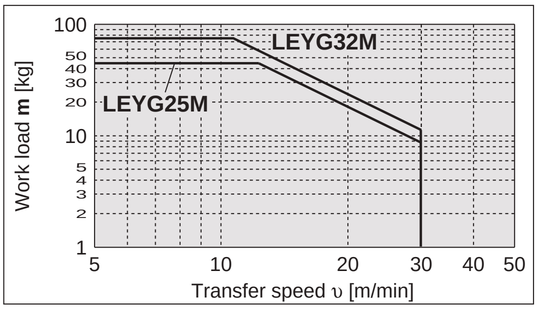


Fig. b



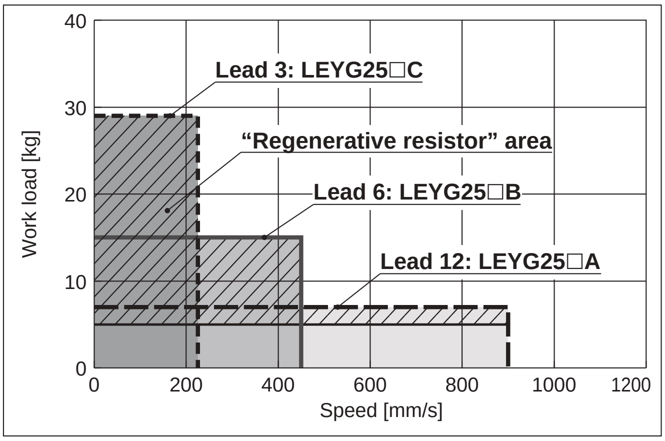


Speed–Work Load Graph/Conditions for “Regenerative Resistor” (Guide)

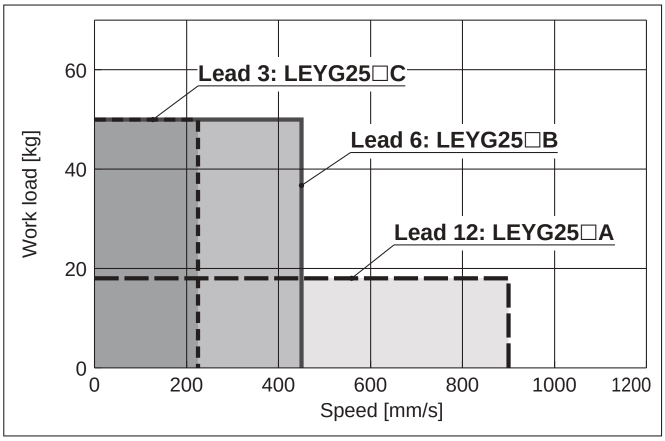
∗ These graphs show the work load when the external guide is used together. When using the LEYG alone, refer to pages 116 and 117.

LEYG25□V6 (Motor mounting position: Top mounting/In-line)

Vertical

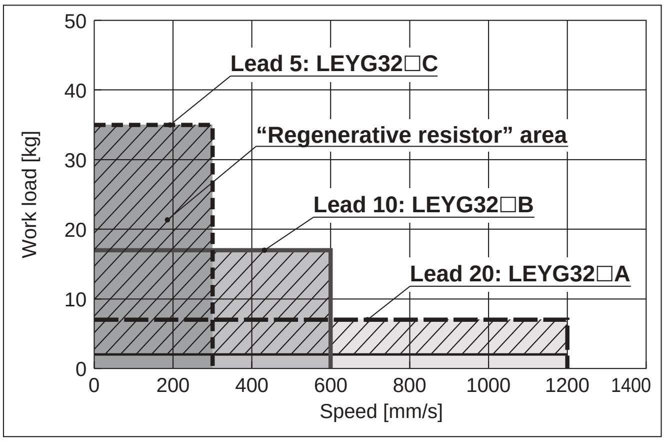


Horizontal

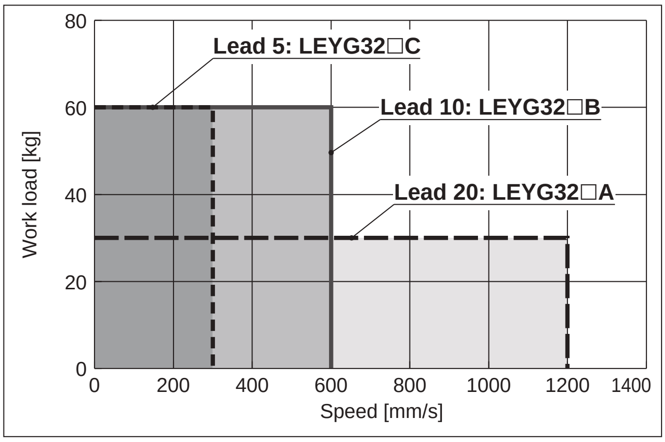


LEYG32V7 (Motor mounting position: Top mounting)

Vertical

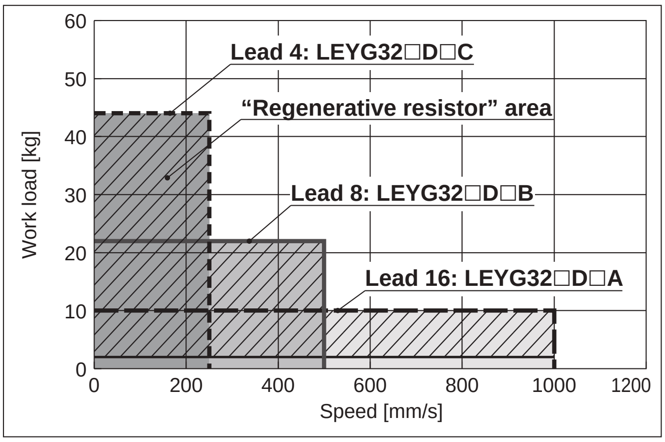


Horizontal

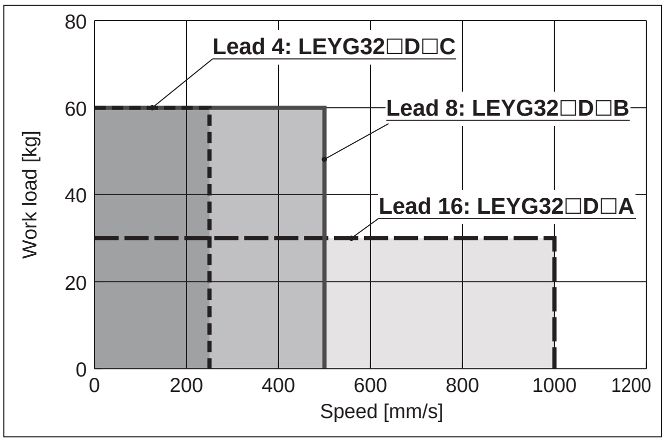


LEYG32DV7 (Motor mounting position: In-line)

Vertical



Horizontal



“Regenerative resistor” area

∗ When using the actuator in the “Regenerative resistor” area, download the “AC servo drive capacity selection program/SigmaJunmaSize+” from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.

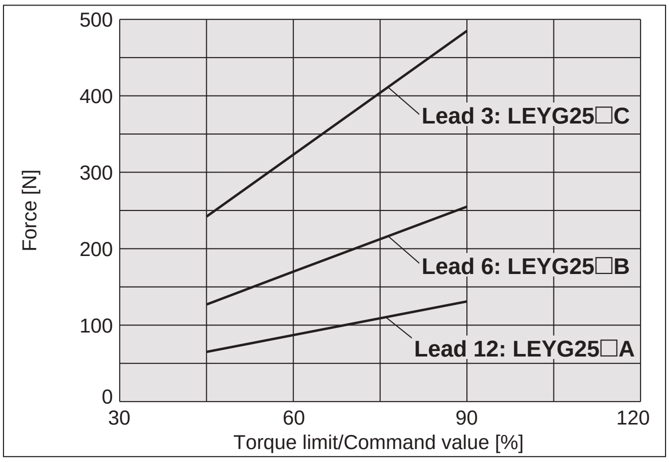
∗ Regenerative resistor should be provided by the customer.

Applicable Motor/Driver

Model	Applicable model	
	Motor	Servopack (SMC driver)
LEYG25□	SGMJV-01A3A	SGDV-R90A11□ (LECYM2-V5) SGDV-R90A21□ (LECYU2-V5)
LEYG32□	SGMJV-02A3A	SGDV-1R6A11□ (LECYM2-V7) SGDV-1R6A21□ (LECYU2-V7)

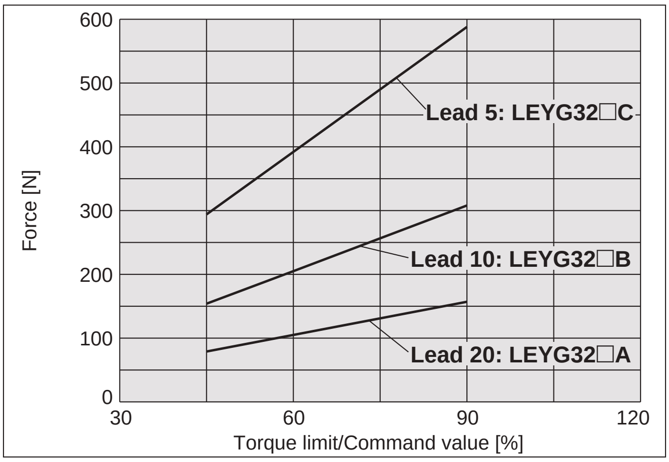
Force Conversion Graph

LEYG25□V6 (Motor mounting position: Top mounting/In-line)



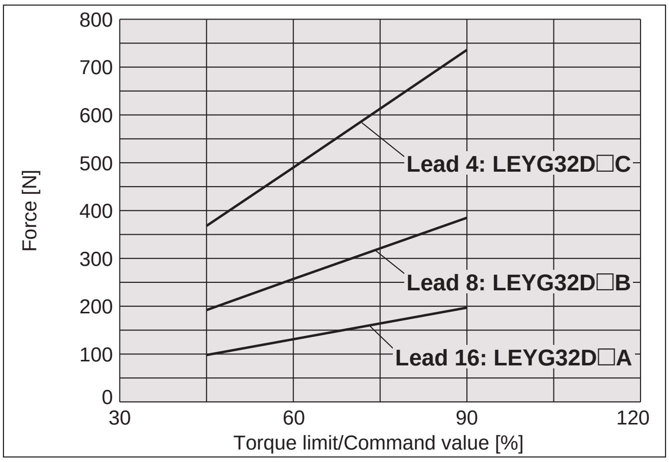
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEYG32□V7 (Motor mounting position: Top mounting)



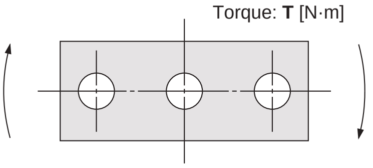
Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

LEYG32DV7 (Motor mounting position: In-line)



Torque limit/Command value [%]	Duty ratio [%]	Continuous pushing time [minute]
75 or less	100	—
90	60	1.5

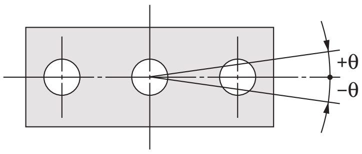
Allowable Rotational Torque of Plate: T



T [N·m]

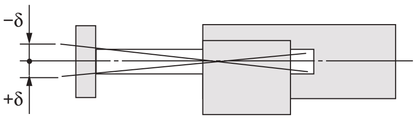
Model	Stroke [mm]				
	30	**50**	**100**	**200**	**300**
LEYG25M	1.56	1.29	3.50	2.18	1.36
LEYG25L	1.52	3.57	2.47	2.05	1.44
LEYG32M	2.55	2.09	5.39	3.26	1.88
LEYG32L	2.80	5.76	4.05	3.23	2.32

Non-rotating Accuracy of Plate: θ



Size	**LEYG□M**	**LEYG□L**
25	±0.06°	±0.04°
32	±0.05°	

Plate Displacement: δ



[mm]

Model	Stroke [mm]				
	30	**50**	**100**	**200**	**300**
LEYG25M	±0.26	±0.31	±0.25	±0.38	±0.36
LEYG25L	±0.13	±0.13	±0.17	±0.20	±0.23
LEYG32M	±0.23	±0.29	±0.23	±0.36	±0.34
LEYG32L	±0.11	±0.11	±0.15	±0.19	±0.22

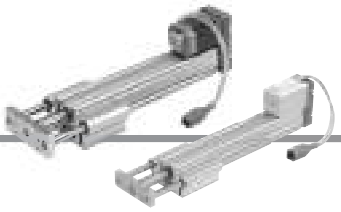
Step Motor (Servo/24 VDC) Servo Motor (24 VDC)

Electric Actuator/ Guide Rod Type

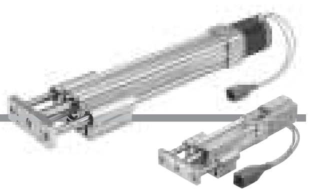
LEYG Series LEYG16, 25, 32, 40

RoHS

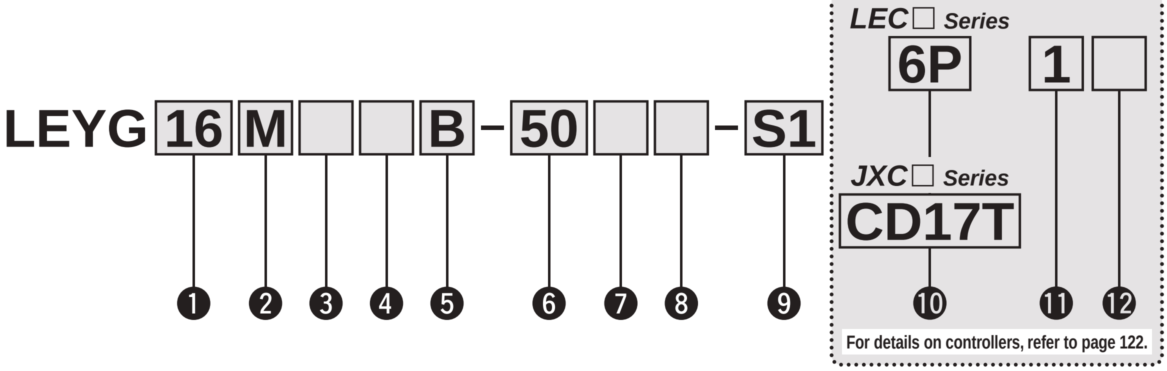
How to Order



Motor mounting position:
Top mounting



Motor mounting position: In-line



LEYG 16 M ☐ ☐ B – 50 ☐ ☐ – S1

LEC☐ *Series* 6P 1 ☐

JXC☐ *Series* CD17T

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬

For details on controllers, refer to page 122.

❶ Size

16
25
32
40

❷ Bearing type[*1]

M	Sliding bearing
L	Ball bushing bearing

❸ Motor mounting position

—	Top mounting
D	In-line

❹ Motor type

Symbol	Type	Applicable size			Compatible controller/ driver
		LEYG16	**LEYG25**	**LEYG32/40**	
—	Step motor (Servo/24 VDC)	●	●	●	LECP1 LECPA JXCE1 JXC91 JXCP1 JXCD1 JXCL1
A	Servo motor (24 VDC)	●	●	—	LECA6

❺ Lead [mm]

Symbol	**LEYG16**	**LEYG25**	**LEYG32/40**
A	10	12	16
B	5	6	8
C	2.5	3	4

❻ Stroke[*2 *3] [mm]

30	30
to	to
300	300

* For details, refer to the applicable stroke table below.

❼ Motor option[*4]

—	Without option
C	With motor cover
B	With lock
W	With lock/motor cover

❽ Guide option[*5]

—	Without option
F	With grease retaining function

❾ Actuator cable type/length[*7]

Standard cable [m]

—	None
S1	1.5[*9]
S3	3[*9]
S5	5[*9]

Robotic cable [m]

R1	1.5	**RA**	10[*6]
R3	3	**RB**	15[*6]
R5	5	**RC**	20[*6]
R8	8[*6]		

Applicable Stroke Table[*2]

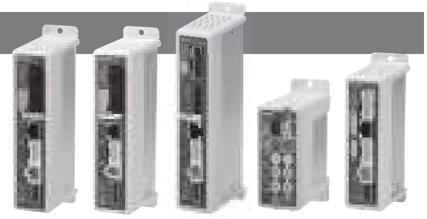
●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	Manufacturable stroke range [mm]
LEYG16	●	●	●	●	●	—	—	10 to 200
LEYG25	●	●	●	●	●	●	●	15 to 300
LEYG32/40	●	●	●	●	●	●	●	20 to 300

For auto switches, refer to pages 101 to 103.

Use of auto switches for the guide rod type LEYG series
- · Auto switches must be inserted from the front side with the rod (plate) sticking out.
- · Auto switches cannot be fixed with the parts hidden behind the guide attachment (the side of the rod that sticks out).
- · Please consult with SMC when using auto switches on the side of the rod that sticks out, as it is produced as a special order.

LEC□ Series (For details, refer to page 123.)



6P **1** □

❿ ⓫ ⓬

❿ Controller/Driver type*8

—	Without controller/driver	
6N	**LECA6** (Step data input type)	NPN
6P		PNP
1N	**LECP1***9 (Programless type)	NPN
1P		PNP
AN	**LECPA***9 *11 (Pulse input type)	NPN
AP		PNP

⓫ I/O cable length*12, Communication plug

—	Without cable (Without communication plug connector)
1	1.5 m
3	3 m*13
5	5 m*13
S	Straight type communication plug connector
T	T-branch type communication plug connector

⓬ Controller/Driver mounting

—	Screw mounting
D	DIN rail*14

JXC□ Series (For details, refer to page 123.)

❿ Controller

—	Without controller
C□1□□	With controller

C **D** **1** **7** **T**

Communication protocol

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

For single axis

Mounting

7	Screw mounting
8*14	DIN rail

Communication plug connector for DeviceNet™*15

—	Without plug connector
S	Straight type
T	T-branch type

---

*1 When [M: Sliding bearing] is selected, the maximum speed of lead [A] is 400 mm/s (at no-load, horizontal mounting). The speed is also restricted with a horizontal/moment load. Refer to “Model Selection” on page 105.
*2 Please consult with SMC for non-standard strokes as they are produced as special orders.
*3 There is a limit for mounting the size 32/40 top mounting types and strokes of 50 mm or less. Refer to the dimensions.
*4 When “With lock” or “With lock/motor cover” is selected for the top mounting type, the motor body will stick out from the end of the body for size 16/40 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.
*5 Only available for size 25, 32, and 40 sliding bearings (Refer to “Construction” on page 128.)
*6 Produced upon receipt of order (Robotic cable only)
*7 The standard cable should only be used on fixed parts. For use on moving parts, select the robotic cable.
*8 For details on controllers/drivers and compatible motors, refer to the compatible controller/driver on the next page.
*9 Only available for the motor type “Step motor”
*10 Not compliant with CE
*11 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 220 separately.
*12 When “Without controller/driver” is selected for controller/driver types, I/O cable cannot be selected. Refer to page 199 (For LECA6), page 213 (For LECP1), or page 220 (For LECPA) if I/O cable is required.
*13 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
*14 The DIN rail is not included. Order it separately.
*15 Select “—” for anything other than DeviceNet™.

⚠Caution

[CE-compliant products]

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

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 199 for the noise filter set. Refer to the LECA series Operation Manual for installation.

[UL-compliant products (For the LEC series)]

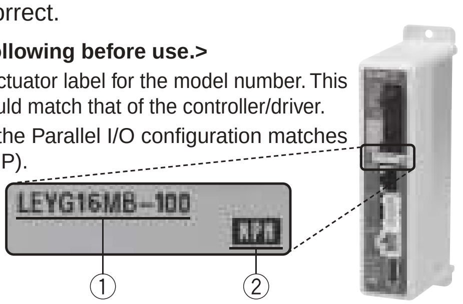
When compliance with UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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

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

<Check the following before use.>

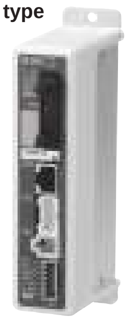
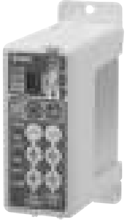
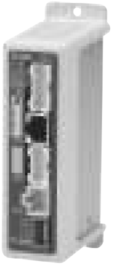
① Check the actuator label for the model number. This number should match that of the controller/driver.
② Check that the Parallel I/O configuration matches (NPN or PNP).



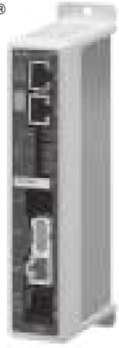
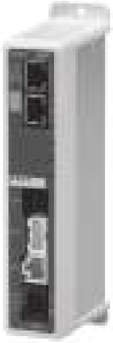
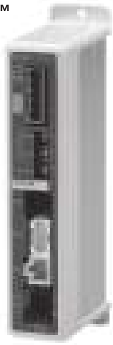
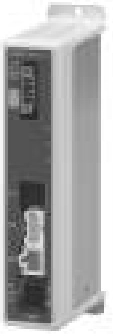
* Refer to the Operation Manual for using the products. Please download it via our website, https://www.smc.eu

Compatible Controller/Driver

LEC□ Series

Type	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECA6**	**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	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Max. number of step data	64 points	14 points	—
Power supply voltage			
Reference page	191	207	214

JXC□ Series

Type	**EtherCAT® direct input type** 	**EtherNet/IP™ direct input type**	**PROFINET direct input type** 	**DeviceNet™ direct input type** 	**IO-Link direct input type** 
Series	**JXCE1**	**JXC91**	**JXCP1**	**JXCD1**	**JXCL1**
Features	EtherCAT® direct input	EtherNet/IP™ direct input	PROFINET direct input	DeviceNet™ direct input	IO-Link direct input
Compatible motor	Step motor (Servo/24 VDC)				
Max. number of step data	64 points				
Power supply voltage	24 VDC				
Reference page	224				

Specifications

Step Motor (Servo/24 VDC)

Model				LEYG16$_{L}^{M}$			LEYG25$_{L}^{M}$			LEYG32$_{L}^{M}$			LEYG40$_{L}^{M}$		
Actuator specifications	Work load [kg]*1	Horizontal (LECP1, JXC□1)	Acceleration/Deceleration at 3000 [mm/s²]	6	17	30	20	40	60	30	45	60	50	60	80
			Acceleration/Deceleration at 2000 [mm/s²]	10	23	35	30	55	70	40	60	80	60	70	90
		Horizontal (LECPA, JXC□$_{3}^{2}$)	Acceleration/Deceleration at 3000 [mm/s²]	4	11	20	12	30	30	20	40	40	30	60	60
			Acceleration/Deceleration at 2000 [mm/s²]	6	17	30	18	50	50	30	60	60	—	—	—
		Vertical	Acceleration/Deceleration at 3000 [mm/s²]	1.5	3.5	7.5	7	15	29	9	20	41	11	25	51
	Pushing force [N]*2 *3 *4			14 to 38	27 to 74	51 to 141	63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707	132 to 283	266 to 553	562 to 1058
	Speed [mm/s]*4	LECP1/JXC□1		15 to 500	8 to 250	4 to 125	18 to 500	9 to 250	5 to 125	24 to 500	12 to 300	6 to 150	24 to 500	12 to 350	6 to 175
		LECPA/JXC□$_{3}^{2}$									12 to 250	6 to 125	24 to 300	12 to 150	6 to 75
	Max. acceleration/deceleration [mm/s²]			3000											
	Pushing speed [mm/s]*5			50 or less			35 or less			30 or less			30 or less		
	Positioning repeatability [mm]			±0.02											
	Lost motion [mm]*6			0.1 or less											
	Screw lead [mm]			10	5	2.5	12	6	3	16	8	4	16	8	4
	Impact/Vibration resistance [m/s²]*7			50/20											
	Actuation type			Ball screw + Belt (LEYG□□), Ball screw (LEYG□□D)											
	Guide type			Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)											
	Operating temp. range [°C]			5 to 40											
	Operating humidity range [%RH]			90 or less (No condensation)											
Electric specifications	Motor size			□28			□42			□56.4			□56.4		
	Motor type			Step motor (Servo/24 VDC)											
	Encoder			Incremental A/B phase (800 pulse/rotation)											
	Rated voltage [V]			24 VDC ±10 %											
	Power consumption [W]*8			23			40			50			50		
	Standby power consumption when operating [W]*9			16			15			48			48		
	Max. instantaneous power consumption [W]*10			43			48			104			106		
Lock unit specifications	Type*11			Non-magnetising lock											
	Holding force [N]			20	39	78	78	157	294	108	216	421	127	265	519
	Power consumption [W]*12			2.9			5			5			5		
	Rated voltage [V]			24 VDC ±10 %											

*1 Horizontal: An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check “Model Selection” on pages 107 and 108.
Vertical: Speed changes according to the work load. Check “Model Selection” on pages 107 and 108.
Set the acceleration/deceleration values to be 3000 [mm/s²] or less.

*2 Pushing force accuracy is ±20 % (F.S.).

*3 The pushing force values for LEYG16□□ is 35 % to 85 %, for LEYG25□□ is 35 % to 65 %, for LEYG32□□ is 35 % to 85 %, and for LEYG40□□ is 35 % to 65 %. The pushing force values change according to the duty ratio and pushing speed. Check “Model Selection” on page 110.

*4 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 %)
When [M: Sliding bearing] is selected, the maximum speed of lead [A] is 400 mm/s (at no-load, horizontal mounting).
The speed is also restricted with a horizontal/moment load. Refer to “Model Selection” on page 105.

*5 The allowable speed for the pushing operation

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

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

*8 The power consumption (including the controller) is for when the actuator is operating.

*9 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation

*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.

*11 With lock only

*12 For an actuator with lock, add the power consumption for the lock.

Specifications

Servo Motor (24 VDC)

Model				LEYG16$\substack{M\\L}$□A			LEYG25$\substack{M\\L}$□A		
Actuator specifications	Work load [kg]*1	Horizontal	Acceleration/Deceleration at 3000 [mm/s²]	3	6	12	7	15	30
		Vertical	Acceleration/Deceleration at 3000 [mm/s²]	1.5	3.5	7.5	2	5	11
	Pushing force [N]*2 *3			16 to 30	30 to 58	57 to 111	18 to 35	37 to 72	66 to 130
	Speed [mm/s]			1 to 500	1 to 250	1 to 125	2 to 500	1 to 250	1 to 125
	Max. acceleration/deceleration [mm/s²]			3000					
	Pushing speed [mm/s]*4			50 or less			35 or less		
	Positioning repeatability [mm]			±0.02					
	Lost motion [mm]*5			0.1 or less					
	Screw lead [mm]			10	5	2.5	12	6	3
	Impact/Vibration resistance [m/s²]*6			50/20					
	Actuation type			Ball screw + Belt (LEYG□□), Ball screw (LEYG□□D)					
	Guide type			Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)					
	Operating temp. range [°C]			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)					
Electric specifications	Motor size			□28			□42		
	Motor output [W]			30			36		
	Motor type			Servo motor (24 VDC)					
	Encoder			Incremental A/B (800 pulse/rotation)/Z phase					
	Rated voltage [V]			24 VDC ±10 %					
	Power consumption [W]*7			40			86		
	Standby power consumption when operating [W]*8			4 (Horizontal)/6 (Vertical)			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W]*9			59			96		
Lock unit specifications	Type*10			Non-magnetising lock					
	Holding force [N]			20	39	78	78	157	294
	Power consumption [W]*11			2.9			5		
	Rated voltage [V]			24 VDC ±10 %					

*1 Horizontal: An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Check "Model Selection" on page 109 for details.
Set the acceleration/deceleration values to be 3000 [mm/s²] or less.

*2 Pushing force accuracy is ±20 % (F.S.).

*3 The thrust setting values for LEYG16□A□ is 60 % to 95 % and for LEYG25□A□ is 70 % to 95 %. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 110.

*4 The allowable speed for the pushing operation

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

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

*7 The power consumption (including the controller) is for when the actuator is operating.

*8 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation

*9 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.

*10 With lock only

*11 For an actuator with lock, add the power consumption for the lock.

Weight

Weight: Motor Top Mounting Type

Model		LEYG16M					LEYG25M							LEYG32M						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.83	0.97	1.20	1.49	1.66	1.67	1.86	2.18	2.60	2.94	3.28	3.54	2.91	3.17	3.72	4.28	4.95	5.44	5.88
	Servo motor	0.83	0.97	1.20	1.49	1.66	1.63	1.82	2.14	2.56	2.90	3.24	3.50	—	—	—	—	—	—	—

Model		LEYG16L					LEYG25L							LEYG32L						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.84	0.97	1.14	1.43	1.58	1.68	1.89	2.13	2.56	2.82	3.14	3.38	2.91	3.18	3.57	4.12	4.66	5.17	5.56
	Servo motor	0.84	0.97	1.14	1.43	1.58	1.64	1.85	2.09	2.52	2.78	3.10	3.34	—	—	—	—	—	—	—

Model		LEYG40M							LEYG40L						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	3.21	3.47	4.02	4.58	5.25	5.74	6.18	3.21	3.48	3.87	4.42	4.96	5.47	5.86
	Servo motor	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

Model		LEYG16M					LEYG25M							LEYG32M						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.83	0.97	1.20	1.49	1.66	1.66	1.85	2.17	2.59	2.93	3.27	3.53	2.90	3.16	3.71	4.27	4.94	5.43	5.87
	Servo motor	0.83	0.97	1.20	1.49	1.66	1.62	1.81	2.13	2.55	2.89	3.23	3.49	—	—	—	—	—	—	—

Model		LEYG16L					LEYG25L							LEYG32L						
Stroke [mm]		30	50	100	150	200	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	0.84	0.97	1.14	1.43	1.58	1.67	1.88	2.12	2.55	2.81	3.13	3.37	2.90	3.17	3.56	4.11	4.65	5.16	5.55
	Servo motor	0.84	0.97	1.14	1.43	1.58	1.63	1.84	2.08	2.51	2.77	3.09	3.33	—	—	—	—	—	—	—

Model		LEYG40M							LEYG40L						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Product weight [kg]	Step motor	3.20	3.46	4.01	4.57	5.24	5.73	6.17	3.20	3.47	3.86	4.41	4.95	5.46	5.85
	Servo motor	—	—	—	—	—	—	—	—	—	—	—	—	—	—

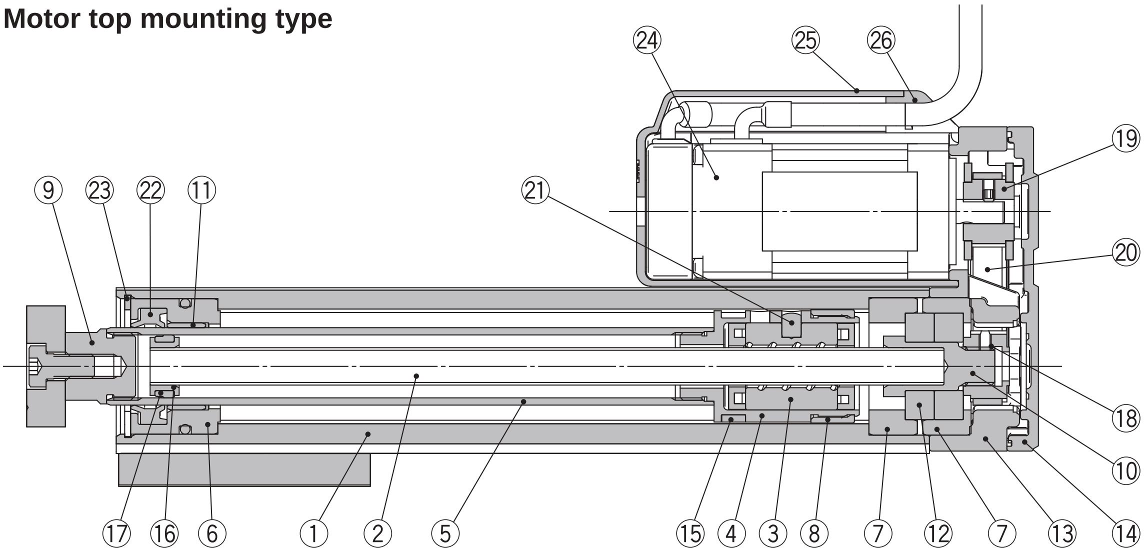
Additional Weight

[kg]

Size	16	25	32	40
Lock	0.12	0.26	0.53	0.53
Motor cover	0.02	0.03	0.04	0.05
Lock/Motor cover	0.16	0.32	0.61	0.62

Construction

Motor top mounting type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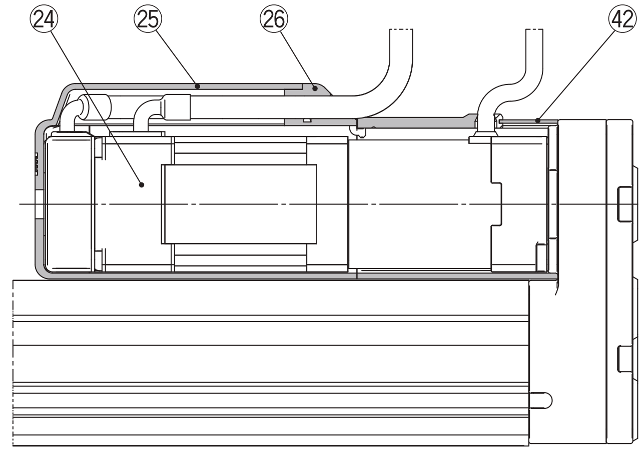
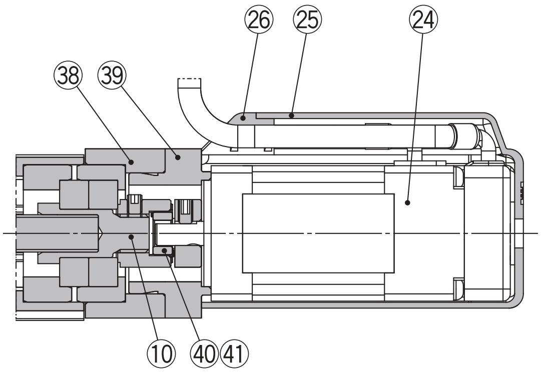
⑦
⑬
⑭

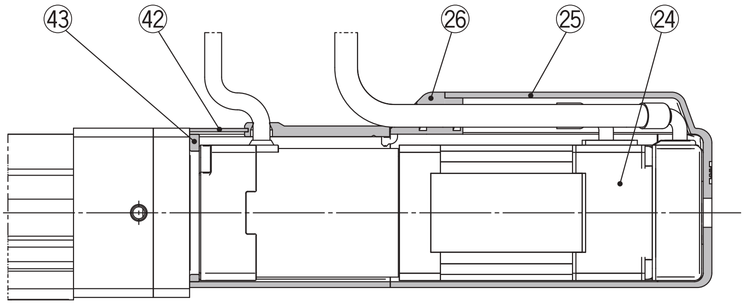
Motor top mounting type With lock/motor cover



In-line motor type

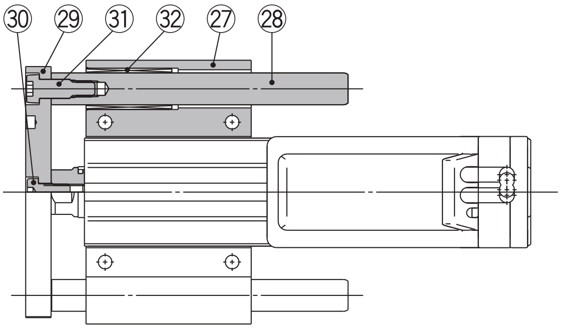


In-line motor type With lock/motor cover

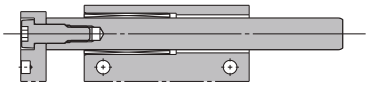


Construction

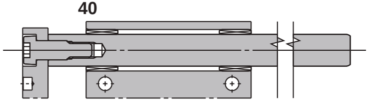
LEYG□M



LEYG$\substack{16\\25\\32\\40}$M: 50st or less

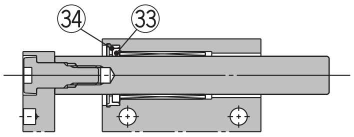


LEYG$\substack{16\\25\\32\\40}$M: Over 50st

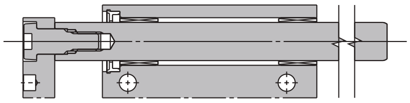


When grease retaining function selected

LEYG$\substack{25\\32\\40}$M□□$\substack{A\\B\\C}$-□□F: 50st or less

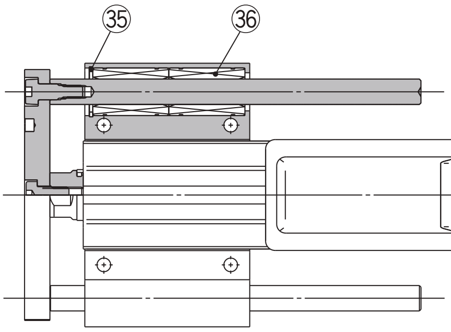


LEYG$\substack{25\\32\\40}$M□□$\substack{A\\B\\C}$-□□F: Over 50st

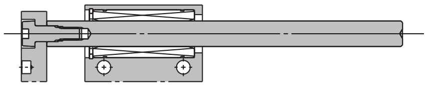


* Felt material is inserted to retain grease at the sliding part of the sliding bearing. This lengthens the life of the sliding part, but does not guarantee it permanently.

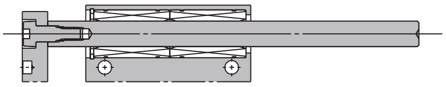
LEYG□L



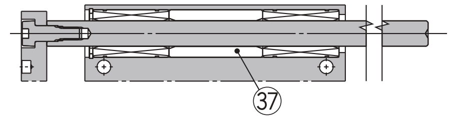
LEYG16L: 30st or less
LEYG$\substack{25\\32\\40}$L: 100st or less



LEYG16L: Over 30st, 100st or less



LEYG$\substack{16\\25\\32\\40}$L: Over 100st



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Synthetic resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor**	—	
25	**Motor cover**	Synthetic resin	Only “With motor cover”
26	**Grommet**	Synthetic resin	Only “With motor cover”
27	**Guide attachment**	Aluminium alloy	Anodised

No.	Description	Material	Note
28	**Guide rod**	Carbon steel	
29	**Plate**	Aluminium alloy	Anodised
30	**Plate mounting cap screw**	Carbon steel	Nickel plating
31	**Guide cap screw**	Carbon steel	Nickel plating
32	**Sliding bearing**	Bearing alloy	
33	**Lube-retainer**	Felt	
34	**Holder**	Resin	
35	**Retaining ring**	Steel for spring	Phosphate coated
36	**Ball bushing**	—	
37	**Spacer**	Aluminium alloy	Chromated
38	**Motor block**	Aluminium alloy	Anodised
39	**Motor adapter**	Aluminium alloy	Anodised/LEY16, 25 only
40	**Hub**	Aluminium alloy	
41	**Spider**	NBR	
42	**Motor cover with lock**	Aluminium alloy	Only “With lock/motor cover”
43	**Cover support**	Aluminium alloy	Only “With lock/motor cover”

Replacement Parts/Belt

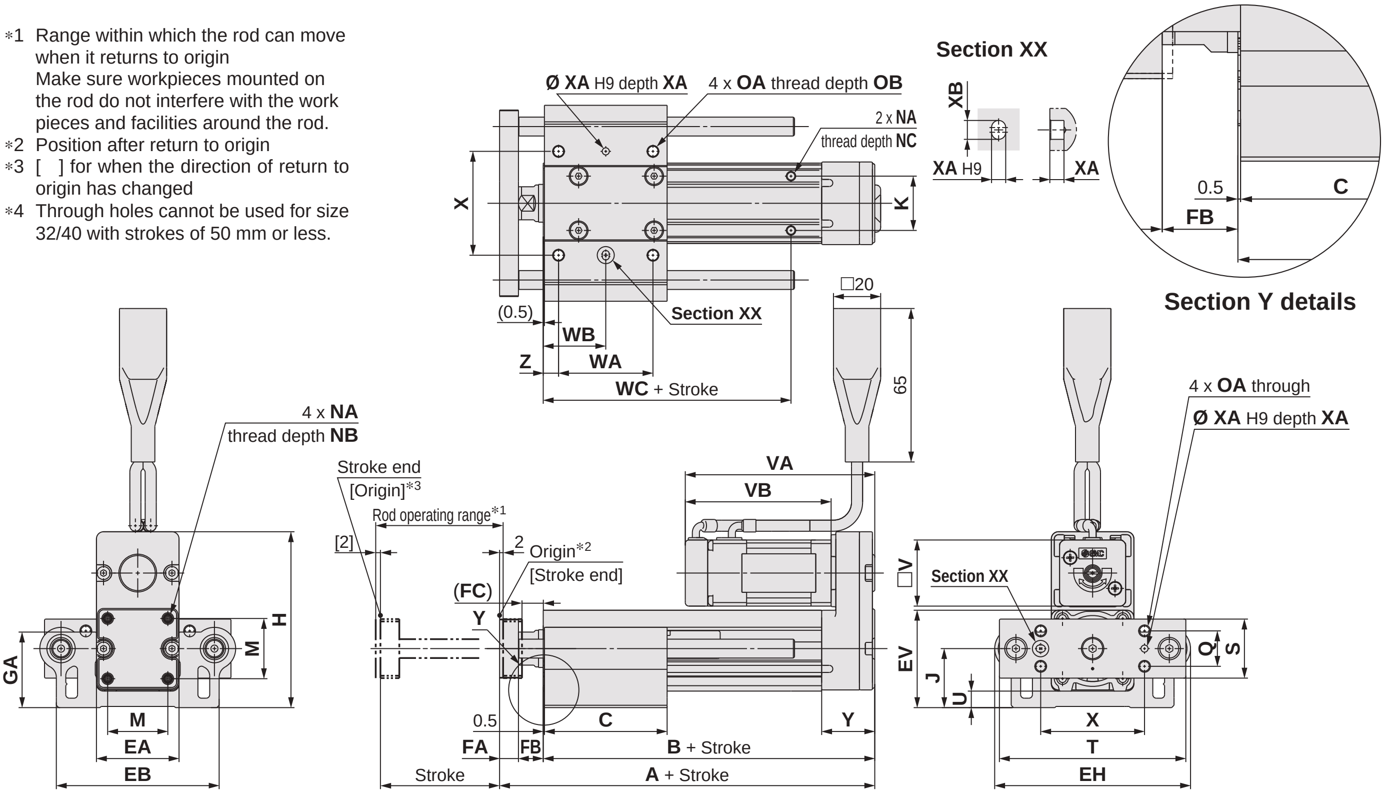
No.	Size	Order no.
20	**16**	LE-D-2-1
	25	LE-D-2-2
	32, 40	LE-D-2-3

Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g)
Guide rod	GR-S-020 (20 g)

* Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions: Motor Top Mounting


Section XX
Ø XA H9 depth XA
4 x OA thread depth OB
2 x NA thread depth NC
XB
XA H9
XA
X
K
(0.5)
WB
Z
WA
WC + Stroke
Section XX
□20
65
0.5
C
FB
Section Y details
4 x NA thread depth NB
Stroke end [Origin]*3
Rod operating range*1
[2]
2
Origin*2 [Stroke end]
(FC)
Y
VA
VB
□V
Section XX
4 x OA through
Ø XA H9 depth XA
GA
M
H
M
EA
EB
0.5
FA
FB
C
B + Stroke
Y
Stroke
A + Stroke
EV
J
U
Q
S
X
T
EH

*1 Range within which the rod can move when it returns to origin
Make sure workpieces mounted on the rod do not interfere with the work pieces and facilities around the rod.

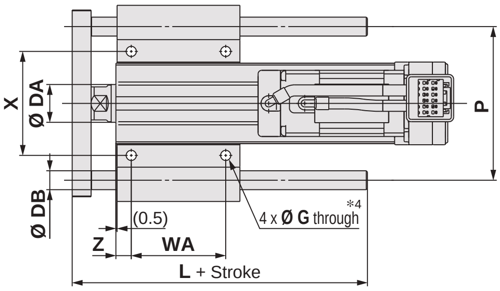
*2 Position after return to origin

*3 [ ] for when the direction of return to origin has changed

*4 Through holes cannot be used for size 32/40 with strokes of 50 mm or less.

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range	L	DB
16	90st or less	75	8
	91st or more, 200st or less	105	
25	114st or less	91	10
	115st or more, 190st or less	115	
	191st or more, 300st or less	133	
32 40	114st or less	97.5	13
	115st or more, 190st or less	116.5	
	191st or more, 300st or less	134	


X
Ø DA
P
Ø DB
(0.5)
*4
4 x Ø G through
Z
WA
L + Stroke

LEYG□M (Sliding bearing) [mm]

Size	Stroke range	L	DB
16	64st or less	51.5	10
	65st or more, 90st or less	74.5	
	91st or more, 200st or less	105	
25	59st or less	67.5	12
	60st or more, 185st or less	100.5	
	186st or more, 300st or less	138	
32 40	54st or less	74	16
	55st or more, 180st or less	107	
	181st or more, 300st or less	144	

LEYG□M, LEYG□L Common

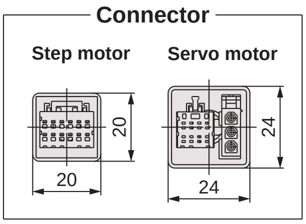
[mm]

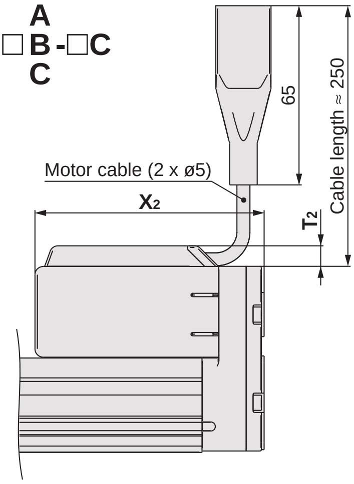
Size	Stroke range	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
16	39st or less	109	90.5	37	16	35	69	83	41.1	8	10.5	8.5	4.3	31.8	74.3	24.8	23	25.5	M4 x 0.7	7	5.5
	40st or more, 100st or less			52																	
	101st or more, 200st or less	129	110.5	82																	
25	39st or less	141.5	116	50	20	46	85	103	52.3	11	14.5	12.5	5.4	40.3	98.8	30.8	29	34	M5 x 0.8	8	6.5
	40st or more, 100st or less			67.5																	
	101st or more, 124st or less	166.5	141																		
	125st or more, 200st or less			84.5																	
	201st or more, 300st or less			102																	
32 40	39st or less	160.5	130	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	125.3	38.3	30	40	M6 x 1.0	10	8.5
	40st or more, 100st or less			68																	
	101st or more, 124st or less	190.5	160																		
	125st or more, 200st or less			85																	
	201st or more, 300st or less			102																	

Size	Stroke range	OA	OB	P	Q	S	T	U	V	Step motor		Servo motor		WA	WB	WC	X	XA	XB	Y	Z
										VA	VB	VA	VB								
16	39st or less	M5 x 0.8	10	65	15	25	79	6.8	28	80.3	61.8	81	62.5	25	19	55	44	3	4	22.5	6.5
	40st or more, 100st or less													40	26.5						
	101st or more, 200st or less													70	41.5	75					
25	39st or less	M6 x 1.0	12	80	18	30	95	6.8	42	85.4	63.4	81.6	59.6	35	26	70	54	4	5	26.5	8.5
	40st or more, 100st or less													50	33.5						
	101st or more, 124st or less															95					
	125st or more, 200st or less													70	43.5						
	201st or more, 300st or less													85	51						
32	39st or less	M6 x 1.0	12	95	28	40	117	7.3	56.4	95.4	68.4	—	—	40	28.5	75	64	5	6	34	8.5
	40st or more, 100st or less													50	33.5						
	101st or more, 124st or less															105					
	125st or more, 200st or less													70	43.5						
	201st or more, 300st or less													85	51						
40	39st or less	M6 x 1.0	12	95	28	40	117	7.3	56.4	117.4	90.4	—	—	40	28.5	75	64	5	6	34	8.5
	40st or more, 100st or less													50	33.5						
	101st or more, 124st or less															105					
	125st or more, 200st or less													70	43.5						
	201st or more, 300st or less													85	51						

Dimensions: Motor Top Mounting

With motor cover: LEYG 16/25/32/40 □□ A/B/C -□C


Connector
Step motor
Servo motor
20
20
24
24

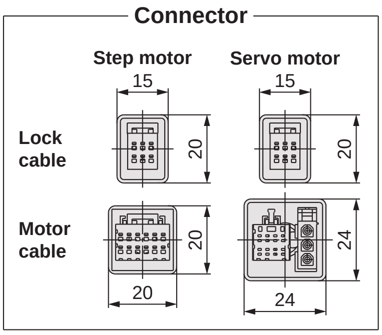

65
Cable length ≈ 250
Motor cable (2 x ø5)
X2
T2

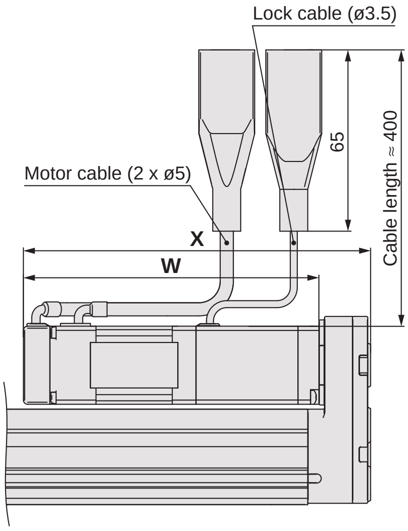
[mm]

Size	T_2	X_2
16	7.5	83
25	7.5	88.5
32	7.5	98.5
40	7.5	120.5

Motor cover material: Synthetic resin

With lock: LEYG 16/25/32/40 □□ A/B/C -□B

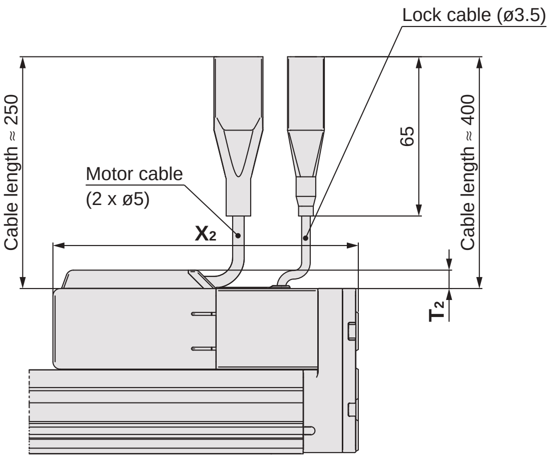

Connector
Step motor
Servo motor
15
15
Lock cable
20
20
Motor cable
20
24
20
24


Lock cable (ø3.5)
Motor cable (2 x ø5)
65
Cable length ≈ 400
X
W

[mm]

Size	Step motor		Servo motor	
	W	X	W	X
16	103.3	121.8	104.0	122.5
25	103.9	125.9	100.1	122.1
32	111.4	138.4	—	—
40	133.4	160.4	—	—

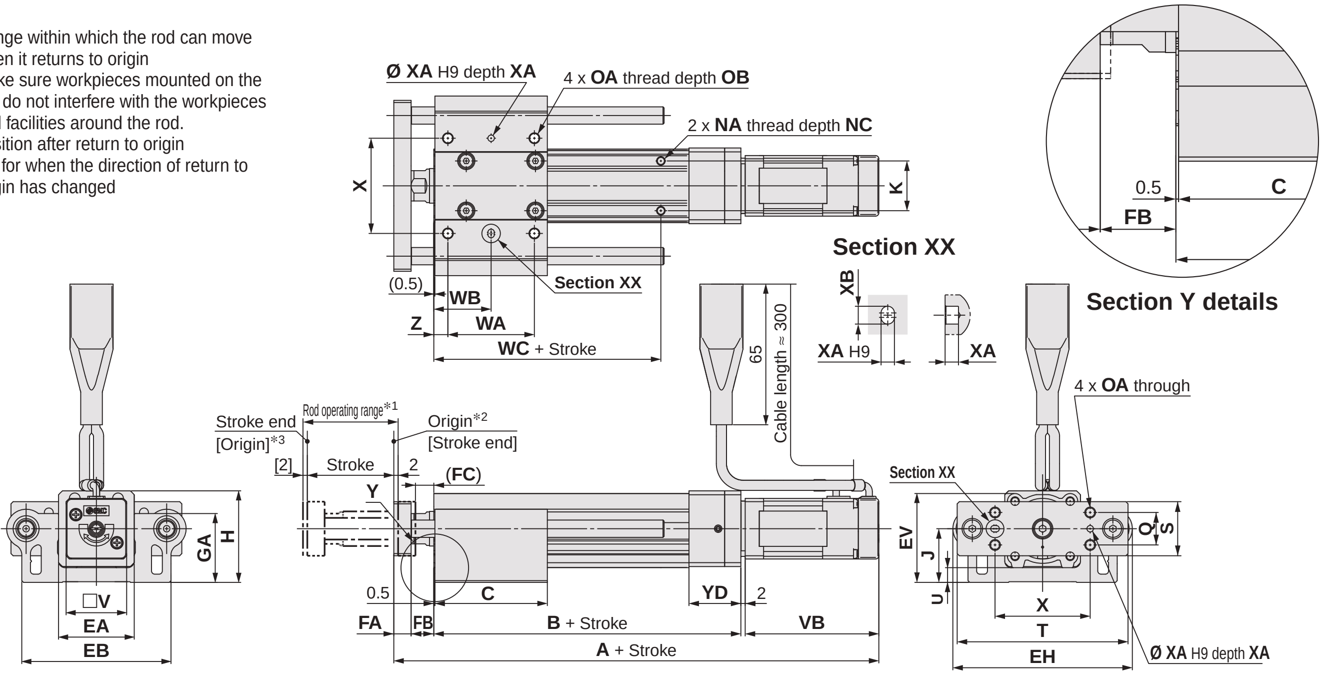
With lock/motor cover: LEYG 16/25/32/40 □□ A/B/C -□W


Lock cable (ø3.5)
Cable length ≈ 250
Motor cable
(2 x ø5)
X2
65
Cable length ≈ 400
T2

[mm]

Size	T_2	X_2
16	7.5	124.5
25	7.5	129
32	7.5	141.5
40	7.5	163.5

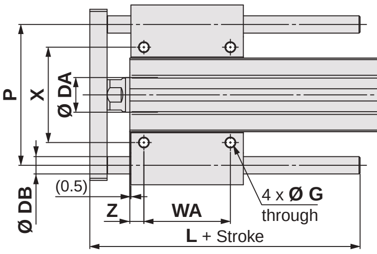
Dimensions: In-line Motor


Ø XA H9 depth XA
4 x OA thread depth OB
2 x NA thread depth NC
X
K
(0.5)
WB
Z
WA
WC + Stroke
Section XX
Section XX
XB
XA H9
XA
0.5
C
FB
Section Y details
65
Cable length ≈ 300
4 x OA through
Stroke end
[Origin]*3
Rod operating range*1
Origin*2
[Stroke end]
[2]
Stroke
2
(FC)
Y
Section XX
EV
J
U
Q
S
X
T
EH
Ø XA H9 depth XA
GA
H
□V
EA
EB
0.5
C
YD
2
FA
FB
B + Stroke
VB
A + Stroke

*1 Range within which the rod can move when it returns to origin
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 Position after return to origin
*3 [ ] for when the direction of return to origin has changed

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range	L	DB
16	90st or less	75	8
	91st or more, 200st or less	105	
25	114st or less	91	10
	115st or more, 190st or less	115	
	191st or more, 300st or less	133	
32 40	114st or less	97.5	13
	115st or more, 190st or less	116.5	
	191st or more, 300st or less	134	


P
X
Ø DA
Ø DB
(0.5)
Z
WA
4 x Ø G
through
L + Stroke

LEYG□M (Sliding bearing) [mm]

Size	Stroke range	L	DB
16	64st or less	51.5	10
	65st or more, 90st or less	74.5	
	91st or more, 200st or less	105	
25	59st or less	67.5	12
	60st or more, 185st or less	100.5	
	186st or more, 300st or less	138	
32 40	54st or less	74	16
	55st or more, 180st or less	107	
	181st or more, 300st or less	144	

LEYG□M, LEYG□L Common

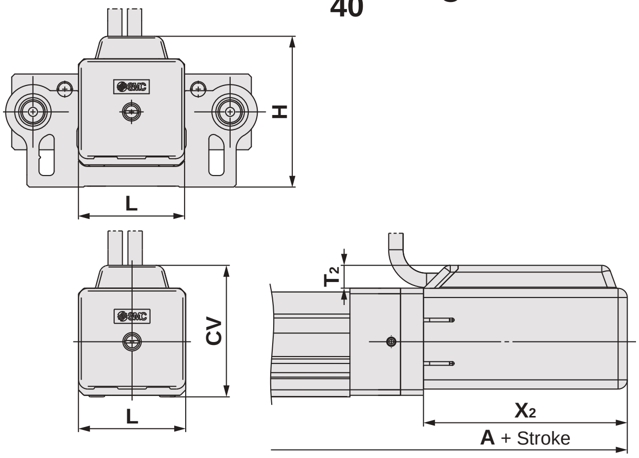
[mm]

Size	Stroke range	A		B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
		Step motor	Servo motor																	
16	39st or less	174.3	175	92	37	16	35	69	83	41.1	8	10.5	8.5	4.3	31.8	42.3	24.8	23	M4 x 0.7	5.5
	40st or more, 100st or less				52															
	101st or more, 200st or less	194.3	195	112	82															
25	39st or less	206.4	202.6	115.5	50	20	45	85	103	52.3	11	14.5	12.5	5.4	40.3	53.3	30.8	29	M5 x 0.8	6.5
	40st or more, 100st or less				67.5															
	101st or more, 124st or less	231.4	227.6	140.5																
	125st or more, 200st or less				84.5															
	201st or more, 300st or less				102															
32	39st or less	228.9	—	128	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0	8.5
	40st or more, 100st or less				68															
	101st or more, 124st or less	258.9	—	158																
	125st or more, 200st or less				85															
	201st or more, 300st or less				102															
40	39st or less	250.9	—	128	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0	8.5
	40st or more, 100st or less				68															
	101st or more, 124st or less	280.9	—	158																
	125st or more, 200st or less				85															
	201st or more, 300st or less				102															

Size	Stroke range	OA	OB	P	Q	S	T	U	V	VB		WA	WB	WC	X	XA	XB	YD	Z
										Step motor	Servo motor								
16	39st or less	M5 x 0.8	10	65	15	25	79	6.8	28	61.8	62.5	25	19	55	44	3	4	24	6.5
	40st or more, 100st or less											40	26.5						
	101st or more, 200st or less											70	41.5	75					
25	39st or less	M6 x 1.0	12	80	18	30	95	6.8	42	63.4	59.6	35	26	70	54	4	5	26	8.5
	40st or more, 100st or less											50	33.5						
	101st or more, 124st or less													95					
	125st or more, 200st or less											70	43.5						
	201st or more, 300st or less											85	51						
32	39st or less	M6 x 1.0	12	95	28	40	117	7.3	56.4	68.4	—	40	28.5	75	64	5	6	32	8.5
	40st or more, 100st or less											50	33.5						
	101st or more, 124st or less													105					
	125st or more, 200st or less											70	43.5						
	201st or more, 300st or less											85	51						
40	39st or less	M6 x 1.0	12	95	28	40	117	7.3	56.4	90.4	—	40	28.5	75	64	5	6	32	8.5
	40st or more, 100st or less											50	33.5						
	101st or more, 124st or less													105					
	125st or more, 200st or less											70	43.5						
	201st or more, 300st or less											85	51						

Dimensions: In-line Motor

With motor cover: $\text{LEYG}\begin{array}{c}16\\25\\32\\40\end{array}\square\text{D}\square\begin{array}{c}\text{A}\\\text{B}\\\text{C}\end{array}\text{-}\square\text{C}$

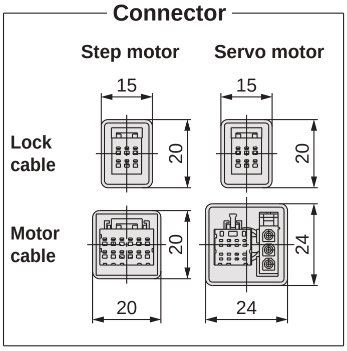

H
L
T2
CV
L
X2
A + Stroke

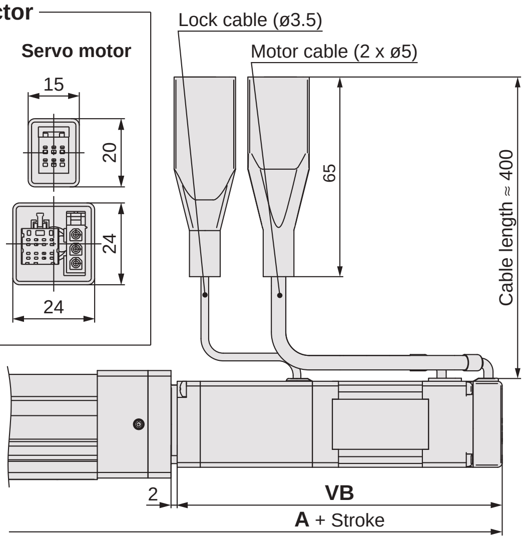
[mm]

Size	Stroke range	A	T_2	X_2	L	H	CV
16	100st or less	177	7.5	66.5	35	49.8	43
	101st or more, 200st or less	197					
25	100st or less	209.5	7.5	68.5	46	61.3	54.5
	101st or more, 300st or less	234.5					
32	100st or less	232	7.5	73.5	60	75.8	68.5
	101st or more, 300st or less	262					
40	100st or less	254	7.5	95.5	60	75.8	68.5
	101st or more, 300st or less	284					

With lock: $\text{LEYG}\begin{array}{c}16\\25\\32\\40\end{array}\square\text{D}\square\begin{array}{c}\text{A}\\\text{B}\\\text{C}\end{array}\text{-}\square\text{B}$

Connector

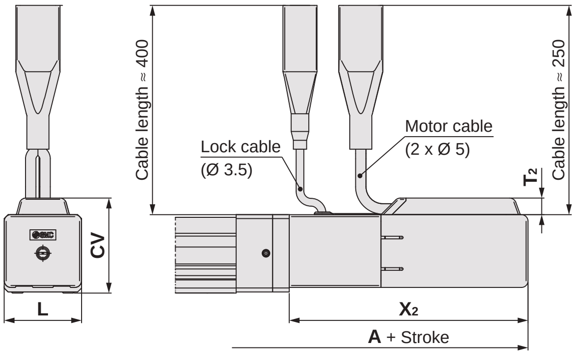

Step motor
Servo motor
15
15
Lock cable
20
20
Motor cable
20
24
20
24


Lock cable (ø3.5)
Motor cable (2 x ø5)
65
Cable length ≈ 400
2
VB
A + Stroke

[mm]

Size	Stroke range	Step motor	Servo motor	Step motor	Servo motor
		A		VB	
16	100st or less	215.8	216.5	103.3	104
	101st or more, 200st or less	235.8	236.5		
25	100st or less	246.9	243.1	103.9	100.1
	101st or more, 300st or less	271.9	268.1		
32	100st or less	271.9	—	111.4	—
	101st or more, 300st or less	301.9	—		
40	100st or less	293.9	—	133.4	—
	101st or more, 300st or less	323.9	—		

With lock/motor cover: $\text{LEYG}\begin{array}{c}16\\25\\32\\40\end{array}\text{D}\square\begin{array}{c}\text{A}\\\text{B}\\\text{C}\end{array}\text{-}\square\text{W}$


Cable length ≈ 400
Lock cable
(Ø 3.5)
Motor cable
(2 x Ø 5)
T2
Cable length ≈ 250
CV
L
X2
A + Stroke

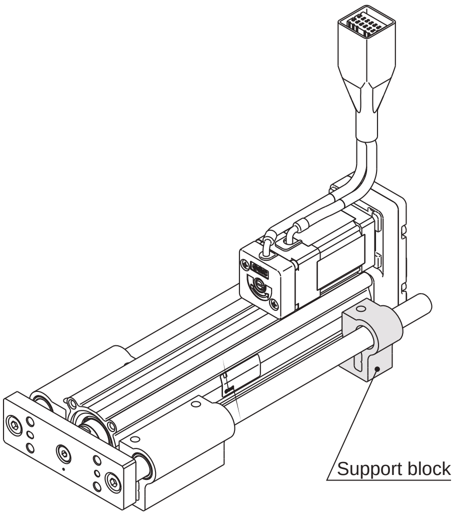
[mm]

Size	Stroke range	A	T_2	X_2	L	H	CV
16	100st or less	218.5	7.5	108	35	49.8	43
	101st or more, 300st or less	238.5					
25	100st or less	250	7.5	109	46	61.3	54.4
	101st or more, 300st or less	275					
32	100st or less	275	7.5	116.5	60	75.8	68.5
	101st or more, 300st or less	305					
40	100st or less	297	7.5	138.5	60	75.8	68.5
	101st or more, 300st or less	327					

Support Block

●Guide for support block application

When the stroke exceeds 100 mm and the mounting orientation is horizontal, the body will be bent. Mounting the support block is recommended. (Please order it separately from the models shown below.)

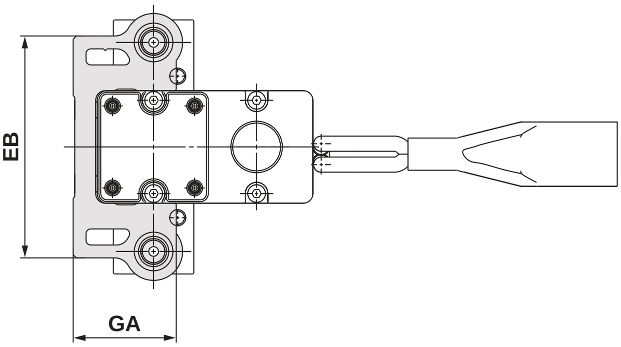


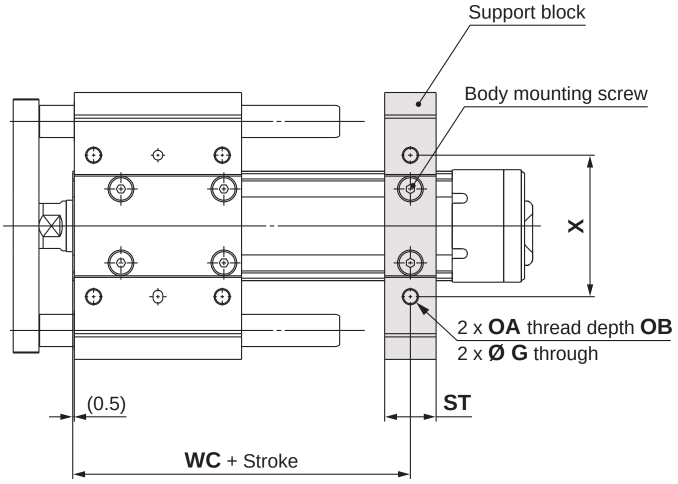
Support Block Model

LEYG–S 016

●**Size**

016	For size 16
025	For size 25
032	For size 32, 40





⚠Caution

Do not install the body using only a support block.
The support block should be used only for support.

[mm]

Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
16	**LEYG-S016**	100st or less	69	4.3	31.8	M5 x 0.8	10	16	55	44
		101st or more, 200st or less							75	
25	**LEYG-S025**	100st or less	85	5.4	40.3	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32 40	**LEYG-S032**	100st or less	101	(5.4)	(50.3)	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

∗ Two body mounting screws are included with the support block.
∗ The through holes of the LEYG-S032 cannot be used for the motor top mounting type. Use taps on the bottom.

Electric Actuator/ Guide Rod Type

LEYG Series LEYG25, 32

LECY□ Series ▶p. 143

∗ Refer to tables ⑤ and ⑫ below.

How to Order

LEY H G 25 M □ S2 B – 100 □ □ – S 2 A1 □

H → ①, 25 → ②, M → ③, □ → ④, S2 → ⑤, B → ⑥, 100 → ⑦, □ → ⑧, □ → ⑨, S → ⑩, 2 → ⑪, A1 → ⑫, □ → ⑬

① Accuracy

—	Basic type
H	High-precision type

② Size

25
32

③ Bearing type

M	Sliding bearing
L	Ball bushing bearing

④ Motor mounting position

—	Top mounting
D	In-line

⑤ Motor type[∗1]

Symbol	Type	Output [W]	Actuator size	Compatible driver[∗3]	UL-compliant
S2	AC servo motor (Incremental encoder)	100	25	LECSA□-S1	—
S3	AC servo motor (Incremental encoder)	200	32	LECSA□-S3	—
S6	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5	—
S7	AC servo motor (Absolute encoder)	200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7	—
T6[∗2]	AC servo motor (Absolute encoder)	100	25	LECSS2-T5	●
T7		200	32	LECSS2-T7	●

∗1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
∗2 For motor type T6, the compatible driver part number suffix is T5.
∗3 For details on the driver, refer to page 246.

⑥ Lead [mm]

Symbol	LEYG25	LEYG32[∗1]
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

∗1 The values shown in ( ) are the leads for the size 32 top mounting type. (Equivalent leads which include the pulley ratio [1.25:1])

⑦ Stroke [mm]

30	30
to	to
300	300

∗ For details, refer to the applicable stroke table below.
∗ There is a limit for mounting the size 32 top mounting type and strokes of 50 mm or less. Refer to the dimensions.

⑧ Motor option

—	Without option
B	With lock

⑨ Guide option

—	Without option
F	With grease retaining function

∗ Only available for size 25 and 32 sliding bearings (Refer to “Construction” on page 138.)

⑩ Cable type[∗1] [∗2]

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

∗1 The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
∗2 Standard cable entry direction is
- Top mounting: (A) Axis side
- In-line: (B) Counter axis side

(Refer to page 264 for details.)

⑪ Cable length[∗1] [m]

—	Without cable
2	2
5	5
A	10

∗1 The length of the motor, encoder, and lock cables are the same.

⑫ Driver type

		Compatible driver	Power supply voltage (V)	UL-compliant
—	Without driver	—	—	—
A1	LECSA1-S□	LECSA1-S□	100 to 120	—
A2	LECSA2-S□	LECSA2-S□	200 to 230	—
B1	LECSB1-S□	LECSB1-S□	100 to 120	—
B2	LECSB2-S□	LECSB2-S□	200 to 230	—
C1	LECSC1-S□	LECSC1-S□	100 to 120	—
C2	LECSC2-S□	LECSC2-S□	200 to 230	—
S1	LECSS1-S□	LECSS1-S□	100 to 120	—
S2	LECSS2-S□	LECSS2-S□	200 to 230	—
T2	LECSS2-T□	LECSS2-T□	200 to 240	●

⑬ I/O cable length [m][∗1]

—	Without cable
H	Without cable (Connector only)
1	1.5
3	3[∗2]
5	5[∗2]

∗1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 262 if I/O cable is required. (Options are shown on page 262.)
∗2 This option is available only for LECSA driver type.

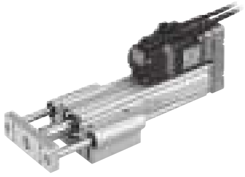
Applicable Stroke Table

●: Standard

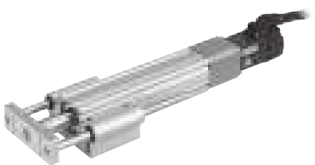
Model \ Stroke [mm]	30	50	100	150	200	250	300	Manufacturable stroke range
LEYG25	●	●	●	●	●	●	●	15 to 300
LEYG32	●	●	●	●	●	●	●	20 to 300

∗ Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 101 to 103.



Motor mounting position: Top mounting



Motor mounting position: In-line

⑫ Driver type*1

	Compatible driver	Power supply voltage [V]	UL-compliant
—	Without driver	—	—
A1	LECSA1-S□	100 to 120	—
A2	LECSA2-S□	200 to 230	—
B1	LECSB1-S□	100 to 120	—
B2	LECSB2-S□	200 to 230	—
C1	LECSC1-S□	100 to 120	—
C2	LECSC2-S□	200 to 230	—
S1	LECSS1-S□	100 to 120	—
S2	LECSS2-S□	200 to 230	—
	LECSS2-T□	200 to 240	●

*1 When a driver type is selected, a cable is included.
Select the cable type and cable length.
Example)
S2S2: Standard cable (2 m) + Driver (LECSS2)
S2 : Standard cable (2 m)
— : Without cable and driver

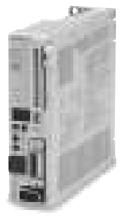
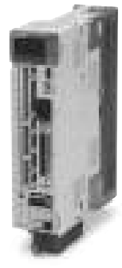
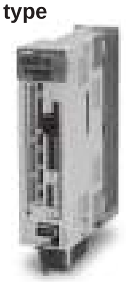
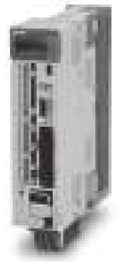
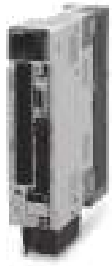
⑬ I/O cable length [m]*1

—	Without cable
H	Without cable (Connector only)
1	1.5

*1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to page 265 if I/O cable is required.
(Options are shown on page 265.)

Use of auto switches for the guide rod type LEYG series
- · Auto switches must be inserted from the front side with the rod (plate) sticking out.
- · Auto switches cannot be fixed with the parts hidden behind the guide attachment (the side of the rod that sticks out).
- · Please consult with SMC when using auto switches on the side of the rod that sticks out, as it is produced as a special order.

Compatible Driver

Driver type	**Pulse input type /Positioning type** 	**Pulse input type** 	**CC-Link direct input type** 	**SSCNET Ⅲ type** 	**SSCNET Ⅲ/H type** 
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**	**LECSS-T**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—	—
Pulse input	○	○	—	—	—
Applicable network	—	—	CC-Link	SSCNET Ⅲ	SSCNET Ⅲ/H
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 22-bit encoder
Communication function	USB communication	USB communication, RS422 communication		USB communication	
Power supply voltage [V]	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz)				200 to 240 VAC (50/60 Hz)
Reference page	246				

Specifications

Model			LEYG25□S$^{2}_{6}$/T6 (Top mounting) LEYG25□DS$^{2}_{6}$/T6 (In-line)			LEYG32□S$^{3}_{7}$/T7 (Top mounting)			LEYG32□DS$^{3}_{7}$/T7 (In-line)		
Actuator specifications	Work load [kg]	Horizontal*1	18	50	50	30	60	60	30	60	60
		Vertical	7	15	29	7	17	35	10	22	44
	Force [N]*2 (Set value: 15 to 30 %)*11		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s]		900	450	225	1200	600	300	1000	500	250
	Pushing speed [mm/s]*3		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02								
		High-precision type	±0.01								
	Lost motion [mm]*4	Basic type	0.1 or less								
		High-precision type	0.05 or less								
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²]*5		50/20			50/20					
	Actuation type		Ball screw + Belt [1:1]/Ball screw			Ball screw + Belt [1:1.25]			Ball screw		
	Guide type		Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)								
	Operating temperature range [°C]		5 to 40			5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)					
	Regeneration option		May be required depending on speed and work load (Refer to page 113.)								
Electric specifications	Motor output/Size		100 W/□40			200 W/□60					
	Motor type		AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)					
	Encoder		Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev) Motor type T6,T7: Absolute 22-bit encoder (Resolution: 4194304 p/rev)								
	Power consumption [W]*6	Horizontal	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W]*7	Horizontal	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W]*8		445			724			724		
Lock unit specifications	Type*9		Non-magnetising lock			Non-magnetising lock					
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption at 20 °C [W]*10		6.3			7.9			7.9		
	Rated voltage [V]		24 VDC $^{0}_{-10}$ %								

*1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

*2 The force setting range (set values for the driver) for the force control with the torque control mode. Set it with reference to “Force Conversion Graph” on page 114. When the control equivalent to the pushing operation of the controller LECP series is performed, select the LECSS driver and combine it with the Simple Motion (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.

*3 The allowable collision speed for collision with the workpiece with the torque control mode

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

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

*6 The power consumption (including the driver) is for when the actuator is operating.

*7 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during operation.

*8 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

*9 Only when motor option “With lock” is selected

*10 For an actuator with lock, add the power consumption for the lock.

*11 For motor type T6 and T7, the set value is from 12 to 24 %.

Weight

Weight: Motor Top Mounting Type

[kg]

Series		LEYG25MS$^{2}_{6}$/T6							LEYG32MS$^{3}_{7}$/T7						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.80	1.99	2.31	2.73	3.07	3.41	3.67	3.24	3.50	4.05	4.80	5.35	5.83	6.28
	Absolute encoder [S$^{6}_{7}$]	1.86	2.05	2.37	2.79	3.13	3.47	3.73	3.18	3.44	3.99	4.74	5.29	5.77	6.22
	Absolute encoder [T$^{6}_{7}$]	1.8	2.0	2.4	2.8	3.1	3.5	3.7	3.2	3.4	4.0	4.7	5.3	5.7	6.2

Series		LEYG25LS$^{2}_{6}$/T6							LEYG32LS$^{3}_{7}$/T7						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.81	2.02	2.26	2.69	2.95	3.27	3.51	3.24	3.51	3.9	4.64	5.06	5.56	5.96
	Absolute encoder [S$^{6}_{7}$]	1.87	2.08	2.32	2.75	3.01	3.33	3.57	3.18	3.45	3.84	4.58	5.00	5.50	5.90
	Absolute encoder [T$^{6}_{7}$]	1.9	2.1	2.3	2.7	3.0	3.3	3.6	3.2	3.4	3.8	4.6	5.0	5.5	5.9

Weight: In-line Motor Type

[kg]

Series		LEYG25MDS$^{2}_{6}$/T6							LEYG32MDS$^{3}_{7}$/T7						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.83	2.02	2.34	2.76	3.10	3.44	3.70	3.26	3.52	4.07	4.82	5.37	5.85	6.30
	Absolute encoder [S$^{6}_{7}$]	1.89	2.08	2.40	2.82	3.16	3.50	3.76	3.20	3.46	4.01	4.76	5.31	5.79	6.24
	Absolute encoder [T$^{6}_{7}$]	1.9	2.1	2.4	2.8	3.1	3.5	3.7	3.2	3.4	4.0	4.7	5.3	5.8	6.2

Series		LEYG25LDS$^{2}_{6}$/T6							LEYG32LDS$^{3}_{7}$/T7						
Stroke [mm]		30	50	100	150	200	250	300	30	50	100	150	200	250	300
Motor type	Incremental encoder	1.84	2.05	2.29	2.72	2.98	3.30	3.54	3.26	3.53	3.92	4.66	5.08	5.58	5.98
	Absolute encoder [S$^{6}_{7}$]	1.90	2.11	2.35	2.78	3.04	3.36	3.60	3.20	3.47	3.86	4.60	5.02	5.52	5.92
	Absolute encoder [T$^{6}_{7}$]	1.9	2.1	2.3	2.8	3.0	3.3	3.6	3.2	3.4	3.8	4.6	5.0	5.5	5.9

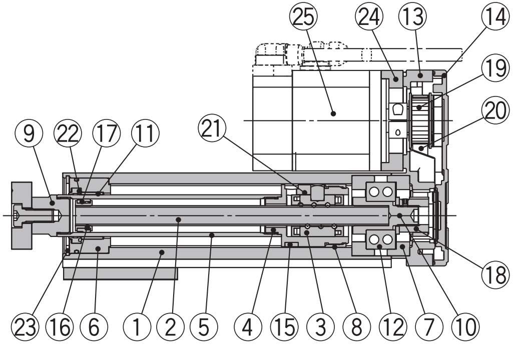
Additional Weight

[kg]

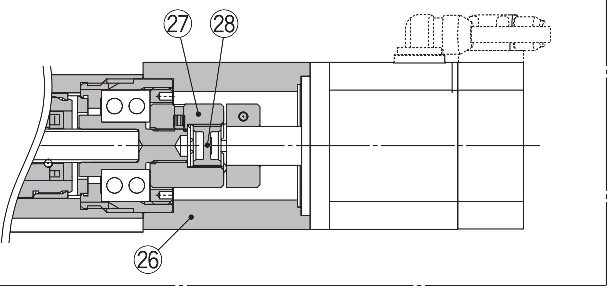
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder [S$^{6}_{7}$]	0.30	0.66
	Absolute encoder [T$^{6}_{7}$]	0.3	0.7

Construction

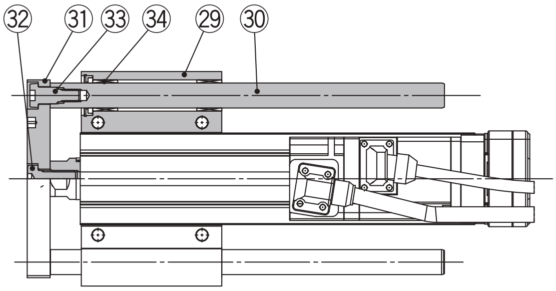
Motor mounting position: Top mounting type



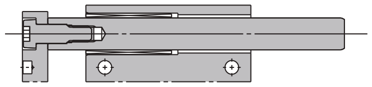
Motor mounting position: In-line type



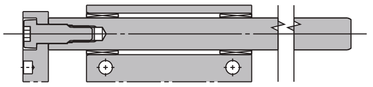
LEYG□M



LEYG25/32M: 50st or less

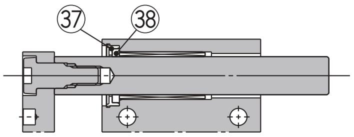


LEYG25/32M: Over 50st

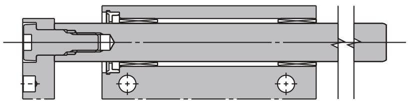


When grease retaining function selected

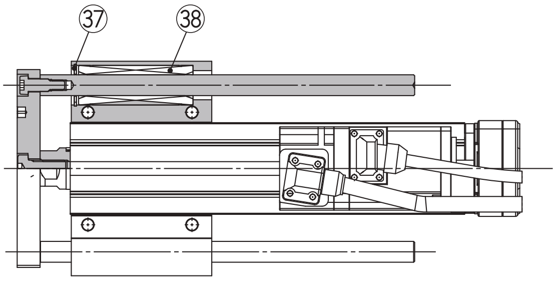
LEYG25/32M: 50st or less



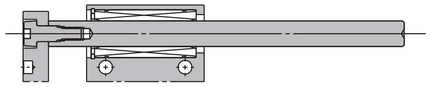
LEYG25/32M: Over 50st



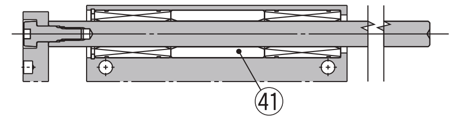
LEYG□L



LEYG25/32L: 100st or less



LEYG25/32L: Over 100st



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Synthetic resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor adapter**	Aluminium alloy	Coating
25	**Motor**	—	
26	**Motor block**	Aluminium alloy	Coating
27	**Hub**	Aluminium alloy	
28	**Spider**	Urethane	
29	**Guide attachment**	Aluminium alloy	Anodised
30	**Guide rod**	Carbon steel	
31	**Plate**	Aluminium alloy	Anodised
32	**Plate mounting cap screw**	Carbon steel	Nickel plating
33	**Guide cap screw**	Carbon steel	Nickel plating
34	**Sliding bearing**	Bearing alloy	
35	**Felt**	Felt	
36	**Holder**	Synthetic resin	
37	**Retaining ring**	Steel for spring	Phosphate coated
38	**Ball bushing**	—	
39	**Spacer**	Aluminium alloy	Chromated

Support Block

Size	Order no.
25	LEYG-S025
32	LEYG-S032

* Two body mounting screws are included with the support block.

Replacement Parts/Belt

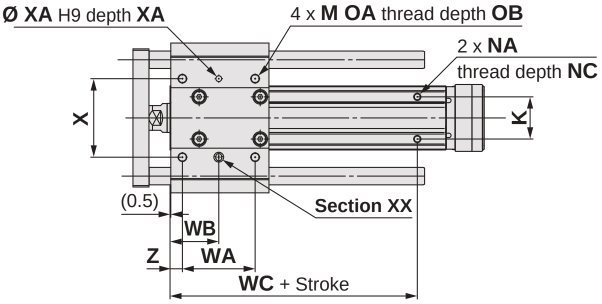
Size	Order no.
25	LE-D-2-2
32	LE-D-2-4

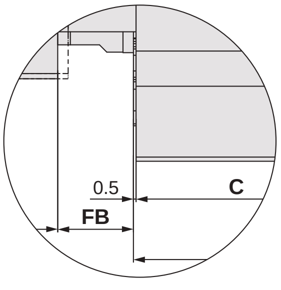
Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g)
Guide rod	GR-S-020 (20 g)

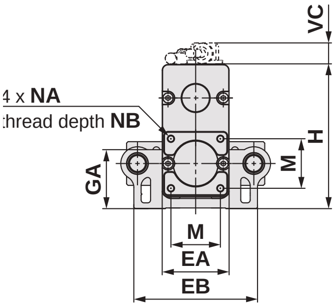
* Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

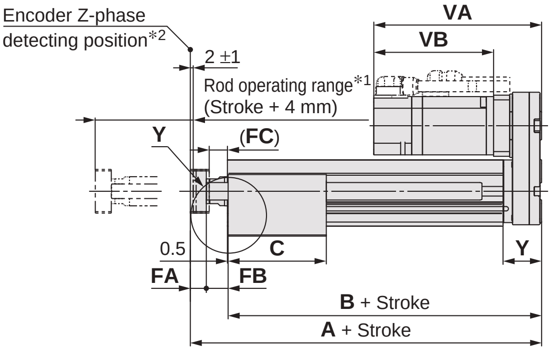
Dimensions: Motor Top Mounting

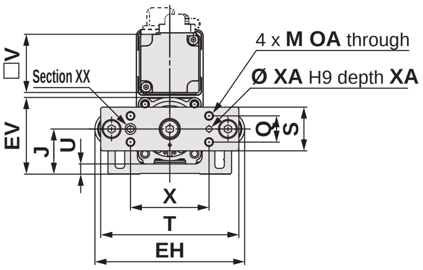

Ø XA H9 depth XA
4 x M OA thread depth OB
2 x NA
thread depth NC
X
K
(0.5)
WB
Z
WA
Section XX
WC + Stroke



Section Y details


VC
4 x NA
thread depth NB
GA
M
H
M
EA
EB

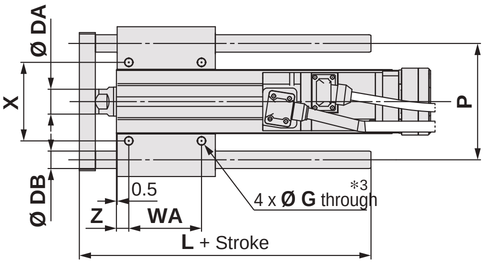

Encoder Z-phase
detecting position*2
2 ±1
Rod operating range*1
(Stroke + 4 mm)
VA
VB
Y
(FC)
0.5
FA
FB
C
Y
B + Stroke
A + Stroke

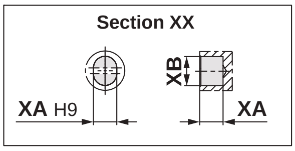

□V
Section XX
4 x M OA through
Ø XA H9 depth XA
EV
J
U
Q
S
X
T
EH

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 The Z-phase first detecting position from the stroke end of the motor side

*3 Through holes cannot be used for size 32 with strokes of 50 mm or less.


Ø DA
X
Ø DB
P
0.5
Z
WA
4 x Ø G through*3
L + Stroke


Section XX
XA H9
XB
XA

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 59	67.5	12
	60 to 185	100.5	
	186 to 300	138	
32	Up to 59	74	16
	60 to 185	107	
	186 to 300	144	

LEYG□M, LEYG□L Common

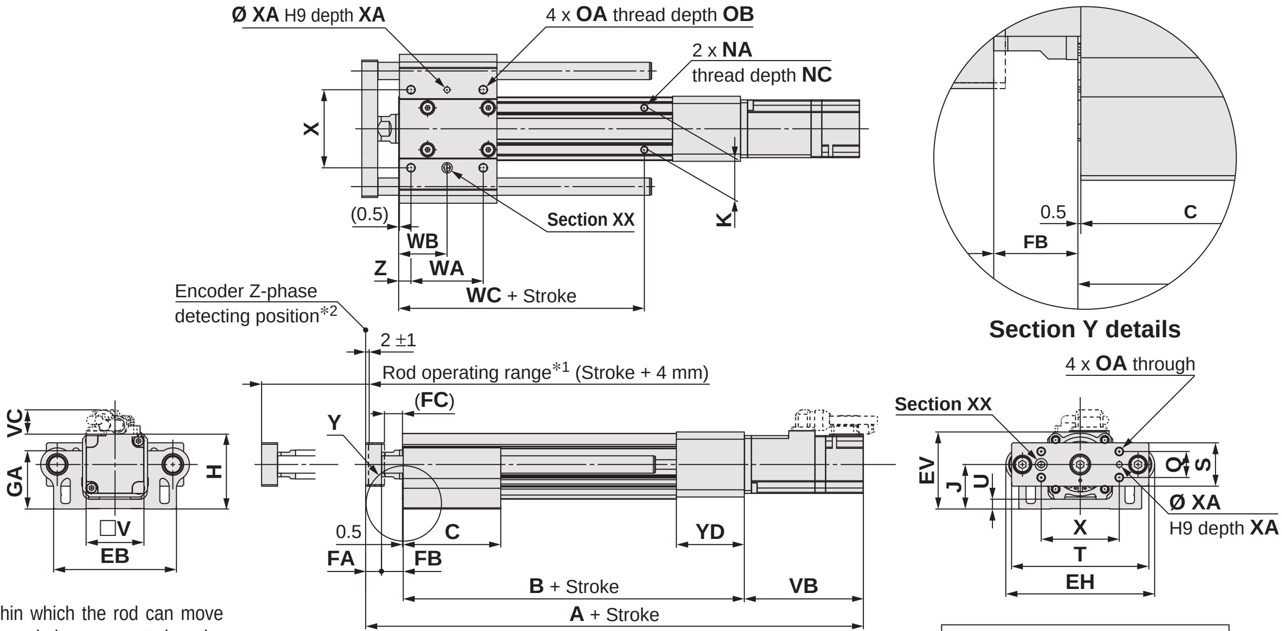
[mm]

Size	Stroke range [mm]	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
25	Up to 39	141.5	116	50	20	46	85	103	52.3	11	14.5	12.5	5.4	40.3	98.8	30.8	29	34	M5 x 0.8	8	6.5
	40 to 100			67.5																	
	101 to 124	166.5	141																		
	125 to 200			84.5																	
	201 to 300			102																	
32	Up to 39	160.5	130	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	125.3	38.3	30	40	M6 x 1.0	10	8.5
	40 to 100			68																	
	101 to 124	190.5	160																		
	125 to 200			85																	
	201 to 300			102																	

Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	Y	Z
25	Up to 39	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	26.5	8.5
	40 to 100									50	33.5						
	101 to 124											95					
	125 to 200									70	43.5						
	201 to 300									85	51						
32	Up to 39	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	34	8.5
	40 to 100									50	33.5						
	101 to 124											105					
	125 to 200									70	43.5						
	201 to 300									85	51						

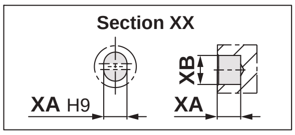
Size	Incremental encoder						Absolute encoder [S6/S7]						Absolute encoder [T6/T7]					
	Without lock			With lock			Without lock			With lock			Without lock			With lock		
	VA	VB	VC	VA	VB	VC	VA	VB	VC	VA	VB	VC	VA	VB	VC	VA	VB	VC
25	120	87	14.1	156.9	123.9	15.8	115.4	82.4	14.1	156.5	123.5	15.8	115.4	82.4	14.1	156	123	15.8
32	128.2	88.2	17.1	156.8	116.8	17.1	116.6	76.6	17.1	156.1	116.1	17.1	116.6	76.6	17.1	153.4	113.4	17.1

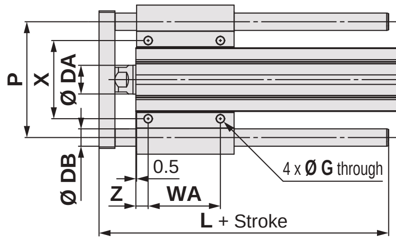
Dimensions: In-line Motor


Ø XA H9 depth XA
4 x OA thread depth OB
2 x NA
thread depth NC
X
K
Section XX
(0.5)
WB
Z
WA
WC + Stroke
Encoder Z-phase detecting position*2
2 ±1
Rod operating range*1 (Stroke + 4 mm)
(FC)
Y
VC
GA
H
□V
EB
0.5
FA
FB
C
YD
B + Stroke
VB
A + Stroke
0.5
C
FB
Section Y details
4 x OA through
Section XX
EV
J
U
Q
S
Ø XA
H9 depth XA
X
T
EH

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 The Z-phase first detecting position from the stroke end of the motor side


Section XX
XA H9
XB
XA


P
X
Ø DA
Ø DB
0.5
Z
WA
4 x Ø G through
L + Stroke

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 59	67.5	12
	60 to 185	100.5	
	186 to 300	138	
32	Up to 59	74	16
	60 to 185	107	
	186 to 300	144	

LEYG□M, LEYG□L Common [mm]

Size	Stroke range [mm]	B	C	DA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
25	Up to 39	136.5	50	20	85	103	52.3	11	14.5	12.5	5.4	40.3	53.3	30.8	29	M5 x 0.8	6.5
	40 to 100		67.5														
	101 to 124	161.5															
	125 to 200		84.5														
	201 to 300		102														
32	Up to 39	156	55	25	101	123	63.8	12	18.5	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0	8.5
	40 to 100		68														
	101 to 124	186															
	125 to 200		85														
	201 to 300		102														

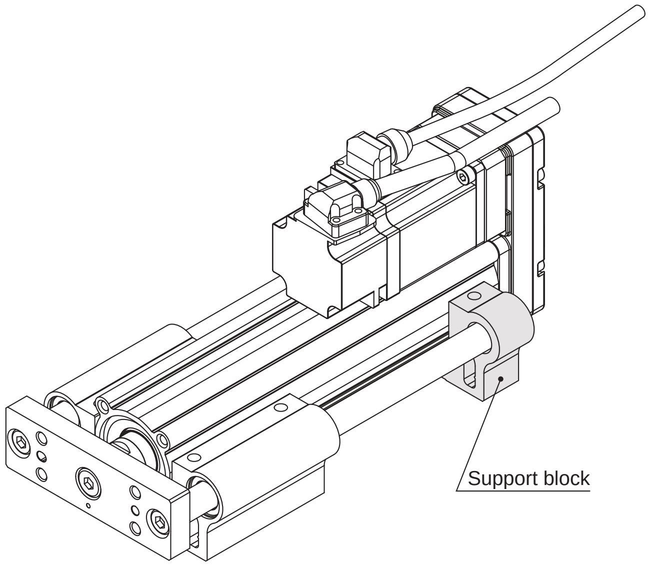
Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	YD	Z
25	Up to 39	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	47	8.5
	40 to 100									50	33.5						
	101 to 124											95					
	125 to 200									70	43.5						
	201 to 300									85	51						
32	Up to 39	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	60	8.5
	40 to 100									50	33.5						
	101 to 124											105					
	125 to 200									70	43.5						
	201 to 300									85	51						

Size	Stroke range [mm]	Incremental encoder						Absolute encoder [S6/S7]						Absolute encoder [T6/T7]					
		Without lock			With lock			Without lock			With lock			Without lock			With lock		
		A	VB	VC	A	VB	VC	A	VB	VC	A	VB	VC	A	VB	VC	A	VB	VC
25	15 to 100	249	87	14.6	285.9	123.9	16.3	244.4	82.4	14.6	285.5	123.5	16.3	244.4	82.4	14.6	285	123	16.3
	105 to 300	274			310.9			269.4			310.5			269.4			310		
32	15 to 100	274.7	88.2	17.1	303.3	116.8	17.1	263.1	76.6	17.1	302.6	116.1	17.1	263.1	76.6	17.1	299.9	113.4	17.1
	105 to 300	304.7			333.3			293.1			332.6			293.1			329.9		

Support Block

●Guide for support block application

When the stroke exceeds 100 mm and the mounting orientation is horizontal, the body will be bent. Mounting the support block is recommended. (Please order it separately from the models shown below.)

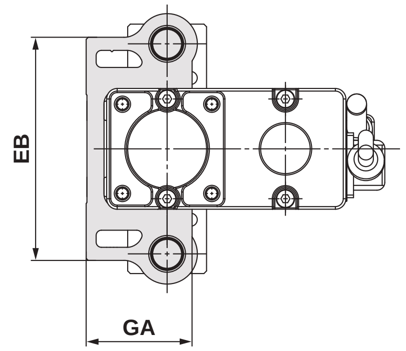

Support block

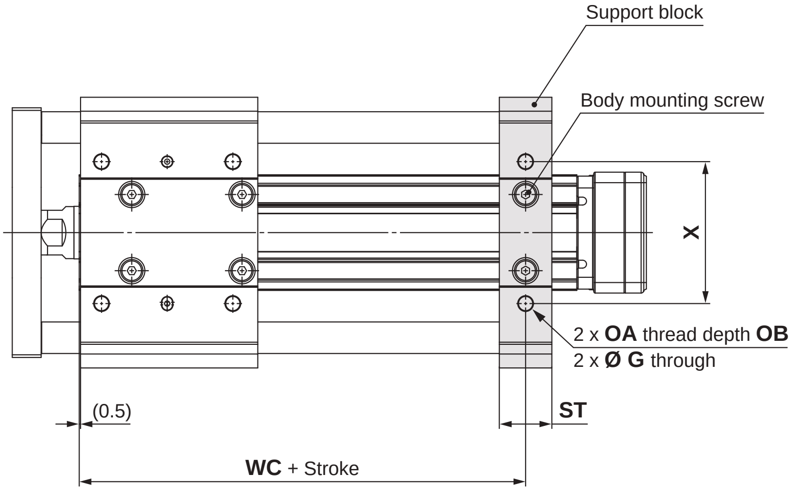
Support Block Model

LEYG−S 025

Size

025	For size 25
032	For size 32




Support block
Body mounting screw
X
2 x **OA** thread depth **OB**
2 x **Ø G** through
(0.5)
ST
WC + Stroke

⚠Caution

Do not install the body using only a support block.
The support block should be used only for support.

[mm]

Size	Model	Stroke range	EB	G	GA	OA	OB	ST	WC	X
25	**LEYG-S025**	100st or less	85	5.4	40.3	M6 x 1.0	12	20	70	54
		101st or more, 300st or less							95	
32	**LEYG-S032**	100st or less	101	(5.4)	(50.3)	M6 x 1.0	12	22	75	64
		101st or more, 300st or less							105	

∗ Two body mounting screws are included with the support block.
∗ The through holes of the LEYG-S032 cannot be used for the motor top mounting type. Use taps on the bottom.

Electric Actuator/ Guide Rod Type

LEYG Series LEYG25, 32

CE RoHS

LECS□ Series ▸ p. 135

How to Order

LEY **H** G **25** **M** □ **V6** **B** – **200** □ □ – **S** **3** **M2** □

H ①, 25 ②, M ③, □ ④, V6 ⑤, B ⑥, 200 ⑦, □ ⑧, □ ⑨, S ⑩, 3 ⑪, M2 ⑫, □ ⑬

① Accuracy

—	Basic type
H	High-precision type

② Size

25
32

③ Bearing type

M	Sliding bearing
L	Ball bushing bearing

④ Motor mounting position

—	Top mounting
D	In-line

⑤ Motor type

Symbol	Type	Output [W]	Actuator size	Compatible driver
V6*1	AC servo motor (Absolute encoder)	100	25	LECYM2-V5 LECYU2-V5
V7		200	32	LECYM2-V7 LECYU2-V7

*1 For motor type V6, the compatible driver part number suffix is V5.

⑥ Lead [mm]

Symbol	LEYG25	LEYG32*1
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

*1 The values shown in ( ) are the leads for the top mounting type. (Equivalent leads which include the pulley ratio [1.25:1])

⑦ Stroke [mm]

30	30
to	to
300	300

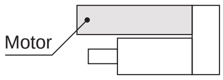
* For details, refer to the applicable stroke table below.

* There is a limit for mounting the size 32 top mounting type and strokes of 50 mm or less. Refer to the dimensions.

⑧ Motor option

—	Without option
B	With lock

* When "With lock" is selected for the top mounting type, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



⑨ Guide option

—	Without option
F	With grease retaining function

* Only available for the sliding bearing

⑩ Cable type*1

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

*1 The motor and encoder cables are included. The motor cable for lock option is included when the motor with lock option is selected.

⑪ Cable length [m]*1

—	Without cable
3	3
5	5
A	10
C	20

*1 The length of the motor and encoder cables are the same. (For with lock)

Applicable Stroke Table

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	Manufacturable stroke range
LEYG25	●	●	●	●	●	●	●	15 to 300
LEYG32	●	●	●	●	●	●	●	20 to 300

* Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 101 to 103.

Motor mounting position: Top mounting

Motor mounting position: In-line

⓬ Driver type

	Compatible driver	Power supply voltage [V]
—	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

∗ When a driver type is selected, a cable is included.
Select the cable type and cable length.

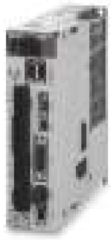
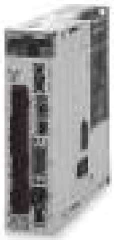
⓭ I/O cable length [m]∗1

—	Without cable
H	Without cable (Connector only)
1	1.5

∗1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to page 278 if I/O cable is required.
(Options are shown on page 278.)

Use of auto switches for the guide rod type LEYG series
- Auto switches must be inserted from the front side with the rod (plate) sticking out.
- Auto switches cannot be fixed with the parts hidden behind the guide attachment (the side of the rod that sticks out).
- Please consult with SMC when using auto switches on the side of the rod that sticks out, as it is produced as a special order.

Compatible Driver

Driver type	MECHATROLINK-Ⅱ type 	MECHATROLINK-Ⅲ type 
Series	**LECYM**	**LECYU**
Applicable network	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	271	

Specifications

Model			LEYG25$^{M}_{L}$V6 (Top mounting) LEYG25$^{M}_{L}$DV6 (In-line)			LEYG32$^{M}_{L}$V7 (Top mounting)			LEYG32$^{M}_{L}$DV7 (In-line)		
Actuator specifications	Work load [kg]	Horizontal∗1	18	50	50	30	60	60	30	60	60
		Vertical	7	15	29	7	17	35	10	22	44
	Force [N]∗2 (Set value: 45 to 90 %)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s]		900	450	225	1200	600	300	1000	500	250
	Pushing speed [mm/s]∗3		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02			±0.02					
		High-precision type	±0.01			±0.01					
	Lost motion [mm]	Basic type	0.1 or less			0.1 or less					
		High-precision type	0.05 or less			0.05 or less					
	Lead [mm] (including pulley ratio)		12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²]∗4		50/20			50/20					
	Actuation type		Ball screw + Belt [1:1]/Ball screw			Ball screw + Belt [1:1.25]			Ball screw		
	Guide type		Sliding bearing (LEYG☐M), Ball bushing bearing (LEYG☐L)								
	Operating temperature range [°C]		5 to 40			5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)					
	Conditions for∗5 "Regenerative resistor" [kg]	Horizontal	Not required			Not required					
		Vertical	5 or more			2 or more					
Electric specifications	Motor output/Size		100 W/☐40			200 W/☐60					
	Motor type		AC servo motor (200 VAC)			AC servo motor (200 VAC)					
	Encoder		Absolute 20-bit encoder (Resolution: 1048576 p/rev)								
	Power consumption [W]∗6	Horizontal	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W]∗7	Horizontal	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W]∗8		445			724			724		
Lock unit specifications	Type∗9		Non-magnetising lock			Non-magnetising lock					
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption at 20 °C [W]∗10		5.5			6			6		
	Rated voltage [V]		24 VDC $^{+10}_{0}$ %								

∗1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

∗2 The force setting range (set values for the driver) for the force control with the torque control mode
Set it with reference to "Force Conversion Graph" on page 119.

∗3 The allowable collision speed for collision with the workpiece with the torque control mode

∗4 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

∗5 The work load conditions which require "Regenerative resistor" when operating at the maximum speed (Duty ratio: 100 %)
Order the regenerative resistor separately. For details, refer to "Conditions for Regenerative Resistor (Guide)" on page 118.

∗6 The power consumption (including the driver) is for when the actuator is operating.

∗7 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during operation.

∗8 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

∗9 Only when motor option "With lock" is selected

∗10 For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight: Motor Top Mounting Type

[kg]

Series	LEYG25MV6							LEYG32MV7						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	1.9	2.2	2.6	3.0	3.3	3.6	3.1	3.4	4.0	4.7	5.3	5.7	6.2

Series	LEYG25LV6							LEYG32LV7						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	1.9	2.2	2.6	2.9	3.2	3.4	3.1	3.4	3.8	4.5	5.0	5.5	5.9

Product Weight: In-line Motor Type

[kg]

Series	LEYG25MDV6							LEYG32MDV7						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	1.9	2.2	2.6	3.0	3.3	3.6	3.2	3.4	4.0	4.7	5.3	5.8	6.2

Series	LEYG25LDV6							LEYG32LDV7						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Weight [kg]	1.7	2.0	2.2	2.6	2.9	3.2	3.4	3.2	3.4	3.8	4.6	5.0	5.5	5.9

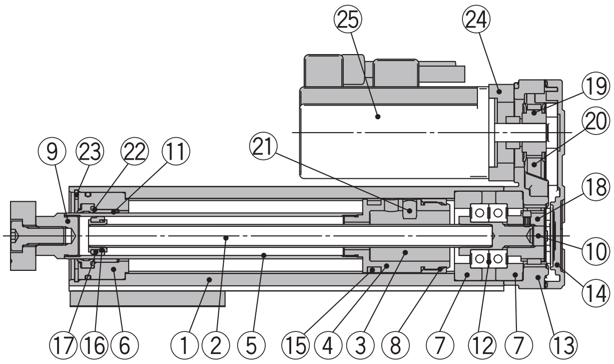
Additional Weight

[kg]

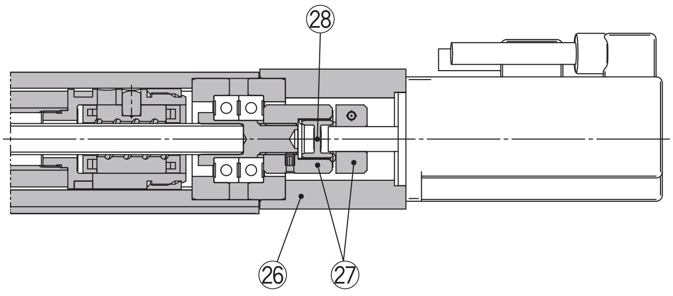
Size	**25**	**32**
Lock	0.3	0.6

Construction

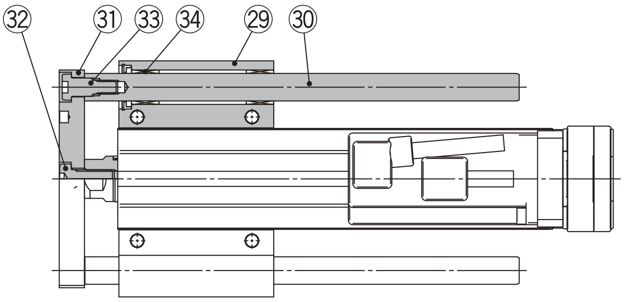
Motor mounting position: Top mounting type



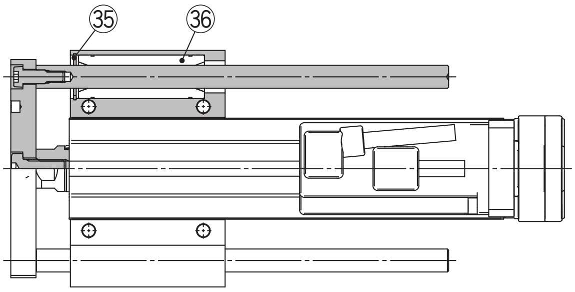
Motor mounting position: In-line type



LEYG□M



LEYG□L



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	—	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Seal**	NBR	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor adapter**	Aluminium alloy	Coating
25	**Motor**	—	
26	**Motor block**	Aluminium alloy	Coating
27	**Hub**	Aluminium alloy	
28	**Spider**	Urethane	
29	**Guide attachment**	Aluminium alloy	Anodised
30	**Guide rod**	Carbon steel	
31	**Plate**	Aluminium alloy	Anodised
32	**Plate mounting cap screw**	Carbon steel	Nickel plating
33	**Guide cap screw**	Carbon steel	Nickel plating
34	**Sliding bearing**	Bearing alloy	
35	**Retaining ring**	Steel for spring	Phosphate coated
36	**Ball bushing**	—	

Support Block

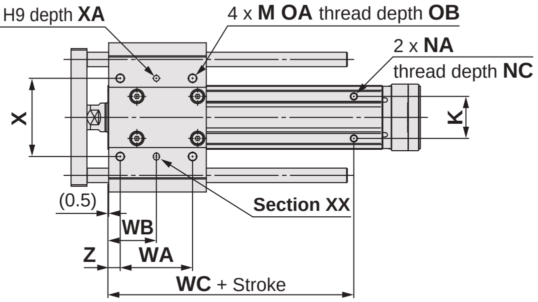
Size	Order no.
25	LEYG-S025
32	LEYG-S032

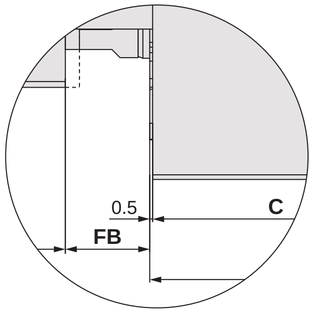
∗ Two body mounting screws are included with the support block.

Replacement Parts/Belt

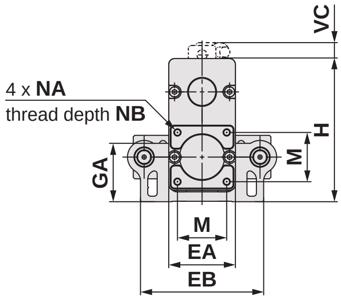
Size	Order no.
25	LE-D-2-2
32	LE-D-2-4

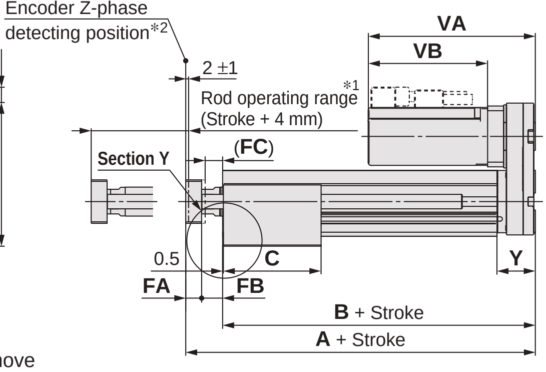
Dimensions: Motor Top Mounting

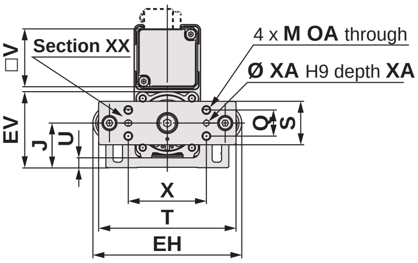

Ø XA H9 depth XA
4 x M OA thread depth OB
2 x NA
thread depth NC
X
K
(0.5)
Section XX
WB
Z
WA
WC + Stroke

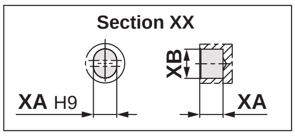


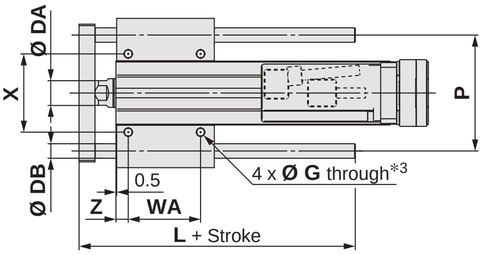
Section Y details


VC
4 x NA
thread depth NB
H
GA
M
M
EA
EB


Encoder Z-phase
detecting position*2
VA
VB
2 ±1
*1
Rod operating range
(Stroke + 4 mm)
Section Y
(FC)
0.5
C
Y
FA
FB
B + Stroke
A + Stroke


□V
Section XX
4 x M OA through
Ø XA H9 depth XA
EV
J
U
Q
S
X
T
EH


Section XX
XB
XA H9
XA


Ø DA
X
P
Ø DB
0.5
4 x Ø G through*3
Z
WA
L + Stroke

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 The Z-phase first detecting position from the stroke end of the motor side

*3 Through holes cannot be used for size 32 with strokes of 50 mm or less.

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	15 to 110	91	10
	115 to 190	115	
	195 to 300	133	
32	20 to 110	97.5	13
	115 to 190	116.5	
	195 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range (mm)	L	DB
25	15 to 55	67.5	12
	60 to 185	100.5	
	190 to 300	138	
32	20 to 55	74	16
	60 to 185	107	
	190 to 300	144	

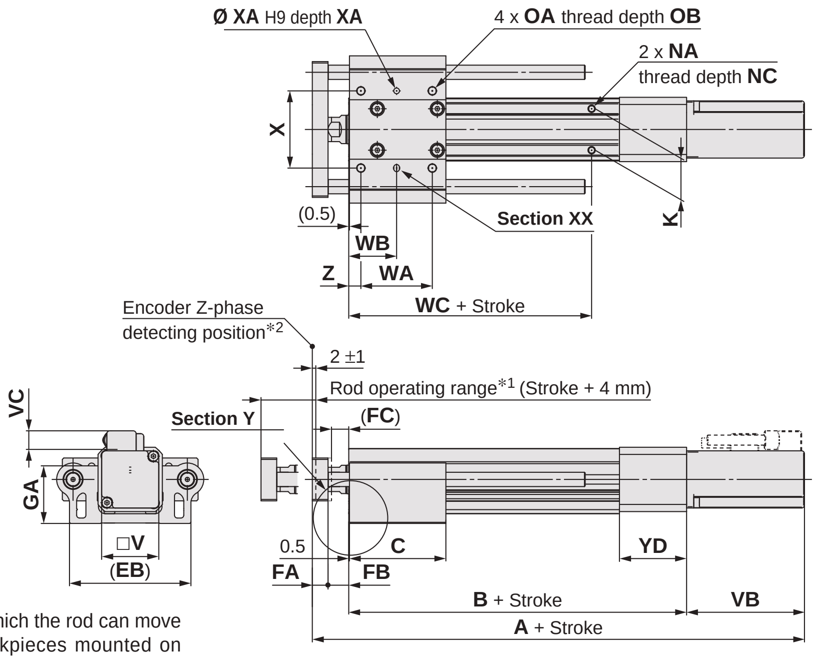
LEYG□M, LEYG□L Common [mm]

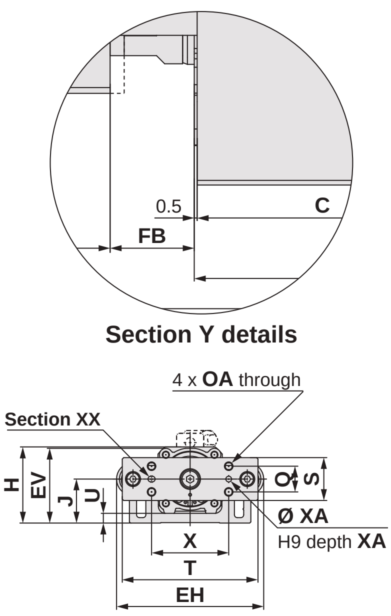
Size	Stroke range [mm]	A	B	C	DA	EA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	M	NA	NB	NC
25	15 to 35	141.5	116	50	20	46	85	103	52.3	11	14.5	12.5	5.4	40.3	98.8	30.8	29	34	M5 x 0.8	8	6.5
	40 to 100			67.5																	
	105 to 120	166.5	141																		
	125 to 200			84.5																	
	205 to 300			102																	
32	20 to 35	160.5	130	55	25	60	101	123	63.8	12	18.5	16.5	5.4	50.3	125.3	38.3	30	40	M6 x 1.0	10	8.5
	40 to 100			68																	
	105 to 120	190.5	160																		
	125 to 200			85																	
	205 to 300			102																	

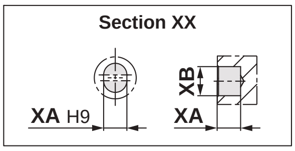
Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	Y	Z
25	15 to 35	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	26.5	8.5
	40 to 100									50	33.5						
	105 to 120											95					
	125 to 200									70	43.5						
	205 to 300									85	51						
32	20 to 35	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	34	8.5
	40 to 100									50	33.5						
	105 to 120											105					
	125 to 200									70	43.5						
	205 to 300									85	51						

Size	Without lock			With lock		
	VA	VB	VC	VA	VB	VC
25	115.5	82.5	11	160.5	127.5	11
32	120	80	14	160	120	14

Dimensions: In-line Motor

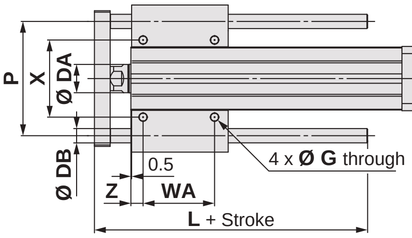

Ø XA H9 depth XA
4 x OA thread depth OB
2 x NA
thread depth NC
X
(0.5)
WB
Section XX
K
Z
WA
WC + Stroke
Encoder Z-phase
detecting position*2
2 ±1
Rod operating range*1 (Stroke + 4 mm)
VC
Section Y
(FC)
GA
□V
(EB)
0.5
FA
C
FB
YD
B + Stroke
VB
A + Stroke


0.5
C
FB
Section Y details
4 x OA through
Section XX
H
EV
J
U
Q
S
Ø XA
H9 depth XA
X
T
EH


Section XX
XB
XA H9
XA

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 The Z-phase first detecting position from the stroke end of the motor side


P
X
Ø DA
Ø DB
0.5
Z
WA
4 x Ø G through
L + Stroke

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	15 to 110	91	10
	115 to 190	115	
	195 to 300	133	
32	20 to 110	97.5	13
	115 to 190	116.5	
	195 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	15 to 55	67.5	12
	60 to 185	100.5	
	190 to 300	138	
32	20 to 55	74	16
	60 to 185	107	
	190 to 300	144	

LEYG□M, LEYG□L Common

[mm]

Size	Stroke range [mm]	B	C	DA	EB	EH	EV	FA	FB	FC	G	GA	H	J	K	NA	NC
25	15 to 35	136.5	50	20	85	103	52.3	11	14.5	12.5	5.4	40.3	53.3	30.8	29	M5 x 0.8	6.5
	40 to 100		67.5														
	105 to 120	161.5															
	125 to 200		84.5														
	205 to 300		102														
32	20 to 35	156	55	25	101	123	63.8	12	18.5	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0	8.5
	40 to 100		68														
	105 to 120	186															
	125 to 200		85														
	205 to 300		102														

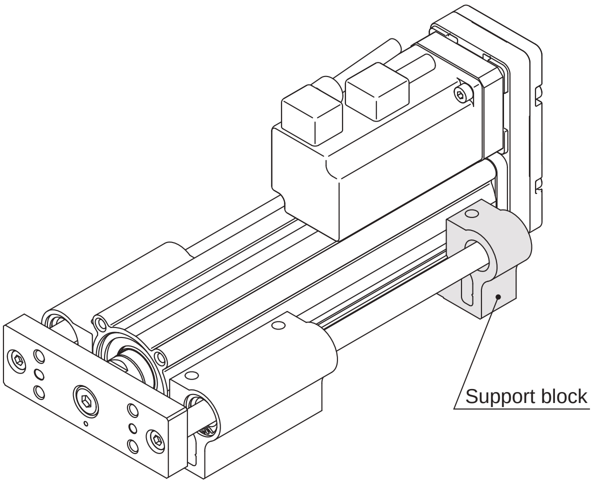
Size	Stroke range [mm]	OA	OB	P	Q	S	T	U	V	WA	WB	WC	X	XA	XB	YD	Z
25	15 to 35	M6 x 1.0	12	80	18	30	95	6.8	40	35	26	70	54	4	5	47	8.5
	40 to 100									50	33.5						
	105 to 120											95					
	125 to 200									70	43.5						
	205 to 300									85	51						
32	20 to 35	M6 x 1.0	12	95	28	40	117	7.3	60	40	28.5	75	64	5	6	60	8.5
	40 to 100									50	33.5						
	105 to 120											105					
	125 to 200									70	43.5						
	205 to 300									85	51						

Size	Stroke range [mm]	Without lock			With lock		
		A	VB	VC	A	VB	VC
25	15 to 100	255.5	82.5	11.5	300.5	127.5	11.5
	105 to 300	280.5			325.5		
32	15 to 100	266.5	80	14	306.5	120	14
	105 to 300	296.5			336.5		

Support Block

●Guide for support block application

When the stroke exceeds 100 mm and the mounting orientation is horizontal, the body will be bent. Mounting the support block is recommended. (Please order it separately from the models shown below.)

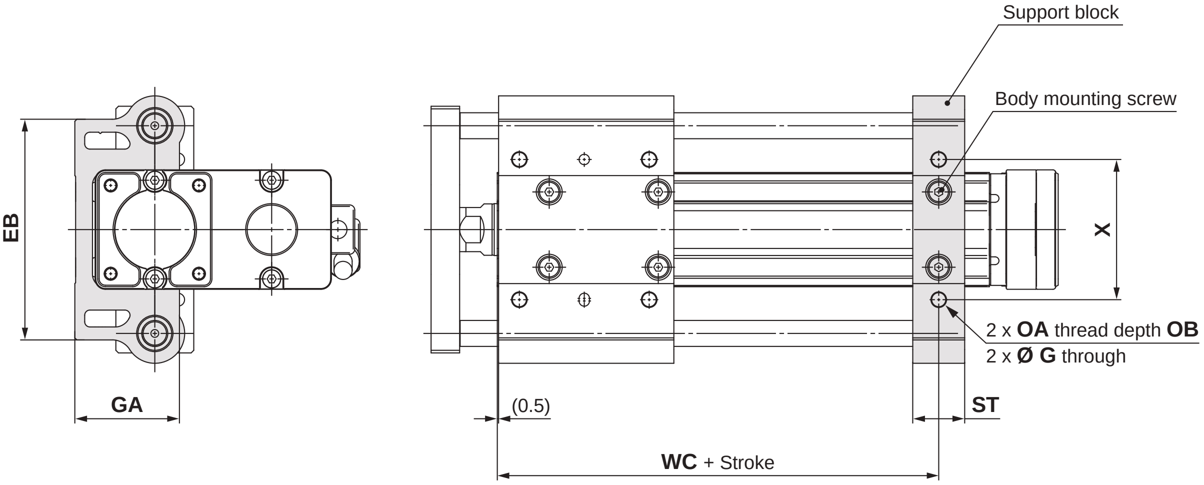

Support block

Support Block Model

LEYG−S 025

●**Size**

025	For size 25
032	For size 32


EB
GA
Support block
Body mounting screw
X
2 x **OA** thread depth **OB**
2 x **Ø G** through
(0.5)
ST
WC + Stroke

⚠Caution

Do not install the body using only a support block.
The support block should be used only for support.

[mm]

Size	Model	Stroke range	**EB**	**G**	**GA**	**OA**	**OB**	**ST**	**WC**	**X**
25	**LEYG-S025**	15 to 100	85	5.4	40.3	M6 x 1.0	12	20	70	54
		105 to 300							95	
32	**LEYG-S032**	20 to 100	101	5.4	50.3	M6 x 1.0	12	22	75	64
		105 to 300							105	

∗ Two body mounting screws are included with the support block.
∗ The through holes of the LEYG-S032 cannot be used for the motor top mounting type. Use taps on the bottom.

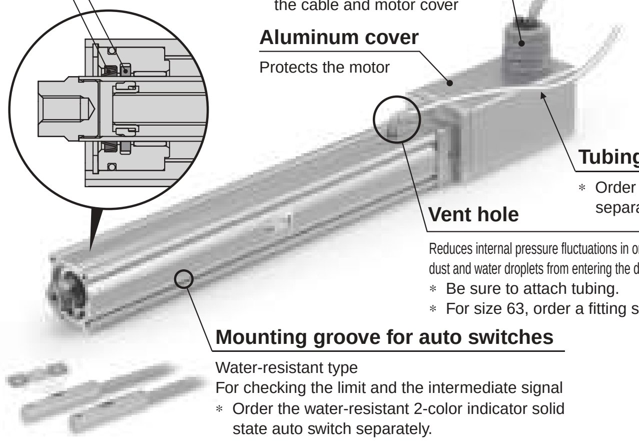
Environment

Dust-tight/Water-jet-proof (IP65 Equivalent)

●Enclosure: IP65 equivalent[*1]

●Max. stroke: 500 mm[*2]

*2 For size 32



Scraper

Lube-retainer (Excludes the LEY63)
Retains grease oil film

Seal connector
Prevents dust and water droplets from entering between the cable and motor cover

Aluminum cover
Protects the motor

Tubing
* Order the tubing separately.

Vent hole
Reduces internal pressure fluctuations in order to prevent dust and water droplets from entering the device
* Be sure to attach tubing.
* For size 63, order a fitting separately.

Mounting groove for auto switches
Water-resistant type
For checking the limit and the intermediate signal
* Order the water-resistant 2-color indicator solid state auto switch separately.

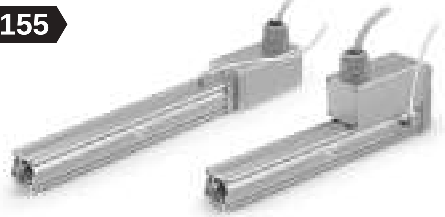
*1 IP65 enclosure: The protection structure against solid foreign objects is dust-tight type and the protection structure against water is water-jet-proof type.
Dust-tight means that no dust can enter the inside of the equipment.
Water-jet-proof means that the product is not adversely affected by direct water jets from any direction. That is, even when direct water jets are applied to the product for 3 minutes by means of the pre-determined method, there is no water entry that hinders the correct operation inside the equipment. Be sure to take appropriate protective measures if the product is to be used in an environment where it will be constantly exposed to water or fluids other than water splash. In particular, the product cannot be used in environments where oils, such as cutting oil or cutting fluid, are present.

LEY-X5 (Made to Order)

Size 25, 32

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

p. 155



AC Servo Motor (100/200 W) Type

p. 163, 169

LEY63☐☐☐-☐P

Size 63

AC Servo Motor (400 W) Type p. 79

* Option

Secondary Battery Compatible

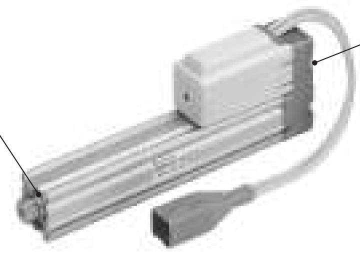
●Copper (Cu) and zinc (Zn) free[*1]

*1 Excludes motors, cables, controllers/drivers

Rod Type/25A-LEY

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

p. 177



Bolts
Material:
Stainless steel

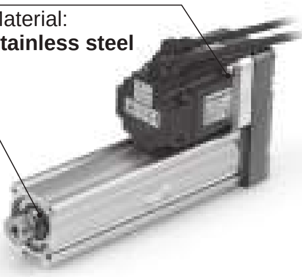
Bushing
Material:
Steel bearing alloy

Motor type \ Size	16	25	32	40
Step motor (Servo/24 VDC)	●	●	●	●
Servo motor (24 VDC)	●	●		

●Compatible with dew points as low as −70 °C

Uses grease compatible with low dew points

AC Servo Motor Type p. 181, 183



Bolts
Material:
Stainless steel

Bushing
Material:
Steel bearing alloy

Motor type \ Size	25	32
AC servo motor	●	●

* Copper and zinc materials are used for the motors, cables, controllers/drivers.

Step Motor (Servo/24 VDC) **Servo Motor** (24 VDC)

Electric Actuator/Rod Type

LEY-X5 **Series** Dust-tight/Water-jet-proof (IP65 Equivalent)

Model Selection

LEY-X5 Series▶p. 155

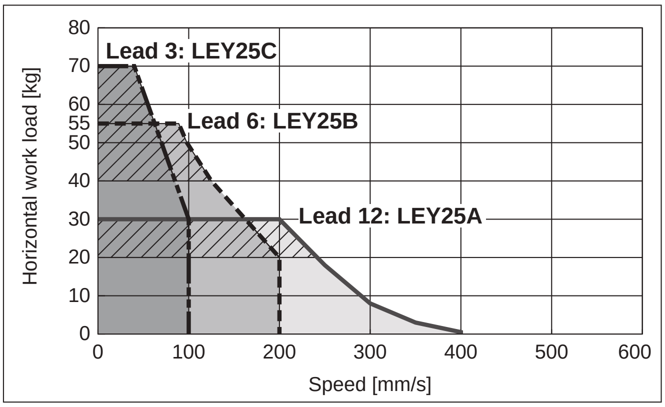
Refer to page 108 for the LECPA, JXC□$^{2}_{3}$ and page 109 for the LECA6.

Speed–Work Load Graph (Guide) for Step Motor (Servo/24 VDC) LECP1, JXC□1

Horizontal

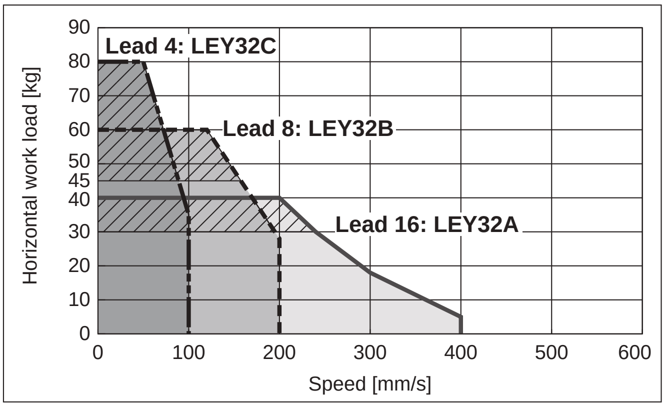
LEY25□-X5

▨ for acceleration/deceleration: 2000 mm/s²



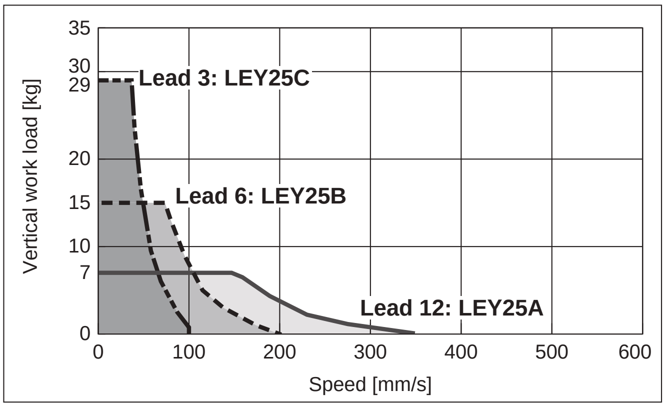
LEY32□-X5

▨ for acceleration/deceleration: 2000 mm/s²

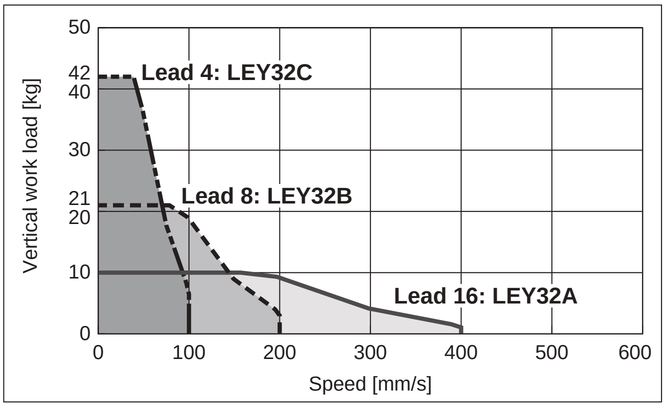


Vertical

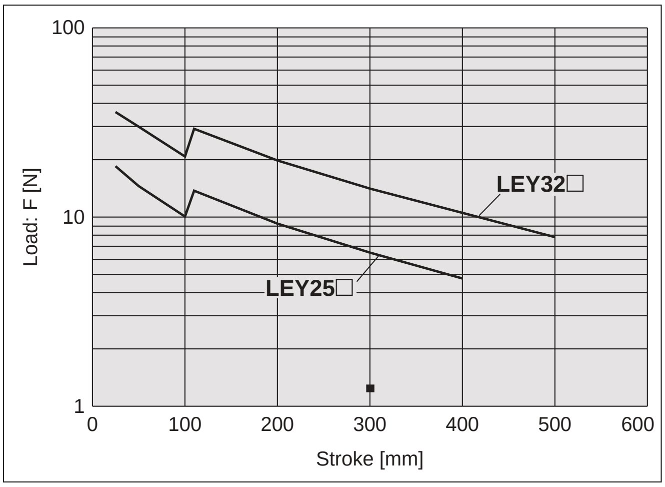
LEY25□-X5



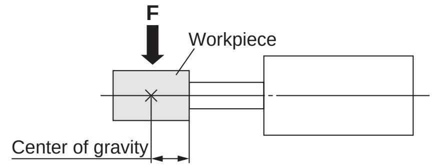
LEY32□-X5



Graph of Allowable Lateral Load on the Rod End (Guide)

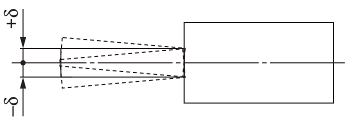


[Stroke] = [Product stroke] + [Distance from the rod end to the centre of gravity of the workpiece]



Rod Displacement: δ [mm]

Size \ Stroke	30	50	100	150	200	250	300	350	400	450	500
25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—
32	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8

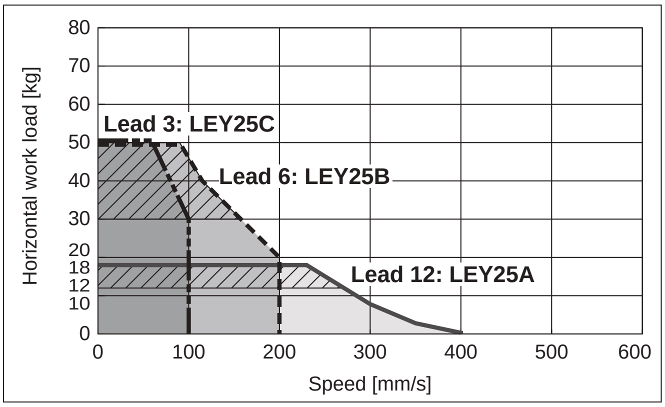


Refer to page 107 for the LECP1, JXC□1 and page 109 for the LECA6.

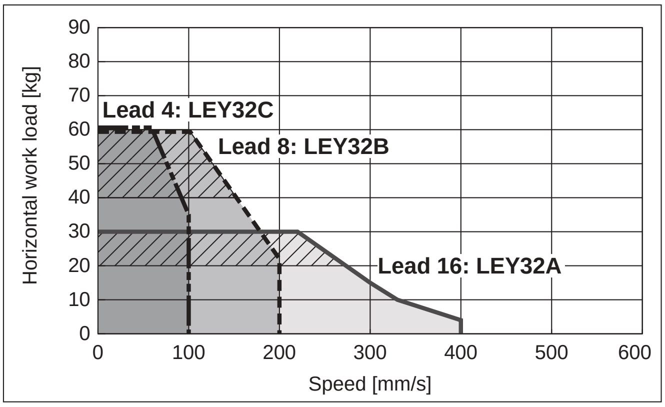
Speed–Work Load Graph (Guide)
For Step Motor (Servo/24 VDC) LECPA, JXC□$^2_3$

Horizontal

LEY25□-X5 ▨ for acceleration/deceleration: 2000 mm/s^2

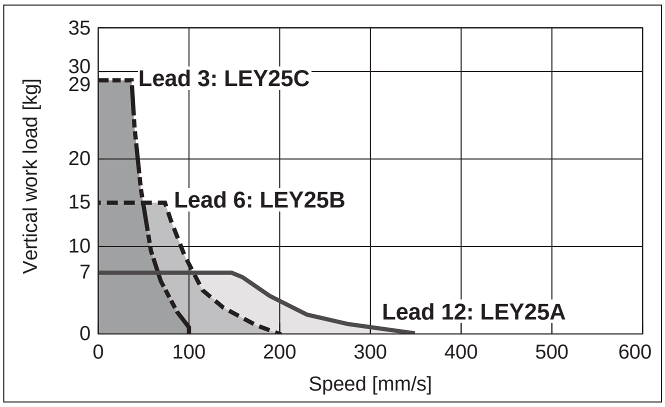


LEY32□-X5 ▨ for acceleration/deceleration: 2000 mm/s^2

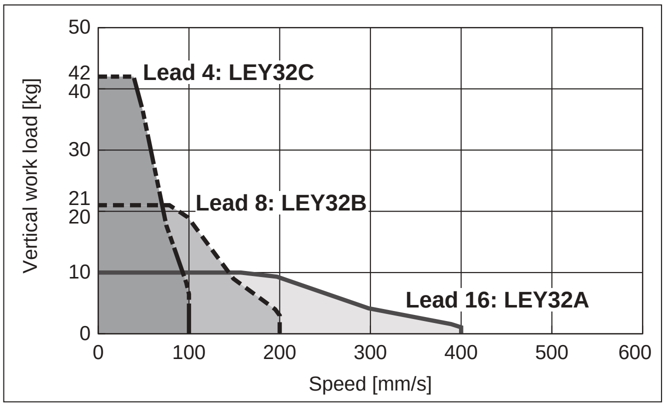


Vertical

LEY25□-X5



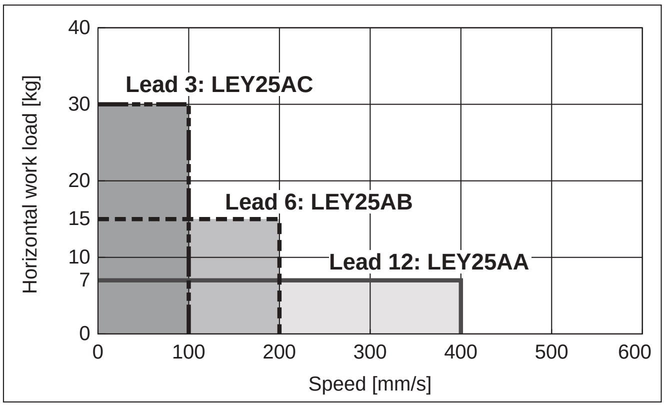
LEY32□-X5



For Servo Motor (24 VDC) LECA6

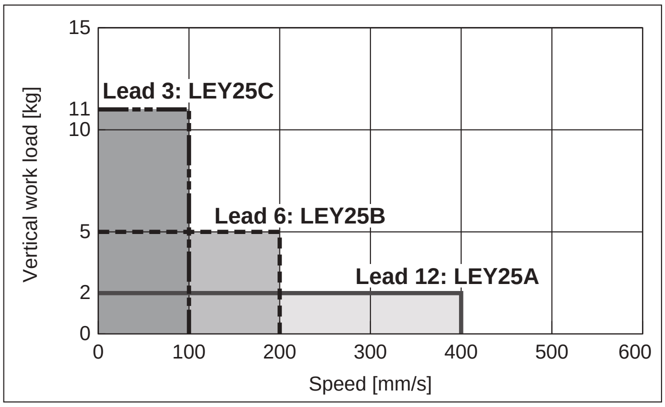
Horizontal

LEY25□A-X5



Vertical

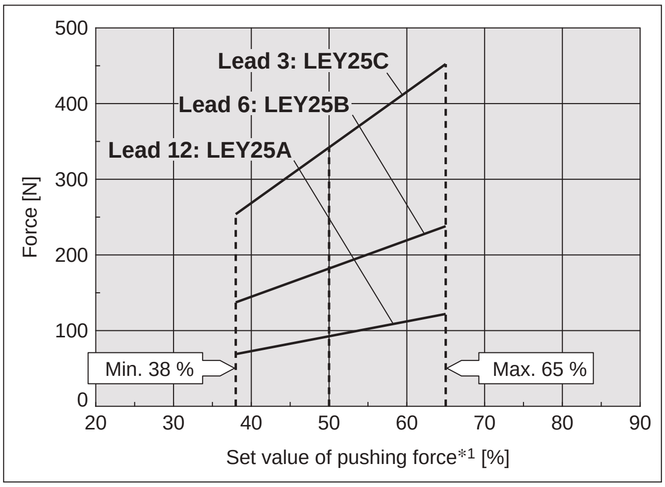
LEY25□A-X5



Force Conversion Graph

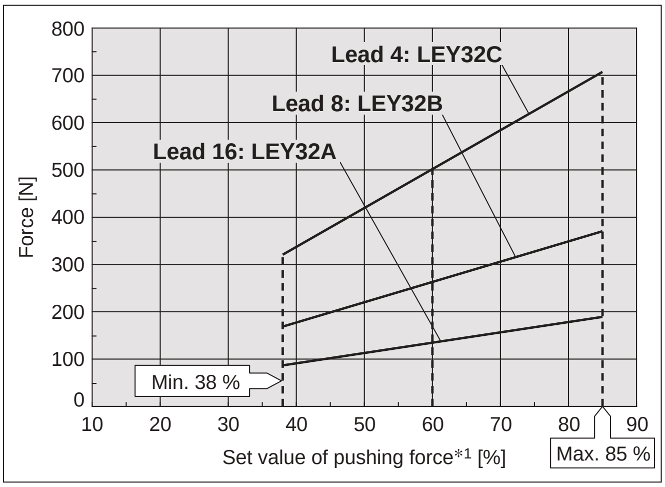
Step Motor (Servo/24 VDC)

LEY25□-X5



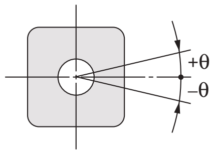
Ambient temperature	Set value of pushing force*1 [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	65 or less	100	—

LEY32□-X5



Ambient temperature	Set value of pushing force*1 [%]	Duty ratio [%]	Continuous pushing time [minute]
25 °C or less	85 or less	100	—
40 °C	65 or less	100	—
	85	50	15

Non-rotating Accuracy of Rod

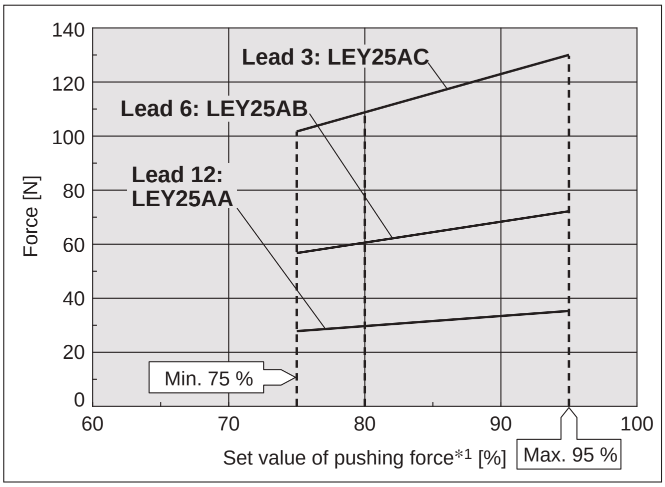


Size	Non-rotating accuracy θ
25	±0.8°
32	±0.7°

∗ Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.
This may cause the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

Servo Motor (24 VDC)

LEY25□A-X5



Ambient temperature	Set value of pushing force*1 [%]	Duty ratio [%]	Continuous pushing time [minute]
40 °C or less	95 or less	100	—

<Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed> Without Load

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY25	A/B/C	21 to 35	50 to 65 %
LEY32	A	24 to 30	60 to 85 %
	B/C	21 to 30	

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY25□A	A/B/C	21 to 35	80 to 95 %

There is a limit to the pushing force in relation to the pushing speed. If the product is operated outside of the range (low pushing force), the completion signal [INP] may be output before the pushing operation has been completed (during the moving operation).
If operating with the pushing speed below the min. speed, please check for operating problems before using the product.

<Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	LEY25□			LEY32□			LEY25□A		
Lead	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**
Work load [kg]	2.5	5	10	4.5	9	18	1.2	2.5	5
Pushing force	65 %			85 %			95 %		

∗1 Set values for the controller

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

Electric Actuator/ Rod Type

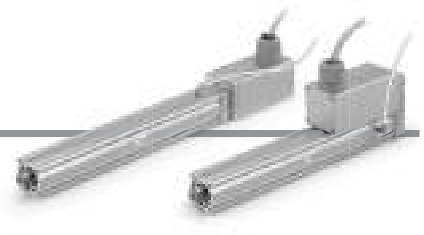
Dust-tight/Water-jet-proof (IP65 Equivalent)

LEY-X5 (Made to Order) *Series* LEY25, 32

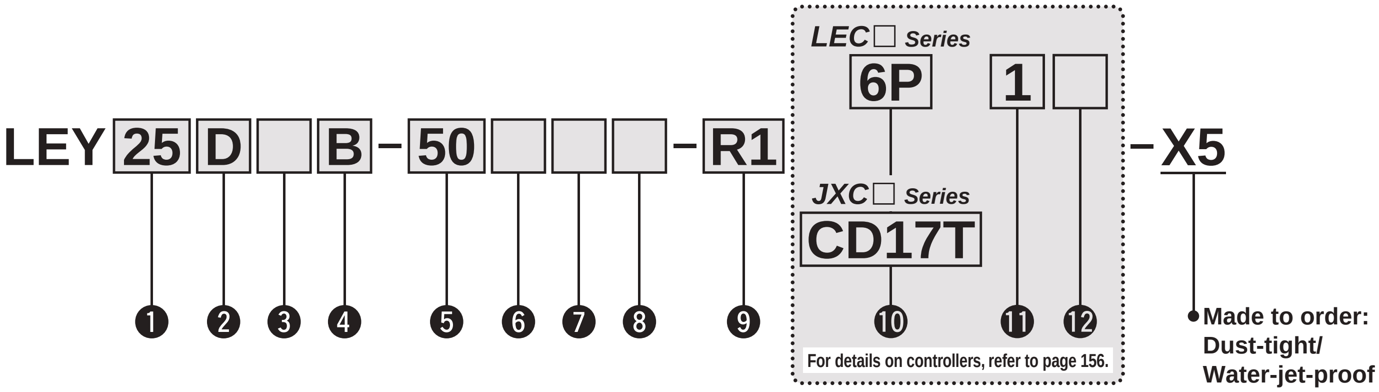
(Only applicable to the JXC□)

RoHS

Refer to page 151 for model selection.



How to Order


LEY 25 D □ B – 50 □ □ □ – R1
LEC□ Series
6P
1 □
JXC□ Series
CD17T
– X5
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬
For details on controllers, refer to page 156.
Made to order: Dust-tight/ Water-jet-proof

❶ Size

25
32

❷ Motor mounting position

—	Top mounting
D	In-line

❸ Motor type

Symbol	Type	Size		Compatible controller/driver
		25	32	
—	Step motor (Servo/24 VDC)	●	●	LECP1 LECPA JXCE1 JXC91 JXCP1 JXCD1 JXCL1
A	Servo motor (24 VDC)	●	—	LECA6

❹ Lead [mm]

Symbol	LEY25	LEY32
A	12	16
B	6	8
C	3	4

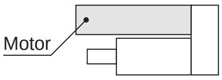
❺ Stroke [mm]

30	30
to	to
500	500

∗ For details, refer to the applicable stroke table below.

❻ Motor option[*2]

—	Without option
B	With lock



❼ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❽ Mounting[*3]

Symbol	Type	Motor mounting position	
		Top mounting	In-line
—	Ends tapped/Body bottom tapped[*4]	●	●
L	Foot	●	—
F	Rod flange[*4]	●[*5]	●
G	Head flange[*4]	●[*6]	—

❾ Actuator cable type/length

Robotic cable [m]

R1	1.5	**RA**	10[*7]
R3	3	**RB**	15[*7]
R5	5	**RC**	20[*7]
R8	8[*7]		

Applicable Stroke Table[*1]

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

∗ For auto switches, refer to page 176.
∗ "-X5" is not added to an actuator model with a controller/driver part number suffix.
Example) "LEY25DB-100" for the LEY25DB-100BMU-R16N1D-X5

LEC□ Series (For details, refer to page 157.)

6P 1 □
⑩ ⑪ ⑫

⑩ Controller/Driver type*8

—	Without controller/driver	
6N	**LECA6** (Step data input type)	NPN
6P		PNP
1N	**LECP1***9 (Programless type)	NPN
1P		PNP
AN	**LECPA***9 *11 (Pulse input type)	NPN
AP		PNP

⑪ I/O cable length*12, Communication plug

—	Without cable
1	1.5 m
3	3 m*13
5	5 m*13
S	Straight type communication plug connector
T	T-branch type communication plug connector

⑫ Controller/Driver mounting

—	Screw mounting
D	DIN rail*14

JXC□ Series (For details, refer to page 157.)

⑩ Controller

—	Without controller
C□1□□	With controller

C D 1 7 T

Communication protocol

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

For single axis

Mounting

7	Screw mounting
8*14	DIN rail

Communication plug connector for DeviceNet™*15

—	Without plug connector
S	Straight type
T	T-branch type

---

*1 Please consult with SMC for non-standard strokes as they are produced as special orders.
*2 When "With lock" is selected for the top mounting type, the motor body will stick out from the end of the body for strokes of 5 0 mm or less. Check for interference with workpieces before selecting a model.
*3 The mounting bracket is shipped together with the product but does not come assembled.
*4 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
 · LEY25: 200 mm or less · LEY32: 100 mm or less
*5 The rod flange type is not available for the LEY 2 5 / 3 2 with strokes of 50 mm or less and motor option "With lock."
*6 The head flange type is not available for the LEY32.
*7 Produced upon receipt of order (Robotic cable only)
*8 For details on controllers/drivers and compatible motors, refer to the compatible controller/driver on the next page.
*9 Only available for the motor type "Step motor"
*10 Not compliant with CE
*11 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 220 separately.
*12 When "Without controller/driver" is selected for controller/driver types, I/O cable cannot be selected. Refer to page 199 (For LECA6), page 213 (For LECP1), or page 220 (For LECPA) if I/O cable is required.
*13 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
*14 The DIN rail is not included. Order it separately.
*15 Select "—" for anything other than DeviceNet™.

⚠Caution

[CE-compliant products]

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

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 199 for the noise filter set. Refer to the LECA series Operation Manual for installation.

[UL-compliant products (For the LEC series)]

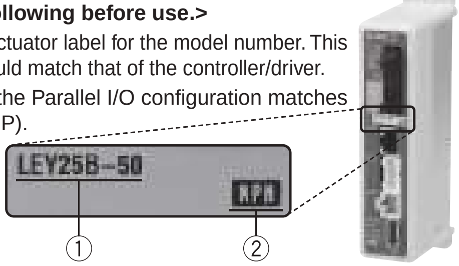
When compliance with UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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

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

<Check the following before use.>

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



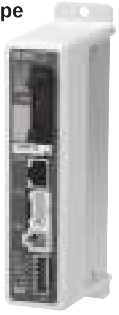
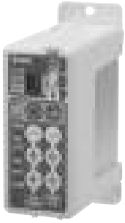
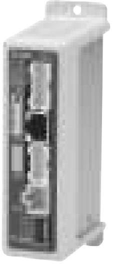
* Refer to the Operation Manual for using the products. Please download it via our website, https://www.smc.eu

LEY-X5 Series

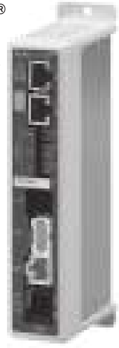
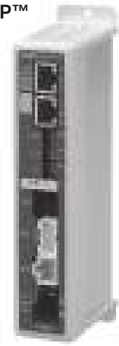
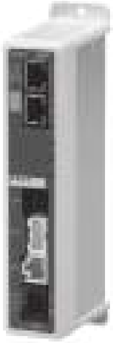
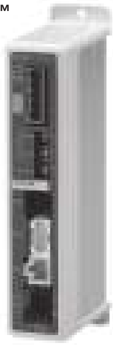
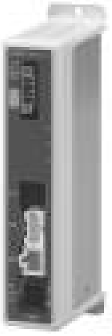
Step Motor (Servo/24 VDC) Servo Motor (24 VDC) Dust-tight/Water-jet-proof (IP65 Equivalent)

Compatible Controller/Driver

LEC□ Series

Type	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECA6**	**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	Servo motor (24 VDC)	Servo motor (Servo/24 VDC)	
Max. number of step data	64 points	14 points	—
Power supply voltage			
Reference page	191	207	214

JXC□ Series

Type	**EtherCAT® direct input type** 	**EtherNet/IP™ direct input type** 	**PROFINET direct input type** 	**DeviceNet™ direct input type** 	**IO-Link direct input type** 
Series	**JXCE1**	**JXC91**	**JXCP1**	**JXCD1**	**JXCL1**
Features	EtherCAT® direct input	EtherNet/IP™ direct input	PROFINET direct input	DeviceNet™ direct input	IO-Link direct input
Compatible motor	Step motor (Servo/24 VDC)				
Max. number of step data	64 points				
Power supply voltage	24 VDC				
Reference page	224				

Specifications

Step Motor (Servo/24 VDC)

Model					LEY25□-X5			LEY32□-X5		
Actuator specifications	Work load [kg]*1	Horizontal	For LECP1 JXC□1	(3000 [mm/s²])	20	40	60	30	45	60
				(2000 [mm/s²])	30	60	70	40	60	80
			For LECPA JXC□$^{2}_{3}$	(3000 [mm/s²])	12	30	30	20	40	40
				(2000 [mm/s²])	18	50	50	30	60	60
		Vertical*14		(3000 [mm/s²])	7	15	29	10	21	42
	Pushing force [N]*2 *3 *4				63 to 122	126 to 238	232 to 452	80 to 189	156 to 370	296 to 707
	Speed [mm/s]*4				18 to 400	9 to 200	5 to 100	24 to 400	12 to 200	6 to 100
	Max. acceleration/deceleration [mm/s²]				3000					
	Pushing speed [mm/s]*5				35 or less			30 or less		
	Positioning repeatability [mm]				±0.02					
	Lost motion [mm]*6				0.1 or less					
	Screw lead [mm]				12	6	3	16	8	4
	Impact/Vibration resistance [m/s²]*7				50/20					
	Actuation type				Ball screw + Belt (LEY□) Ball screw (LEY□D)					
	Guide type				Sliding bushing (Piston rod)					
	Enclosure*8				IP65 equivalent					
	Operating temperature range [°C]				5 to 40					
	Operating humidity range [%RH]				90 or less (No condensation)					
Electric specifications	Motor size				□42			□56.4		
	Motor type				Step motor (Servo/24 VDC)					
	Encoder				Incremental A/B phase (800 pulse/rotation)					
	Rated voltage [V]				24 VDC ±10 %					
	Power consumption [W]*9				40			50		
	Standby power consumption when operating [W]*10				15			48		
	Max. instantaneous power consumption [W]*11				48			104		
Lock unit specifications	Type*12				Non-magnetising lock					
	Holding force [N]				78	157	294	108	216	421
	Power consumption [W]*13				5			5		
	Rated voltage [V]				24 VDC ±10 %					

*1 Horizontal: The maximum value of the work load. An external guide is necessary to support the load. (Friction coefficient of guide: 0.1 or less) The actual work load and transfer speed change according to the condition of the external guide. Also, speed changes according to the work load. Check “Model Selection” on pages 151 and 152.
Vertical: Speed changes according to the work load. Check “Model Selection” on pages 151 and 152.
The values shown in ( ) are the acceleration/deceleration. Set these values to be 3000 [mm/s²] or less.

*2 Pushing force accuracy is ±20 % (F.S.).

*3 The thrust setting values for LEY25□ is 38 % to 65 % and for LEY32□ is 38 % to 85 %. The pushing force values change according to the duty ratio and pushing speed. Check “Model Selection” on page 153.

*4 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 %)

*5 The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.

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

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

*8 Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water
Take appropriate protective measures. For details on enclosure, refer to “Enclosure” on page 188.

*9 The power consumption (including the controller) is for when the actuator is operating.

*10 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation. Except during the pushing operation

*11 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.

*12 With lock only

*13 For an actuator with lock, add the power consumption for the lock.

*14 When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

Specifications

Servo Motor (24 VDC)

Model				LEY25□A-X5		
Actuator specifications	**Work load [kg]**[1]	**Horizontal**	**(3000 [mm/s^2])**	7	15	30
		Vertical[13]	**(3000 [mm/s^2])**	2	5	11
	Pushing force [N][2][3]			18 to 35	37 to 72	66 to 130
	Speed [mm/s]			2 to 400	1 to 200	1 to 100
	Max. acceleration/deceleration [mm/s^2]			3000		
	Pushing speed [mm/s][4]			35 or less		
	Positioning repeatability [mm]			±0.02		
	Lost motion [mm][5]			0.1 or less		
	Screw lead [mm]			12	6	3
	Impact/Vibration resistance [m/s^2][6]			50/20		
	Actuation type			Ball screw + Belt (LEY□) Ball screw (LEY□D)		
	Guide type			Sliding bushing (Piston rod)		
	Enclosure[7]			IP65 equivalent		
	Operating temperature range [°C]			5 to 40		
	Operating humidity range [%RH]			90 or less (No condensation)		
Electric specifications	**Motor size**			□42		
	Motor type			Servo motor (24 VDC)		
	Encoder			Incremental A/B phase (800 pulse/rotation)/Z-phase		
	Rated voltage [V]			24 VDC ±10 %		
	Power consumption [W][8]			86		
	Standby power consumption when operating [W][9]			4 (Horizontal)/12 (Vertical)		
	Max. instantaneous power consumption [W][10]			96		
Lock unit specifications	**Type**[11]			Non-magnetising lock		
	Holding force [N]			78	157	294
	Power consumption [W][12]			5		
	Rated voltage [V]			24 VDC ±10 %		

[1] Horizontal: The maximum value of the work load. An external guide is necessary to support the load. (Friction coefficient of guide: 0.1 or less) The actual work load and transfer speed change according to the condition of the external guide.
Vertical: Speed changes according to the work load. Check "Model Selection" on page 152. The values shown in ( ) are the acceleration/deceleration.
Set these values to be 3000 [mm/s^2] or less.

[2] Pushing force accuracy is ±20 % (F.S.).

[3] The thrust setting values for LEY25A□ is 75 % to 95 %. The pushing force values change according to the duty ratio and pushing speed. Check "Model Selection" on page 153.

[4] The allowable speed for pushing operation
When push conveying a workpiece, operate at the vertical work load or less.

[5] A reference value for correcting an error in reciprocal operation

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

[7] Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water
Take appropriate protective measures. For details on enclosure, refer to "Enclosure" on page 188.

[8] The power consumption (including the controller) is for when the actuator is operating.

[9] The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation with the maximum work load. Except during the pushing operation

[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.

[11] With lock only

[12] For an actuator with lock, add the power consumption for the lock.

[13] When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

Weight

Weight: Motor Top Mounting Type

Model		LEY25-X5									LEY32-X5										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	**Step motor**	1.45	1.52	1.69	1.95	2.13	2.30	2.48	2.65	2.83	2.48	2.59	2.88	3.35	3.64	3.91	4.21	4.49	4.76	5.04	5.32
	Servo motor	1.41	1.48	1.65	1.91	2.09	2.26	2.44	2.61	2.79	—	—	—	—	—	—	—	—	—	—	—

Weight: In-line Motor Type

Model		LEY25D-X5									LEY32D-X5										
Stroke [mm]		30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	**Step motor**	1.46	1.53	1.70	1.96	2.14	2.31	2.49	2.66	2.84	2.49	2.60	2.89	3.36	3.65	3.92	4.22	4.50	4.77	5.05	5.33
	Servo motor	1.42	1.49	1.66	1.92	2.10	2.27	2.45	2.62	2.80	—	—	—	—	—	—	—	—	—	—	—

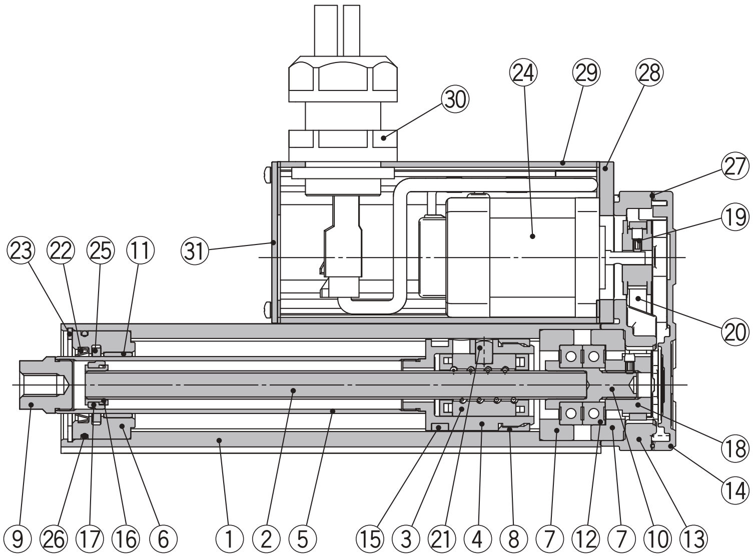
Additional Weight

[kg]

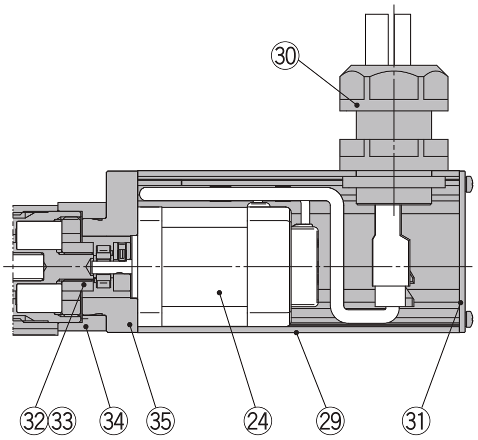
Size		25	32
Lock		0.33	0.63
Rod end male thread	**Male thread**	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

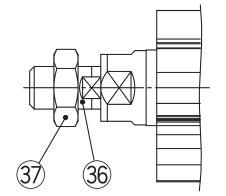
Construction

Motor top mounting type: LEY$^{25}_{32}$



In-line motor type: LEY$^{25}_{32}$D





When rod end male thread selected

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Synthetic resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	

No.	Description	Material	Note
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Scraper**	Nylon	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor**	—	
25	**Lube-retainer**	Felt	
26	**O-ring**	NBR	
27	**Gasket**	NBR	
28	**Motor adapter**	Aluminium alloy	Anodised
29	**Motor cover**	Aluminium alloy	Anodised
30	**Seal connector**	—	
31	**End cover**	Aluminium alloy	Anodised
32	**Hub**	Aluminium alloy	
33	**Spider**	NBR	
34	**Motor block**	Aluminium alloy	Anodised
35	**Motor adapter**	Aluminium alloy	LEY25 only
36	**Socket (Male thread)**	Free cutting carbon steel	Nickel plating
37	**Nut**	Alloy steel	Zinc chromated

Replacement Parts (Motor top mounting only)/Belt

No.	Size	Order no.
20	**25**	LE-D-2-2
	32	LE-D-2-3

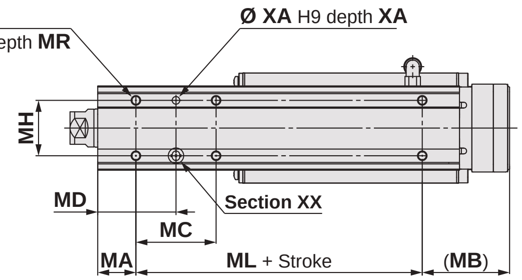
Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g) GR-S-020 (20 g)

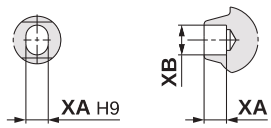
∗ Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

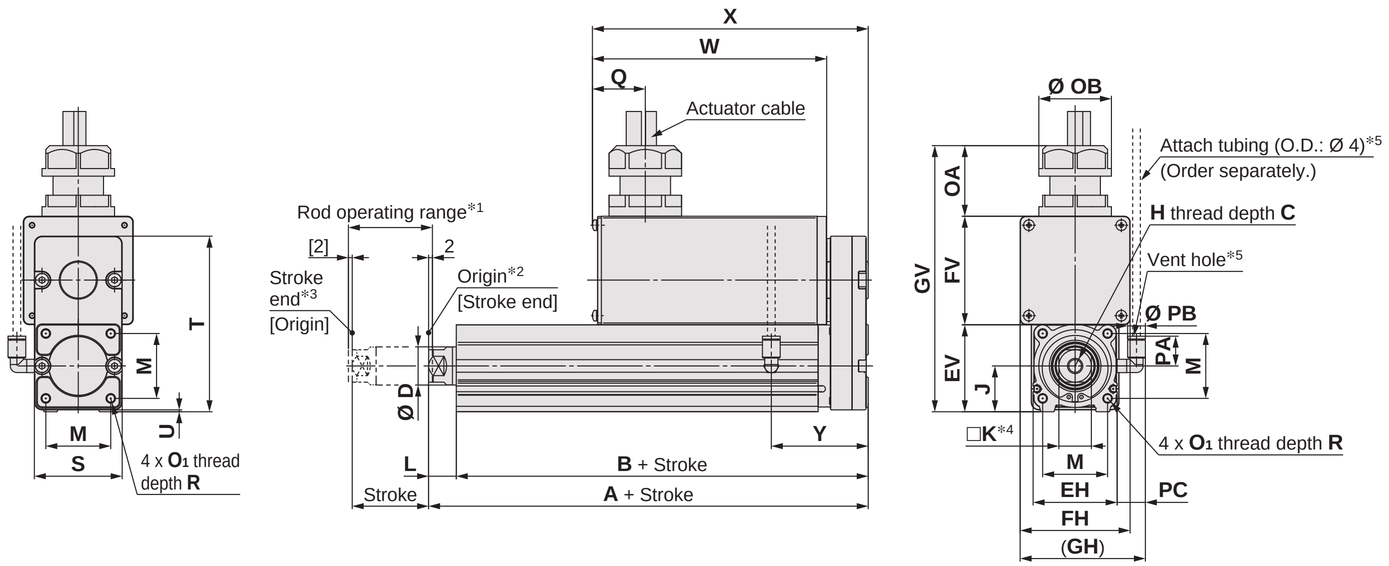
Dimensions

Motor top mounting type


6 x MO
thread depth MR
Ø XA H9 depth XA
MH
MD
Section XX
MC
MA
ML + Stroke
(MB)

Section XX details




X
W
Q
Actuator cable
Ø OB
Attach tubing (O.D.: Ø 4)*5
(Order separately.)
H thread depth C
Vent hole*5
Ø PB
PA
M
OA
GV
FV
EV
J
□K*4
4 x O1 thread depth R
M
EH
PC
FH
(GH)
Rod operating range*1
[2]
2
Stroke end*3
[Origin]
Origin*2
[Stroke end]
Ø D
L
Stroke
B + Stroke
A + Stroke
Y
T
M
U
M
S
4 x O1 thread depth R

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	FH	FV	GH	GV	H	J	K	L	M	O_1
25	15 to 100	130.5	116	13	20	44	45.5	57.6	56.8	66.2	139.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	69.6	78.6	76.2	173.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0
	101 to 500	178.5	160														

Size	Stroke range [mm]	R	OA	OB	PA	PB	Q	S	T	U	PC	W		X		Y
												Without lock	With lock	Without lock	With lock	
25	15 to 100	8	37	38	15.4	8.2	28	46	92	1	15.4	123	173	145	195	51
	101 to 400															
32	20 to 100	10	37	38	15.4	8.2	28	60	118	1	15.9	123	173	150	200	61
	101 to 500															

Body Bottom Tapped

[mm]

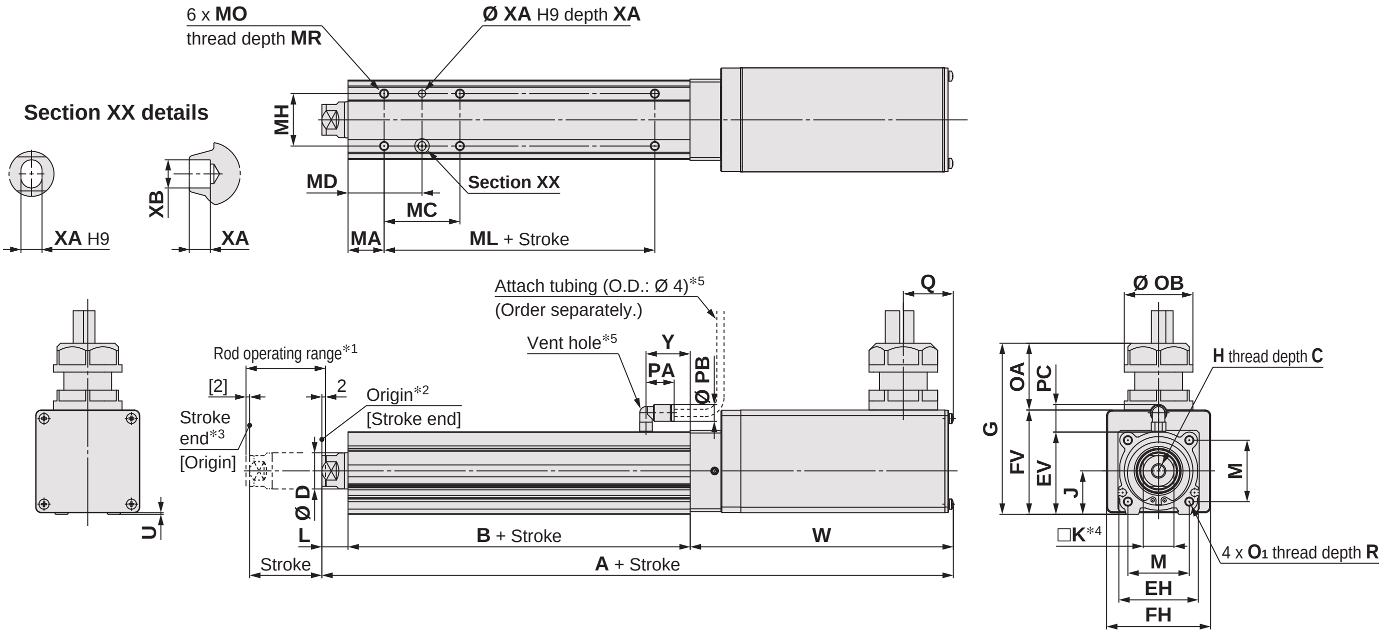
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125 to 200			53	51.5						
	201 to 500			70	60						

*1 Range within which the rod can move when it returns to origin
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 Position after return to origin
*3 [ ] for when the direction of return to origin has changed
*4 The direction of rod end width across flats (□K) differs depending on the products.
*5 The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 67. For the mounting bracket dimensions, refer to page 97.

Dimensions

In-line motor type


6 x MO
thread depth MR
Ø XA H9 depth XA
Section XX details
MH
XB
XA H9
XA
MD
MC
Section XX
MA
ML + Stroke
Attach tubing (O.D.: Ø 4)*5
(Order separately.)
Vent hole*5
Rod operating range*1
[2]
2
Origin*2
[Stroke end]
Stroke end*3
[Origin]
Y
PA
Ø PB
Q
Ø D
L
U
B + Stroke
W
Stroke
A + Stroke
Ø OB
H thread depth C
OA
PC
G
FV
EV
J
M
□K*4
4 x O1 thread depth R
M
EH
FH

[mm]

Size	Stroke range [mm]	A		B	C	D	EH	EV	FH	FV	G	H	J	K	L
		Without lock	With lock												
25	15 to 100	250	300	89.5	13	20	44	45.5	57.6	57.7	94.7	M8 x 1.25	24	17	14.5
	101 to 400	275	325	114.5											
32	20 to 100	265.5	315.5	96	13	25	51	56.5	69.6	79.6	116.6	M8 x 1.25	31	22	18.5
	101 to 500	295.5	345.5	126											

Size	Stroke range [mm]	M	O_1	R	OA	OB	PA	PB	Q	U	PC	W		Y
												Without lock	With lock	
25	15 to 100	34	M5 x 0.8	8	37	38	15.4	8.2	28	0.9	15.9	146	196	24.5
	101 to 400													
32	20 to 100	40	M6 x 1.0	10	37	38	15.4	8.2	28	1	15.9	151	201	27
	101 to 500													

Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	101 to 124					75				
	125 to 200		59	49.5						
	201 to 400		76	58						
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	101 to 124					80				
	125 to 200		53	51.5						
	201 to 500		70	60						

*1 Range within which the rod can move when it returns to origin
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

*2 Position after return to origin

*3 [ ] for when the direction of return to origin has changed

*4 The direction of rod end width across flats (□K) differs depending on the products.

*5 The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 67. For the mounting bracket dimensions, refer to page 97.

Electric Actuator/ Rod Type Dust-tight/Water-jet-proof (IP65 Equivalent)

LEY-X5 (Made to Order) Series LEY25, 32

Refer to page 41 for model selection.

Size 63 is available by selecting option P. Refer to page 79.

CE RoHS

LECY□ Series▶p. 169

How to Order

LEY H 25 □ S2 B – 100 □ □ □ – S 2 A1 □ – X5

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬ ⓭

●Made to order: Dust-tight/ Water-jet-proof

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
D	In-line

❺ Lead [mm]

Symbol	LEY25□	LEY32□*1
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

*1 The values shown in ( ) are the equivalent leads which include the pulley ratio for the size 32 top mounting type.

❹ Motor type

Symbol	Type	Output [W]	Actuator size	Compatible driver
S2*1	AC servo motor (Incremental encoder)	100	25	LECSA□-S1
S3		200	32	LECSA□-S3
S6*1	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7		200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7
T6*2	AC servo motor (Absolute encoder)	100	25	LECSS2-T5
T7		200	32	LECSS2-T7

*1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
*2 For motor type T6, the compatible driver part number suffix is T5.

❻ Stroke [mm]

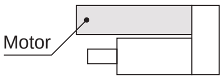
30	30
to	to
500	500

* For details, refer to the applicable stroke table below.

❼ Motor option

—	Without option
B	With lock*1

*1 When "With lock" is selected for the top mounting type, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



❽ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❾ Mounting*1

Symbol	Type	Motor mounting position	
		Top mounting	In-line
—	Ends tapped/ Body bottom tapped*2	●	●
L	Foot	●	—
F	Rod flange*2	●*3	●
G	Head flange*2	●*4	—

*1 The mounting bracket is shipped together with the product but does not come assembled.
*2 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
- LEY25: 200 mm or less
- LEY32: 100 mm or less

*3 The rod flange type is not available for the LEY25 with a 30 mm stroke and motor option "With lock."
*4 The head flange type is not available for the LEY32.

❿ Cable type*1 *2

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

*1 The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
*2 Standard cable entry direction is
- Top mounting: (A) Axis side
- In-line: (B) Counter axis side

(Refer to page 264 for details.)

⓭ I/O cable length [m]*1

—	Without cable
H	Without cable (Connector only)
1	1.5

*1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 265 if I/O cable is required. (Options are shown on page 265.)

⓫ Cable length [m]*1

—	Without cable
2	2
5	5
A	10

*1 The length of the encoder, motor, and lock cables are the same.

⓬ Driver type*1

	Compatible driver	Power supply voltage [V]
—	Without driver	—
A1	LECSA1-S□	100 to 120
A2	LECSA2-S□	200 to 230
B1	LECSB1-S□	100 to 120
B2	LECSB2-S□	200 to 230
C1	LECSC1-S□	100 to 120
C2	LECSC2-S□	200 to 230
S1	LECSS1-S□	100 to 120
S2	LECSS2-S□	200 to 230
	LECSS2-T□	200 to 240

*1 When a driver type is selected, a cable is included. Select the cable type and cable length.
Example)
S2S2: Standard cable (2 m) + Driver (LECSS2)
S2 : Standard cable (2 m)
— : Without cable and driver

Applicable Stroke Table

●: Standard

Model \ Stroke	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range [mm]
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

* Please consult with SMC for non-standard strokes as they are produced as special orders.

* For auto switches, refer to page 176.

Specifications: LECSA/LECSB/LECSC/LECSS

Model				LEY25S$_6^2$/T6-X5 /LEY25DS$_6^2$/T6-X5			LEY32S$_7^3$/T7-X5 (Top mounting)			LEY32DS$_7^3$/T7-X5 (In-line)		
Actuator specifications	Work load [kg]	Horizontal*1		18	50	50	30	60	60	30	60	60
		Vertical*8		8	16	30	9	19	37	12	24	46
	Force [N]*2 (Set value: 15 to 30%)*15			65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max. speed [mm/s]*3	Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
			305 to 400	600	300	150						
			405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s]*4			35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]			5000			5000					
	Positioning repeatability [mm]	Basic type		±0.02								
		High-precision type		±0.01								
	Lost motion [mm]*5	Basic type		0.1 or less								
		High-precision type		0.05 or less								
	Lead [mm]			12	6	3	20	10	5	16	8	4
	Impact/Vibration resistance [m/s²]*6			50/20			50/20					
	Actuation type			Ball screw + Belt/Ball screw			Ball screw + Belt [1.25:1]			Ball screw		
	Guide type			Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Enclosure*7			IP65 equivalent								
	Operating temperature range [°C]			5 to 40			5 to 40					
	Operating humidity range [%RH]			90 or less (No condensation)			90 or less (No condensation)					
	Regeneration option			May be required depending on speed and work load (Refer to pages 45 and 46.)								
Electric specifications	Motor output/Size			100 W/□40			200 W/□60					
	Motor type			AC servo motor (100/200 VAC)			AC servo motor (100/200 VAC)					
	Encoder			Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev) Motor type T6, T7: Absolute 22-bit encoder (Resolution: 4194304 p/rev)								
	Power consumption [W]*9	Horizontal		45			65			65		
		Vertical		145			175			175		
	Standby power consumption when operating [W]*10	Horizontal		2			2			2		
		Vertical		8			8			8		
	Max. instantaneous power consumption [W]*11			445			724			724		
Lock unit specifications	Type*12			Non-magnetizing lock								
	Holding force [N]			131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20°C*13			6.3			7.9			7.9		
	Rated voltage [V]			24 VDC $^{0}_{-10}$ %								

*1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

*2 The force setting range (set values for the driver) for the force control with the torque control mode
Set it with reference to "Force Conversion Graph" on pages 45 and 46. When the control equivalent to the pushing operation of the controller LECP6 series is performed, combine the Simple Motion module (manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.

*3 The allowable speed changes according to the stroke.

*4 The allowable collision speed for collision with the workpiece with the torque control mode

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

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

*7 Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water Take appropriate protective measures. For details on enclosure, refer to "Enclosure" on page 188.

*8 When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.

*9 The power consumption (including the driver) is for when the actuator is operating.

*10 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.

*11 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.

*12 Only when motor option "With lock" is selected

*13 For an actuator with lock, add the power consumption for the lock.

*14 The resolution will change depending on the driver type.

*15 For motor type T6 and T7, the set value is from 12 to 24 %.

Weight

Product Weight

Series			LEY25S$_6^2$/T6-X5 (Motor mounting position: Top mounting)									LEY32S$_7^3$/T7-X5 (Motor mounting position: Top mounting)										
Stroke [mm]			30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Incremental encoder		1.31	1.38	1.55	1.81	1.99	2.16	2.34	2.51	2.69	2.42	2.53	2.82	3.29	3.57	3.85	4.14	4.42	4.70	4.98	5.26
	Absolute encoder	S6/S7	1.37	1.44	1.61	1.87	2.05	2.22	2.40	2.57	2.75	2.36	2.47	2.76	3.23	3.51	3.79	4.08	4.36	4.64	4.92	5.20
		T6/T7	1.4	1.5	1.6	1.9	2.0	2.2	2.4	2.6	2.7	2.3	2.4	2.7	3.2	3.5	3.8	4.1	4.3	4.6	4.9	5.2

Series			LEY25DS$_6^2$/T6-X5 (Motor mounting position: In-line)									LEY32DS$_7^3$/T7-X5 (Motor mounting position: In-line)										
Stroke [mm]			30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Motor type	Incremental encoder		1.34	1.41	1.58	1.84	2.02	2.19	2.37	2.54	2.72	2.44	2.55	2.84	3.31	3.59	3.87	4.16	4.44	4.72	5.00	5.28
	Absolute encoder	S6/S7	1.40	1.47	1.64	1.90	2.08	2.25	2.43	2.60	2.78	2.38	2.49	2.78	3.25	3.53	3.81	4.10	4.38	4.66	4.94	5.22
		T6/T7	1.4	1.5	1.6	1.9	2.1	2.2	2.4	2.6	2.8	2.4	2.5	2.8	3.2	3.5	3.8	4.1	4.4	4.6	4.9	5.2

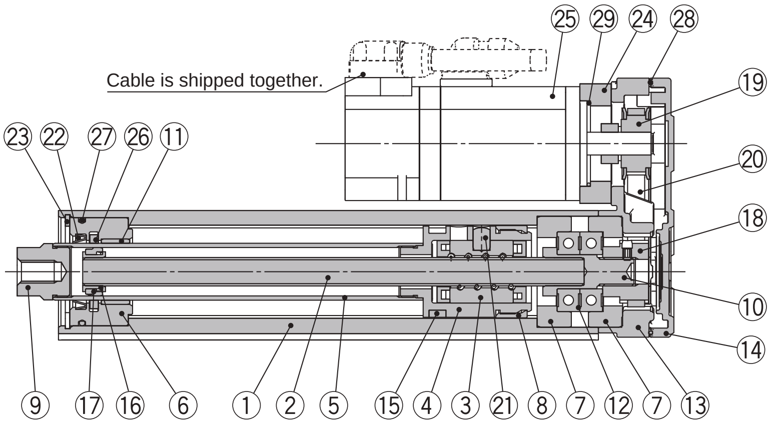
Additional Weight

[kg]

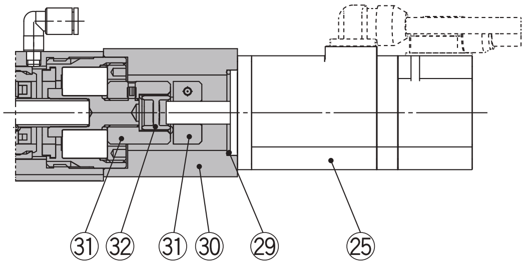
Size		25	32
Lock	Incremental encoder	0.20	0.40
	Absolute encoder	0.30	0.66
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring, and mounting bolt)		0.16	0.22

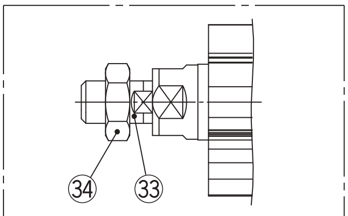
Construction

Motor top mounting type: LEY$_{32}^{25}$



In-line motor type: LEY$_{32}^{25}$D





When rod end male thread selected

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminium alloy	Anodised
2	**Ball screw shaft**	Alloy steel	
3	**Ball screw nut**	Synthetic resin/Alloy steel	
4	**Piston**	Aluminium alloy	
5	**Piston rod**	Stainless steel	Hard chrome plating
6	**Rod cover**	Aluminium alloy	
7	**Bearing holder**	Aluminium alloy	
8	**Rotation stopper**	POM	
9	**Socket**	Free cutting carbon steel	Nickel plating
10	**Connected shaft**	Free cutting carbon steel	Nickel plating
11	**Bushing**	Bearing alloy	
12	**Bearing**	—	
13	**Return box**	Aluminium die-cast	Coating
14	**Return plate**	Aluminium die-cast	Coating
15	**Magnet**	—	
16	**Wear ring holder**	Stainless steel	Stroke 101 mm or more
17	**Wear ring**	POM	Stroke 101 mm or more
18	**Screw shaft pulley**	Aluminium alloy	
19	**Motor pulley**	Aluminium alloy	
20	**Belt**	—	
21	**Parallel pin**	Stainless steel	
22	**Scraper**	Nylon	
23	**Retaining ring**	Steel for spring	Phosphate coated
24	**Motor adapter**	Aluminium alloy	Coating
25	**Motor**	—	
26	**Lube-retainer**	Felt	
27	**O-ring**	NBR	
28	**Gasket**	NBR	
29	**O-ring**	NBR	
30	**Motor block**	Aluminium alloy	Coating
31	**Hub**	Aluminium alloy	
32	**Spider**	Urethane	
33	**Socket (Male thread)**	Free cutting carbon steel	Nickel plating
34	**Nut**	Alloy steel	Trivalent chromated

Replacement Parts (Motor top mounting only)/Belt

No.	Size	Order no.
20	**25**	LE-D-2-2
	32	LE-D-2-4

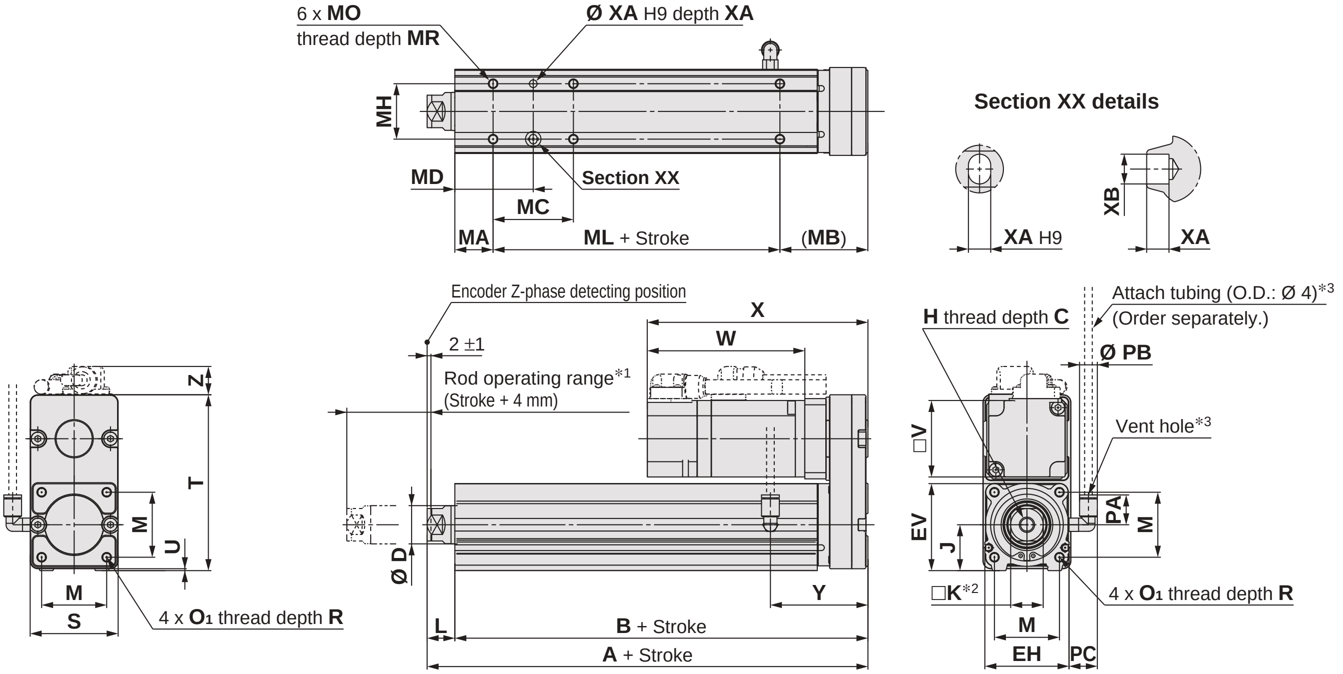
Replacement Parts/Grease Pack

Applied portion	Order no.
Piston rod	GR-S-010 (10 g) GR-S-020 (20 g)

∗ Apply grease on the piston rod periodically.
Grease should be applied at 1 million cycles or 200 km, whichever comes first.

Dimensions

Motor top mounting type: LEY$^{25}_{32}$


6 x **MO**
thread depth **MR**
Ø **XA** H9 depth **XA**
MH
MD
Section XX
MC
MA
ML + Stroke
(MB)
Section XX details
XA H9
XB
XA
Encoder Z-phase detecting position
X
W
2 ±1
Rod operating range*1
(Stroke + 4 mm)
Z
T
M
U
M
S
4 x O₁ thread depth R
Ø D
L
B + Stroke
A + Stroke
Y
H thread depth C
Attach tubing (O.D.: Ø 4)*3
(Order separately.)
Ø PB
□V
Vent hole*3
EV
J
PA
M
□K*2
4 x O₁ thread depth R
M
EH
PC

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O₁	R	PA	PB	V	S	T	U
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.4	8.2	40	46	92	1
	101 to 400	155.5	141																	
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60	60	118	1
	101 to 500	178.5	160																	

Size	Stroke range [mm]	PC	Incremental encoder						Absolute encoder [S6/S7]						Absolute encoder [T6/T7]						Y
			Without lock			With lock			Without lock			With lock			Without lock			With lock			
			W	X	Z	W	X	Z	W	X	Z	W	X	Z	W	X	Z	W	X	Z	
25	15 to 100	15.4	87	120	14.1	123.9	156.9	15.8	82.4	115.4	14.1	123.5	156.5	15.8	82.4	115.4	14.1	123	156	15.8	51
	101 to 400																				
32	20 to 100	15.9	88.2	128.2	17.1	116.8	156.8	17.1	76.6	116.6	17.1	116.1	156.1	17.1	76.6	116.6	17.1	113.4	153.4	17.1	61
	101 to 500																				

Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125 to 200			53	51.5						
	201 to 500			70	60						

*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

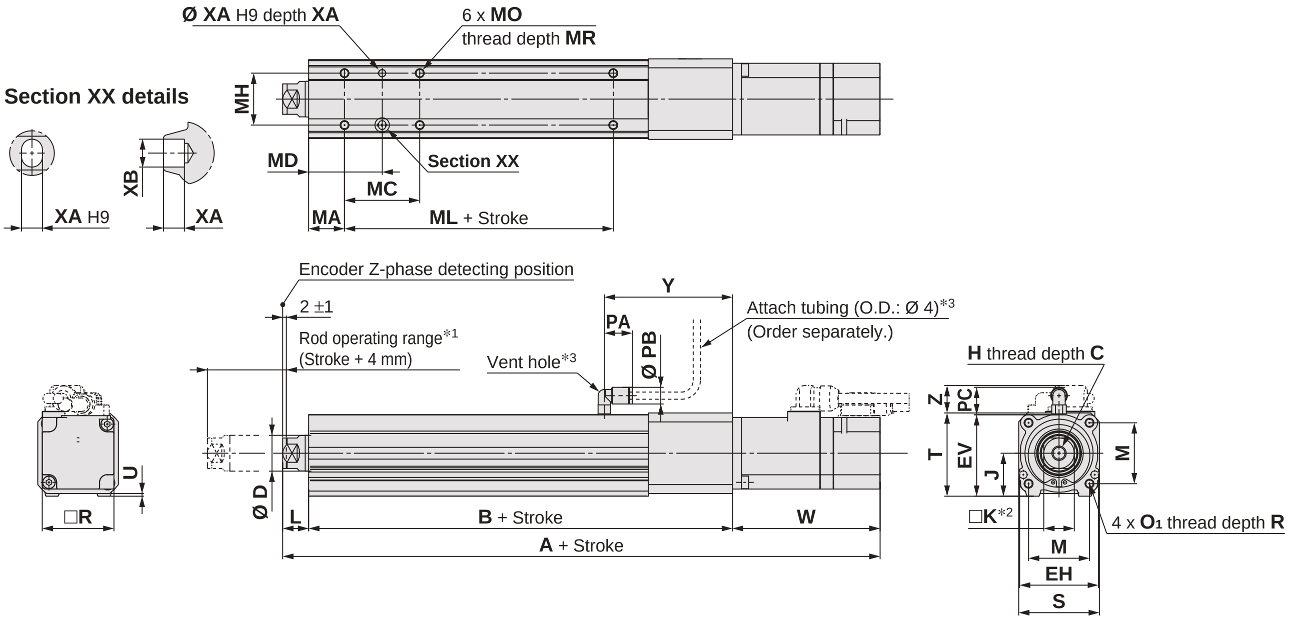
*2 The direction of rod end width across flats (□K) differs depending on the products.

*3 The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 77. For the mounting bracket dimensions, refer to page 97.

Dimensions

In-line motor type: LEY$^{25}_{32}$D


Ø XA H9 depth XA
6 x MO thread depth MR
Section XX details
MH
XB
XA H9
XA
MD
Section XX
MC
MA
ML + Stroke
Encoder Z-phase detecting position
2 ±1
Rod operating range*1 (Stroke + 4 mm)
Y
PA
Ø PB
Vent hole*3
Attach tubing (O.D.: Ø 4)*3 (Order separately.)
H thread depth C
U
□R
Ø D
L
B + Stroke
W
A + Stroke
Z
PC
T
EV
J
M
□K*2
4 x O1 thread depth R
M
EH
S

[mm]

Size	Stroke range [mm]	Incremental encoder						Absolute encoder [S6/S7]						Absolute encoder [T6/T7]						B
		Without lock			With lock			Without lock			With lock			Without lock			With lock			
		A	W	Z	A	W	Z	A	W	Z	A	W	Z	A	VB	VC	A	VB	VC	
25	15 to 100	238	87	14.6	274.9	123.9	16.3	233.4	82.4	14.6	274.5	123.5	16.3	233.4	82.4	14.6	274	123	16.3	136.5
	101 to 400	263			299.9			258.4			299.5			258.4			299			161.5
32	20 to 100	262.7	88.2	17.1	291.3	116.8	17.1	251.1	76.6	17.1	290.6	116.1	17.1	251.1	76.6	17.1	287.9	113.4	17.1	156
	101 to 500	292.7			321.3			281.1			320.6			281.1			317.9			186

Size	Stroke range [mm]	C	D	EH	EV	H	J	K	L	M	O_1	R	PA	PB	V	S	T	U	PC	Y
25	15 to 100	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.4	8.2	40	45	46.5	1.5	15.9	71.5
	101 to 400																			
32	20 to 100	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60	60	61	1	15.9	87
	101 to 500																			

Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	101 to 124					75				
	125 to 200		59	49.5						
	201 to 400		76	58						
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	101 to 124					80				
	125 to 200		53	51.5						
	201 to 500		70	60						

[*1] Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.

[*2] The direction of rod end width across flats (□K) differs depending on the products.

[*3] The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 77. For the mounting bracket dimensions, refer to page 97.

AC Servo Motor ***LECY□ Series***

Electric Actuator/ Rod Type **Dust-tight/Water-jet-proof (IP65 Equivalent)**

LEY-X5 (Made to Order) *Series* LEY25, 32

Refer to page 48 for model selection. **Size 63 is available by selecting option P. Refer to page 87.**

CE RoHS

LECS□ Series ▸ p. 163

How to Order

LEY H 25 □ V6 B − 200 □ □ □ − S 3 M2 □ − X5

❶ H ❷ 25 ❸ □ ❹ V6 ❺ B ❻ 200 ❼ □ ❽ □ ❾ □ ❿ S ⓫ 3 ⓬ M2 ⓭ □

X5 ● **Made to order: Dust-tight/ Water-jet-proof**

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
D	In-line

❹ Motor type

Symbol	Type	Output [W]	Size	Compatible driver
V6*1	AC servo motor (Absolute encoder)	100	25	LECYM2-V5 LECYU2-V5
V7		200	32	LECYM2-V7 LECYU2-V7

*1 For motor type V6, the compatible driver part number suffix is V5.

❺ Lead [mm]

Symbol	LEY25	LEY32
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

* The values shown in ( ) are the leads for the top mounting type. (Equivalent leads which include the pulley ratio [1.25:1])

❻ Stroke [mm]

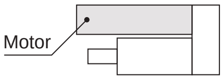
30	30
to	to
500	500

* For details, refer to the applicable stroke table below.

❼ Motor option

—	Without option
B	With lock

* When "With lock" is selected for the top mounting type, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



❽ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

Applicable Stroke Table

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range
LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

* Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to page 176.

SMC

Motor mounting position: Top mounting

Motor mounting position: In-line

❾ Mounting[*1]

Symbol	Type	Motor mounting position	
		Top mounting	In-line
—	Ends tapped/ Body bottom tapped[*2]	●	●
L	Foot	●	—
F	Rod flange[*2]	●[*3]	●
G	Head flange[*2]	●[*4]	—

[*1] The mounting bracket is shipped together with the product but does not come assembled.
[*2] For the horizontal cantilever mounting of the ends tapped, rod flange, or head flange types, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 100 mm or less
[*3] The rod flange type is not available for the LEY25 with a 30 mm stroke and motor option "With lock."
[*4] The head flange type is not available for the LEY32.

❿ Cable type[*1]

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

[*1] The motor and encoder cables are included. The motor cable for lock option is included when the motor with lock option is selected.

⓫ Cable length [m][*1]

—	Without cable
3	3
5	5
A	10
C	20

[*1] The length of the motor and encoder cables are the same. (For with lock)

⓬ Driver type

	Compatible driver	Power supply voltage [V]
—	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

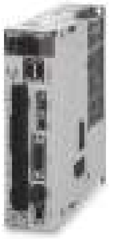
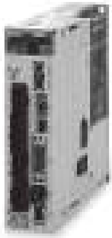
* When a driver type is selected, a cable is included. Select the cable type and cable length.

⓭ I/O cable length [m][*1]

—	Without cable
H	Without cable (Connector only)
1	1.5

[*1] When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 278 if I/O cable is required. (Options are shown on page 278.)

Compatible Driver

Driver type	MECHATROLINK-Ⅱ type 	MECHATROLINK-Ⅲ type 
Series	**LECYM**	**LECYU**
Applicable network	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	271	

Specifications: LECY

Model			LEY25V6-X5/LEY25DV6-X5			LEY32V7-X5 (Top mounting)			LEY32DV7-X5 (In-line)		
Actuator specifications	Work load [kg]	Horizontal*1	18	50	50	30	60	60	30	60	60
		Vertical*9	8	16	30	9	19	37	12	24	46
	Force [N]*2 (Set value: 45 to 90 %)		65 to 131	127 to 255	242 to 485	79 to 157	154 to 308	294 to 588	98 to 197	192 to 385	368 to 736
	Max.*3 speed [mm/s] Stroke range	Up to 300	900	450	225	1200	600	300	1000	500	250
		305 to 400	600	300	150						
		405 to 500	—	—	—	800	400	200	640	320	160
	Pushing speed [mm/s]*4		35 or less			30 or less			30 or less		
	Max. acceleration/deceleration [mm/s²]		5000			5000					
	Positioning repeatability [mm]	Basic type	±0.02			±0.02					
		High-precision type	±0.01			±0.01					
	Lost motion [mm]*5	Basic type	0.1 or less			0.1 or less					
		High-precision type	0.05 or less			0.05 or less					
	Lead [mm] (including pulley ratio)		12	6	3	20*6	10*6	5*6	16	8	4
	Impact/Vibration resistance [m/s²]*7		50/20			50/20					
	Actuation type		Ball screw + Belt (LEY☐)/Ball screw (LEY☐D)			Ball screw + Belt [1.25:1]			Ball screw		
	Guide type		Sliding bushing (Piston rod)			Sliding bushing (Piston rod)					
	Enclosure*8		IP65 equivalent								
	Operating temperature range [°C]		5 to 40			5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)			90 or less (No condensation)					
	Conditions for*10 "Regenerative resistor" [kg]	Horizontal	Not required			Not required					
		Vertical	6 or more			4 or more					
Electric specifications	Motor output/Size		100 W/☐40			200 W/☐60					
	Motor type		AC servo motor (200 VAC)			AC servo motor (200 VAC)					
	Encoder		Absolute 20-bit encoder (Resolution: 1048576 p/rev)								
	Power consumption [W]*11	Horizontal	45			65			65		
		Vertical	145			175			175		
	Standby power consumption when operating [W]*12	Horizontal	2			2			2		
		Vertical	8			8			8		
	Max. instantaneous power consumption [W]*13		445			724			724		
Lock unit specifications	Type*14		Non-magnetising lock								
	Holding force [N]		131	255	485	157	308	588	197	385	736
	Power consumption [W] at 20 °C*15		5.5			6			6		
	Rated voltage [V]		24 VDC $^{+10}_{\ 0}$ %								

*1 This is the maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.
*2 The force setting range (set values for the driver) for the force control with the torque control mode
Set it with reference to "Force Conversion Graph (Guide)" on page 52.
*3 The allowable speed changes according to the stroke.
*4 The allowable collision speed for collision with the workpiece with the torque control mode
*5 A reference value for correcting an error in reciprocal operation
*6 Equivalent leads which include the pulley ratio [1.25:1]
*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. (The test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
*8 Cannot be used in an environment where oil such as cutting oil splashes or it is constantly exposed to water Take appropriate protective measures. For details on enclosure, refer to "Enclosure" on page 188.
*9 When mounting vertically and using the product facing upwards in an environment where water is present, take necessary measures to prevent water from splashing on the rod cover, because water will accumulate on the rod seal due to the structure of the product.
*10 The work load conditions which require "Regenerative resistor" when operating at the maximum speed (Duty ratio: 100 %)
Order the regenerative resistor separately. For details, refer to "Conditions for Regenerative Resistor (Guide)" on pages 51 and 52.
*11 The power consumption (including the driver) is for when the actuator is operating.
*12 The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
*13 The maximum instantaneous power consumption (including the driver) is for when the actuator is operating.
*14 Only when motor option "With lock" is selected
*15 For an actuator with lock, add the power consumption for the lock.

Weight

Product Weight

[kg]

Series	LEY25V6 (Motor mounting position: Top mounting)									LEY32V7 (Motor mounting position: Top mounting)										
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Weight [kg]	1.2	1.3	1.6	1.7	1.9	2.1	2.2	2.4	2.6	2.3	2.4	2.7	3.2	3.5	3.8	4.0	4.3	4.6	4.9	5.2

Series	LEY25DV6 (Motor mounting position: In-line)									LEY32DV7 (Motor mounting position: In-line)										
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Weight [kg]	1.2	1.3	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.3	2.4	2.7	3.2	3.5	3.8	4.1	4.3	4.6	4.9	5.2

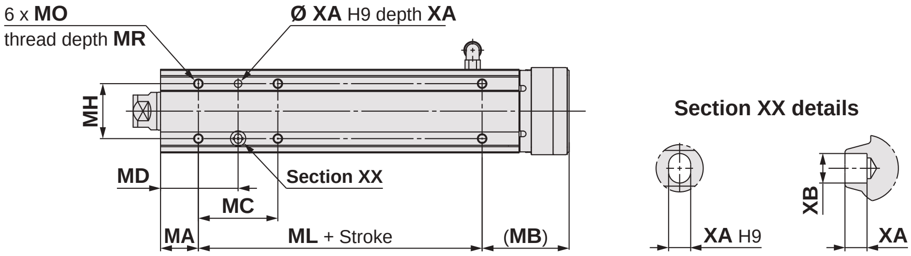
Additional Weight

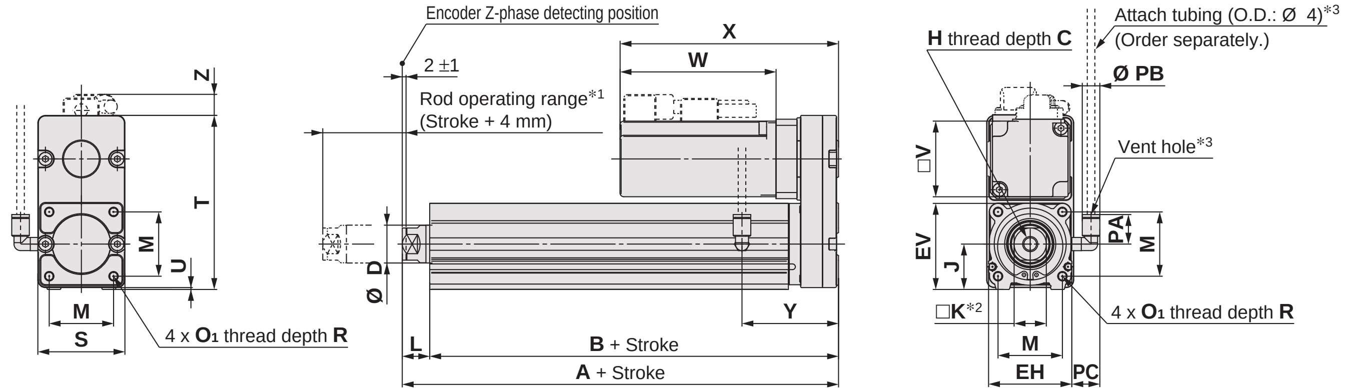
[kg]

Size		25	32
Lock		0.30	0.60
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			

Dimensions

Motor top mounting type: LEY$^{25}_{32}$


6 x MO
thread depth MR
Ø XA H9 depth XA
MH
MD
Section XX
MC
MA
ML + Stroke
(MB)
Section XX details
XB
XA H9
XA


Z
T
M
U
M
S
4 x O1 thread depth R
Encoder Z-phase detecting position
2 ±1
Rod operating range*1
(Stroke + 4 mm)
X
W
Ø D
L
B + Stroke
A + Stroke
Y
H thread depth C
Attach tubing (O.D.: Ø 4)*3
(Order separately.)
Ø PB
Vent hole*3
□V
EV
J
PA
M
□K*2
4 x O1 thread depth R
M
EH
PC

[mm]

Size	Stroke range [mm]	A	B	C	D	EH	EV	H	J	K	L	M	O1	R	PA	PB	V
25	15 to 100	130.5	116	13	20	44	45.5	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.4	8.2	40
	101 to 400	155.5	141														
32	20 to 100	148.5	130	13	25	51	56.5	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60
	101 to 500	178.5	160														

Size	Stroke range [mm]	S	T	U	PC	Without lock			With lock			Y
						W	X	Z	W	X	Z	
25	15 to 100	46	92	1	15.4	82.5	115.5	11	127.5	160.5	11	51
	101 to 400											
32	20 to 100	60	118	1	15.9	80	120	14	120	160	14	61
	101 to 500											

Body Bottom Tapped

[mm]

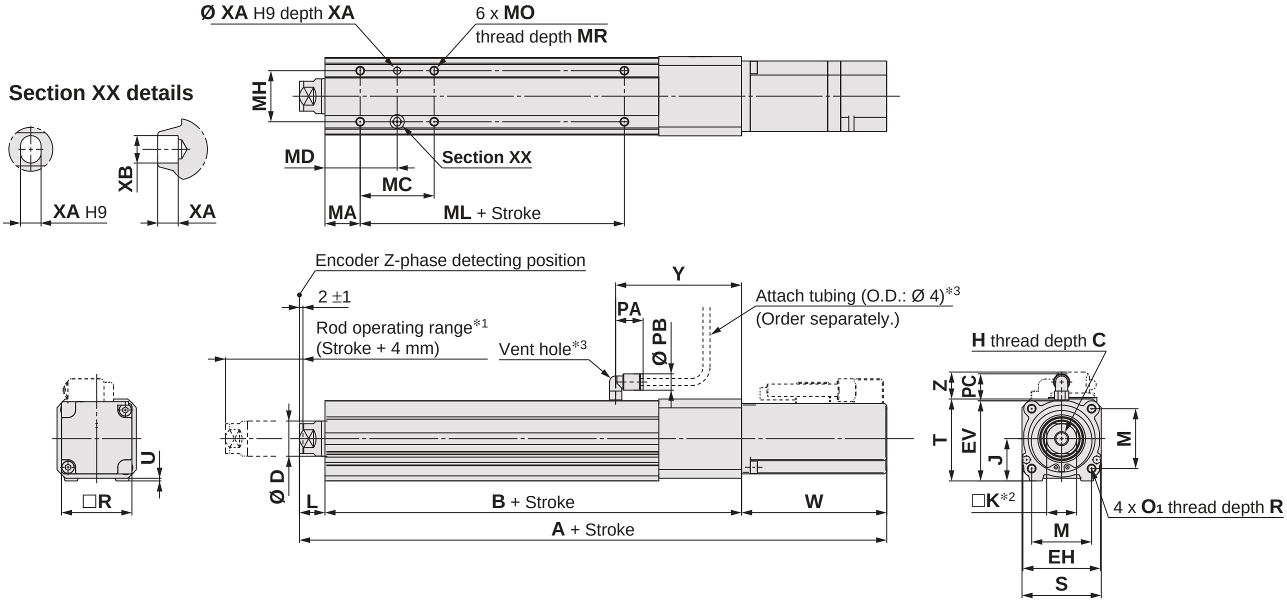
Size	Stroke range [mm]	MA	MB	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	46	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100			42	41						
	101 to 124						75				
	125 to 200			59	49.5						
	201 to 400			76	58						
32	20 to 39	25	55	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100			36	43						
	101 to 124						80				
	125 to 200			53	51.5						
	201 to 500			70	60						

∗1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
∗2 The direction of rod end width across flats (□K) differs depending on the products.
∗3 The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 77. For the mounting bracket dimensions, refer to page 97.

Dimensions

In-line motor type: LEY$^{25}_{32}$D


Ø XA H9 depth XA
6 x MO
thread depth MR
Section XX details
MH
MD
Section XX
MC
XB
XA H9
XA
MA
ML + Stroke
Encoder Z-phase detecting position
2 ±1
Rod operating range*1
(Stroke + 4 mm)
Vent hole*3
Y
PA
Ø PB
Attach tubing (O.D.: Ø 4)*3
(Order separately.)
H thread depth C
Z
PC
T
EV
J
M
U
□R
Ø D
L
B + Stroke
W
A + Stroke
□K*2
4 x O1 thread depth R
M
EH
S

[mm]

Size	Stroke range [mm]	Without lock A	Without lock W	Without lock Z	With lock A	With lock W	With lock Z	B	C	D	EH	EV
25	15 to 100	233.5	82.5	11.5	278.5	127.5	11.5	136.5	13	20	44	45.5
	101 to 400	258.5			303.5			161.5				
32	20 to 100	254.5	80	14	294.5	120	14	156	13	25	51	56.5
	101 to 500	284.5			324.5			186				

Size	Stroke range [mm]	H	J	K	L	M	O1	R	PA	PB	V	S	T	U	PC	Y
25	15 to 100	M8 x 1.25	24	17	14.5	34	M5 x 0.8	8	15.4	8.2	40	45	46.5	1.5	15.9	71.5
	101 to 400															
32	20 to 100	M8 x 1.25	31	22	18.5	40	M6 x 1.0	10	15.4	8.2	60	60	61	1	15.9	87
	101 to 500															

Body Bottom Tapped

[mm]

Size	Stroke range [mm]	MA	MC	MD	MH	ML	MO	MR	XA	XB
25	15 to 39	20	24	32	29	50	M5 x 0.8	6.5	4	5
	40 to 100		42	41						
	101 to 124					75				
	125 to 200		59	49.5						
	201 to 400		76	58						
32	20 to 39	25	22	36	30	50	M6 x 1	8.5	5	6
	40 to 100		36	43						
	101 to 124					80				
	125 to 200		53	51.5						
	201 to 500		70	60						

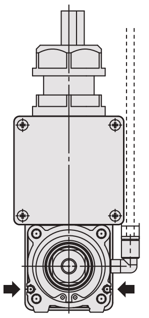
*1 Range within which the rod can move
Make sure workpieces mounted on the rod do not interfere with the workpieces and facilities around the rod.
*2 The direction of rod end width across flats (□K) differs depending on the products.
*3 The vent hole is the port for releasing to atmosphere. Do not apply pressure to this hole.
Attach tubing to the vent hole and place the end of the tubing so it is not exposed to dust or water.

For the rod end male thread, refer to page 77. For the mounting bracket dimensions, refer to page 97.

LEY-X5 Series
Auto Switch Mounting

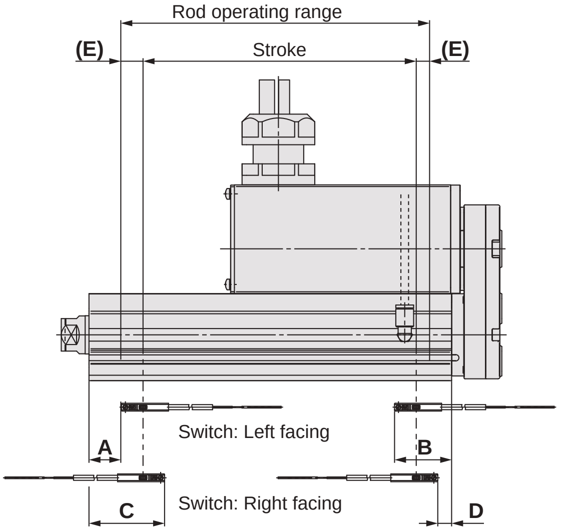
Proper Auto Switch Mounting Position

Applicable auto switches: D-M9□A(V)



LEY25, 32

➡ Auto switch groove


Rod operating range
(E)
Stroke
(E)
A
Switch: Left facing
B
C
Switch: Right facing
D

[mm]

Size	Stroke range	Auto switch position				Return to origin distance	Operating range
		Mounting: Left facing		Mounting: Right facing			
		A	**B**	**C**	**D**	**E**	—
25	15 to 100	27	62.5	39	50.5	(2)	4.2
	105 to 400	52		64			
32	20 to 100	30.5	85.5	42.5	53.5	(2)	4.9
	105 to 500	90.5		102.5			

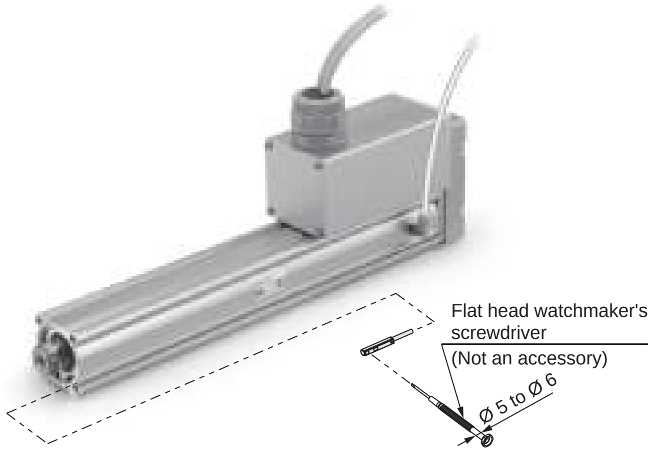
∗1 Figures in the table above are used as a reference when mounting the auto switches for stroke end detection. Adjust the auto switch after confirming the operating condition in the actual setting.

∗2 Switches cannot be mounted on the motor mounting side surface.

∗3 For the LEYG with a guide, switches cannot be mounted on the guide attachment side (rod side).

∗4 Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30 % dispersion). It may change substantially depending on the ambient environment.

Auto Switch Mounting


Flat head watchmaker's screwdriver
(Not an accessory)
Ø 5 to Ø 6

Auto Switch Mounting Screw Tightening Torque

[N·m]

Auto switch model	Tightening torque
D-M9□A(V)	0.05 to 0.10

∗ When tightening the auto switch mounting screw (included with auto switch), use a watchmaker's screwdriver with a handle diameter of about 5 to 6 mm.

Water Resistant 2-Colour Indicator
Solid State Auto Switch: Direct Mounting Type
D-M9NA(V)/D-M9PA(V)/D-M9BA(V) CE RoHS

Grommet

- Water (coolant) resistant type
- 2-wire load current is reduced (2.5 to 40 mA).
- The proper operating range can be determined by the colour of the light. (Red → Green ← Red)
- Using flexible cable as standard spec.

⚠Caution

Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the supplied is used.
Please consult with SMC if using coolant liquid other than water based solution.

Weight

[g]

Auto switch model		D-M9NA(V)	D-M9PA(V)	D-M9BA(V)
Lead wire length	0.5 m (—)	8		7
	1 m (**M**)	14		13
	3 m (**L**)	41		38
	5 m (**Z**)	68		63

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□A, D-M9□AV (With indicator light)

Auto switch model	D-M9NA	D-M9NAV	D-M9PA	D-M9PAV	D-M9BA	D-M9BAV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 µA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating range ·········· Red LED illuminates. Proper operating range ·········· Green LED illuminates.					
Standard	CE marking (EMC directive/RoHS directive)					

Oilproof Flexible Heavy-duty Lead Wire Specifications

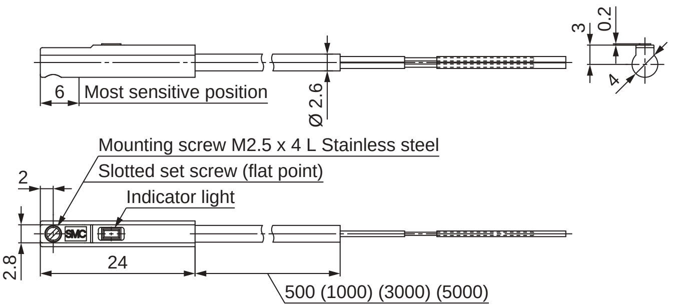
Auto switch model		D-M9NA□	D-M9NAV□	D-M9PA□	D-M9PAV□	D-M9BA□	D-M9BAV□
Sheath	Outside diameter [mm]	2.6					
Insulator	Number of cores	3 cores (Brown/Blue/Black)				2 cores (Brown/Blue)	
	Outside diameter [mm]	0.88					
Conductor	Effective area [mm²]	0.15					
	Strand diameter [mm]	0.05					
Minimum bending radius [mm]		17					

∗ Refer to the **Web Catalogue** for solid state auto switch common specifications.
∗ Refer to the **Web Catalogue** for lead wire lengths.

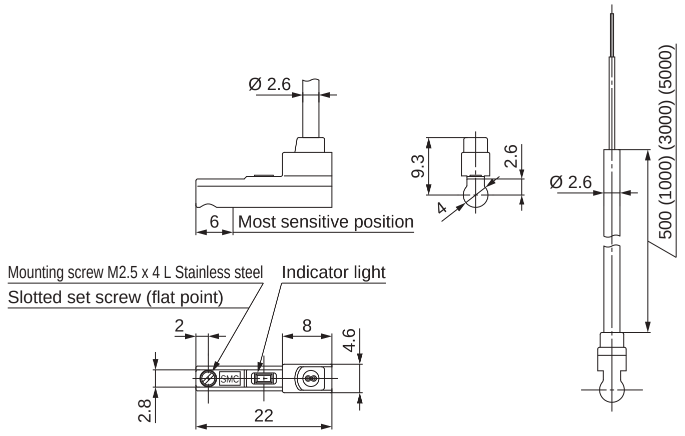
Dimensions

[mm]

D-M9□A


3
0.2
4
6
Most sensitive position
Ø 2.6
Mounting screw M2.5 x 4 L Stainless steel
Slotted set screw (flat point)
Indicator light
2
SMC
2.8
24
500 (1000) (3000) (5000)

D-M9□AV


Ø 2.6
6
Most sensitive position
9.3
2.6
4
Ø 2.6
500 (1000) (3000) (5000)
Mounting screw M2.5 x 4 L Stainless steel
Slotted set screw (flat point)
Indicator light
2
8
4.6
SMC
2.8
22

Step Motor (Servo/24 VDC) **Servo Motor** (24 VDC)

Electric Actuator/ Rod Type

Secondary Battery Compatible

25A-LEY Series LEY16, 25, 32, 40

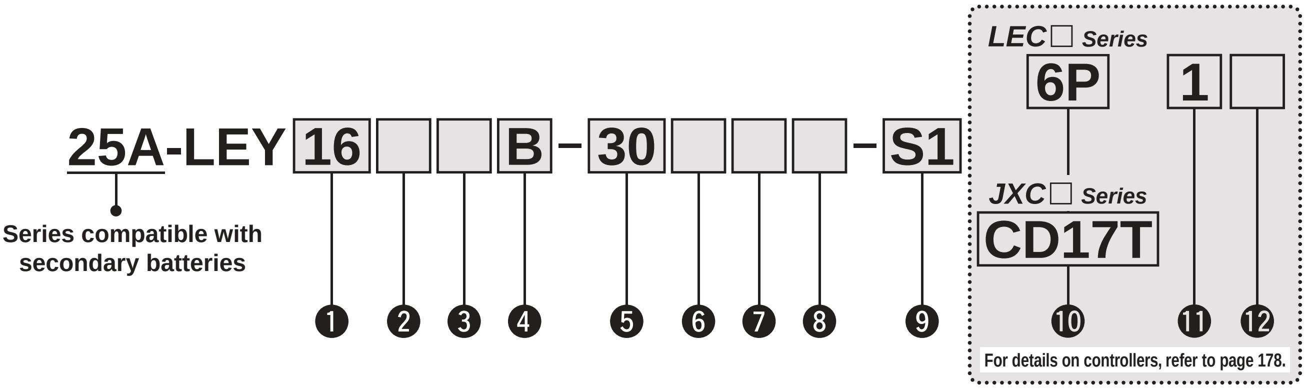
RoHS

Dust -tight/Water-jet-proof ▸p. 151

How to Order

Motor mounting position: Top/Parallel

Motor mounting position: In-line


25A-LEY 16 ☐ ☐ B – 30 ☐ ☐ ☐ – S1
Series compatible with secondary batteries
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
LEC☐ Series 6P 1 ☐
JXC☐ Series CD17T
⑩ ⑪ ⑫

For details on controllers, refer to page 178.

① Size

16
25
32
40

② Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

③ Motor type

Symbol	Type	Applicable size			Compatible controller/driver	
		LEY16	LEY25	LEY32/40		
—	Step motor (Servo/24 VDC)	●	●	●	LECP1 LECPA	JXCE1 JXC91 JXCP1 JXCD1 JXCL1
A	Servo motor (24 VDC)	●	●	—	LECA6	

④ Lead [mm]

Symbol	LEY16	LEY25	LEY32/40
A	10	12	16
B	5	6	8
C	2.5	3	4

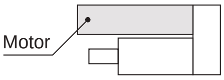
⑤ Stroke [mm]

30	30
to	to
500	500

* For details, refer to the applicable stroke table below.

⑥ Motor option*2

—	Without option
C	With motor cover
W	With lock/motor cover



⑦ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

⑧ Mounting*5

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/Body bottom tapped*6	●	●
L	Foot	●	—
F	Rod flange*6	●*8	●
G	Head flange*6	●*9	—
D	Double clevis*7	●	—

⑨ Actuator cable type/length*11

Standard cable [m]

—	None
S1	1.5*12
S3	3*12
S5	5*12

Robotic cable [m]

R1	1.5	RA	10*10
R3	3	RB	15*10
R5	5	RC	20*10
R8	8*10		

Mounting Bracket Part Nos. for the 25A- Series*4

Applicable size	Foot*3	Flange	Double clevis
16	25-LEY-L016	25-LEY-F016	25-LEY-D016
25	25-LEY-L025	25-LEY-F025	25-LEY-D025
32, 40	25-LEY-L032	25-LEY-F032	25-LEY-D032
Surface treatment	RAYDENT®	RAYDENT®	Coating (Size 16: Electroless nickel plating)

Solid state auto switches should be ordered separately. For details on auto switches, refer to the Web Catalogue.

Applicable auto switches

D-M9N(V)-900, D-M9P(V)-900, D-M9B(V)-900
D-M9NW(V)-900, D-M9PW(V)-900, D-M9BW(V)-900

Applicable Stroke Table*1

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range
25A-LEY16	●	●	●	●	●	●	●	—	—	—	—	10 to 300
25A-LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
25A-LEY32/40	●	●	●	●	●	●	●	●	●	●	●	20 to 500

LEC□ Series (For details, refer to page 179.)

6P 1 □
⑩ ⑪ ⑫

⑩ Controller/Driver type*12

—	Without controller/driver	
6N	**LECA6** (Step data input type)	NPN
6P		PNP
1N	**LECP1***13 (Programless type)	NPN
1P		PNP
AN	**LECPA***13 *15 (Pulse input type)	NPN
AP		PNP

⑪ I/O cable length*16, Communication plug

—	Without cable (Without communication plug connector)
1	1.5 m
3	3 m*17
5	5 m*17
S	Straight type communication plug connector
T	T-branch type communication plug connector

⑫ Controller/Driver mounting

—	Screw mounting
D	DIN rail*18

JXC□ Series (For details, refer to page 179.)

⑩ Controller

—	Without controller
C□1□□	With controller

C D 1 7 T

Communication protocol

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

For single axis

Mounting

7	Screw mounting
8*18	DIN rail

Communication plug connector for DeviceNet™*19

—	Without plug connector
S	Straight type
T	T-branch type

---

*1 Please consult with SMC for non-standard strokes as they are produced as special orders.
*2 When “With lock” or “With lock/motor cover” is selected for the top mounting and right/left side parallel types, the motor body will stick out from the end of the body for size 16/40 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.
*3 When ordering foot brackets, order 2 pieces per actuator.
*4 Parts belonging to each bracket are as follows.
Foot, Flange: Body mounting bolt, Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt
*5 The mounting bracket is shipped together with the product but does not come assembled.
*6 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32/40: 100 mm or less
*7 For the mounting of the double clevis type, use the actuator within the following stroke range.
· LEY16: 100 mm or less · LEY25: 200 mm or less · LEY32/40: 200 mm or less
*8 The rod flange type is not available for the LEY16/40 with a 30 mm stroke and motor option “With lock,” “With lock/motor cover.”
*9 The head flange type is not available for the LEY32/40.
*10 Produced upon receipt of order (Robotic cable only)
*11 The standard cable should only be used on fixed parts.
For use on moving parts, select the robotic cable.
*12 For details on controllers/drivers and compatible motors, refer to the compatible controller/driver on the next page.
*13 Only available for the motor type “Step motor”
*14 Not compliant with CE
*15 When pulse signals are open collector, order the current limiting resistor (LEC-PA-R-□) on page 220 separately.
*16 When “Without controller/driver” is selected for controller/driver types, I/O cable cannot be selected. Refer to page 199 (For LECA6), page 213(For LECP1), or page 220 (For LECPA) if I/O cable is required.
*17 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
*18 The DIN rail is not included. Order it separately.
*19 Select “—” for anything other than DeviceNet™.

⚠Caution

[CE-compliant products]

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

② For the servo motor (24 VDC) specification, EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 199 for the noise filter set. Refer to the LECA series Operation Manual for installation.

[UL-compliant products (For the LEC series)]

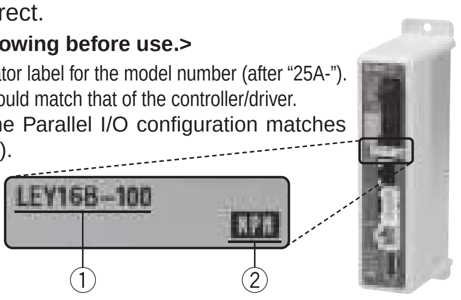
When compliance with UL is required, the electric actuator and controller/driver should be used with a UL1310 Class 2 power supply.

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

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

<Check the following before use.>

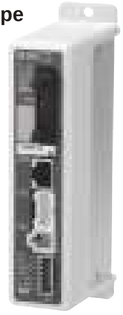
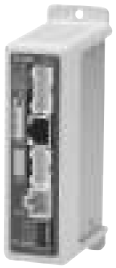
① Check the actuator label for the model number (after “25A-”).
This number should match that of the controller/driver.
② Check that the Parallel I/O configuration matches (NPN or PNP).



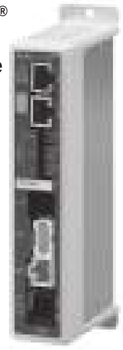
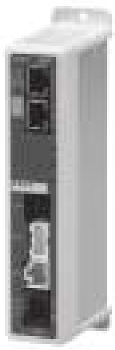
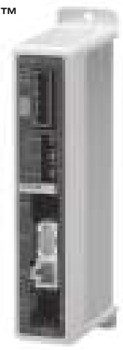
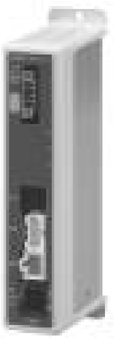
* Refer to the Operation Manual for using the products. Please download it via our website, https://www.smc.eu

Compatible Controller/Driver

LEC□ Series

Type	**Step data input type** 	**Programless type** 	**Pulse input type** 
Series	**LECA6**	**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	Servo motor (24 VDC)	Step motor (Servo/24 VDC)	
Max. number of step data	64 points	14 points	—
Power supply voltage			
Reference page	191	207	214

JXC□ Series

Type	**EtherCAT® direct input type** 	**EtherNet/IP™ direct input type** 	**PROFINET direct input type** 	**DeviceNet™ direct input type** 	**IO-Link direct input type** 
Series	**JXCE1**	**JXC91**	**JXCP1**	**JXCD1**	**JXCL1**
Features	EtherCAT® direct input	EtherNet/IP™ direct input	PROFINET direct input	DeviceNet™ direct input	IO-Link direct input
Compatible motor	Step motor (Servo/24 VDC)				
Max. number of step data	64 points				
Power supply voltage	24 VDC				
Reference page	224				

AC Servo Motor **LECS□ Series**

Electric Actuator/ Rod Type

Secondary Battery Compatible

25A-LEY Series

LEY25, 32 Size 25, 32

∗ Refer to the table below.

RoHS

LECY□ Series ▸ p. 183

Refer to page 41 for model selection.

How to Order

25A-LEY H 25 □ S2 B – 100 □ □ □ – S 2 A1 □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

25A: Series compatible with secondary batteries

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

❹ Motor type

Symbol	Type	Output [W]	Actuator size	Compatible driver*3	UL-compliant
S2*1	AC servo motor (Incremental encoder)	100	25	LECSA□-S1	—
S3		200	32	LECSA□-S3	—
S6*1	AC servo motor (Absolute encoder)	100	25	LECSB□-S5 LECSC□-S5 LECSS□-S5	—
S7		200	32	LECSB□-S7 LECSC□-S7 LECSS□-S7	—
T6*2	AC servo motor (Absolute encoder)	100	25	LECSS2-T5	●
T7		200	32	LECSS2-T7	●

∗1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
∗2 For motor type T6, the compatible driver part number suffix is T5.
∗3 For details on the driver, refer to the **Web Catalogue**.

❺ Lead [mm]

Symbol	LEY25	LEY32*1
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

∗1 The values shown in ( ) are the leads for the size 32 top mounting, right/left side parallel types. (Equivalent leads which include the pulley ratio [1.25:1])

❻ Stroke [mm]

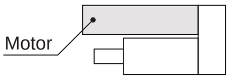
30	30
to	to
500	500

∗ For details, refer to the applicable stroke table below.

❼ Motor option

—	Without option
B	With lock*1

∗1 When "With lock" is selected for the top mounting and right/left side parallel types, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



❽ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❾ Mounting*1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/ Body bottom tapped*2	●	●
L	Foot	●	—
F	Rod flange*2	●*4	●
G	Head flange*2	●*5	—
D	Double clevis*3	●	—

∗1 The mounting bracket is shipped together with the product but does not come assembled.
∗2 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
 · 25A-LEY25: 200 mm or less
 · 25A-LEY32: 100 mm or less
∗3 For the mounting of the double clevis type, use the actuator within the following stroke range.
 · 25A-LEY25: 200 mm or less
 · 25A-LEY32: 200 mm or less
∗4 The rod flange type is not available for the 25A-LEY25 with a 30 mm stroke and motor option "With lock."
∗5 The head flange type is not available for the 25A-LEY32.

Mounting Bracket Part Nos. for the 25A- Series

Applicable size	Foot*1	Flange	Double clevis
25	25-LEY-L025	25-LEY-F025	25-LEY-D025
32	25-LEY-L032	25-LEY-F032	25-LEY-D032
Surface treatment	RAYDENT®	RAYDENT®	Coating (Size 16: Electroless nickel plating)

∗1 When ordering foot brackets, order 2 pieces per actuator.
∗ Parts belonging to each bracket are as follows.
Foot, Flange: Body mounting bolt, Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

Applicable Stroke Table

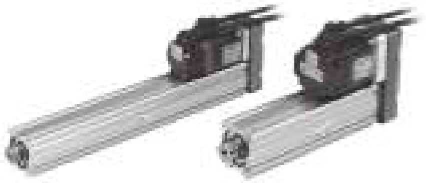
●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range [mm]
25A-LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
25A-LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

∗ Please consult with SMC for non-standard strokes as they are produced as special orders.

Solid state auto switches should be ordered separately. For details on auto switches, refer to the Web Catalogue.

Applicable auto switches
D-M9N(V)-900, D-M9P(V)-900, D-M9B(V)-900
D-M9NW(V)-900, D-M9PW(V)-900, D-M9BW(V)-900



Motor mounting position:
Top/Parallel

Motor mounting position:
In-line

⑩ Cable type*1 *2

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

*1 The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
*2 Standard cable entry direction is
· Top/Parallel: (A) Axis side
· In-line: (B) Counter axis side

⑪ Cable length*1 [m]

—	Without cable
2	2
5	5
A	10

*1 The length of the encoder, motor, and lock cables are the same.

⑫ Driver type*1

	Compatible driver	Power supply voltage [V]	UL-compliant
—	Without driver	—	—
A1	LECSA1-S□	100 to 120	—
A2	LECSA2-S□	200 to 230	—
B1	LECSB1-S□	100 to 120	—
B2	LECSB2-S□	200 to 230	—
C1	LECSC1-S□	100 to 120	—
C2	LECSC2-S□	200 to 230	—
S1	LECSS1-S□	100 to 120	—
S2	LECSS2-S□	200 to 230	—
	LECSS2-T□	200 to 240	●

*1 When a driver type is selected, a cable is included. Select the cable type and cable length.
Example)
S2S2: Standard cable (2 m) + Driver (LECSS2)
S2 : Standard cable (2 m)
— : Without cable and driver

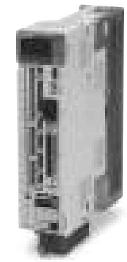
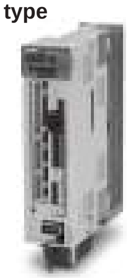
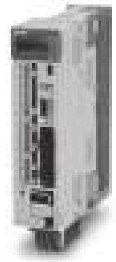
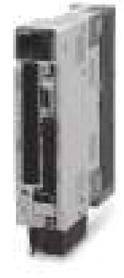
⑬ I/O cable length [m]*1

—	Without cable
H	Without cable (Connector only)
1	1.5

*1 When "Without driver" is selected for driver type, only "—: Without cable" can be selected.
Refer to page 265 if I/O cable is required.

* The 25A- series specifications and dimensions are the same as those of the standard model.

Compatible Driver

Driver type	**Pulse input type/ Positioning type** 	**Pulse input type** 	**CC-Link direct input type** 	**SSCNETⅢ type** 	**SSCNETⅢ/H type** 
Series	**LECSA**	**LECSB**	**LECSC**	**LECSS**	**LECSS-T**
Number of point tables	Up to 7	—	Up to 255 (2 stations occupied)	—	—
Pulse input	○	○	—	—	—
Applicable network	—	—	CC-Link	SSCNETⅢ	SSCNETⅢ/H
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 22-bit encoder
Communication function	USB communication	USB communication, RS422 communication		USB communication	
Power supply voltage [V]	100 to 120 VAC (50/60 Hz), 200 to 230 VAC (50/60 Hz)				200 to 240 VAC (50/60 Hz)
Reference page	246				

* Copper and zinc materials are used for the motors, cables, controllers/drivers.

Electric Actuator/ Rod Type

Secondary Battery Compatible

25A-LEY Series LEY25, 32

Size 25, 32

LECS□ Series▶p. 181

Refer to page 48 for model selection.

How to Order

25A-LEY H 25 □ V6 B – 100 □ □ □ – S 2 M2 □

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⑫ ⑬

25A: Series compatible with secondary batteries

❶ Accuracy

—	Basic type
H	High-precision type

❷ Size

25
32

❸ Motor mounting position

—	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

❹ Motor type

Symbol	Type	Output [W]	Size	Compatible driver
V6*1	AC servo motor (Absolute encoder)	100	25	LECYM2-V5 LECYU2-V5
V7		200	32	LECYM2-V7 LECYU2-V7

*1 For motor type V6, the compatible driver part number suffix is V5.

❺ Lead [mm]

Symbol	25A-LEY25	25A-LEY32*1
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

*1 The values shown in ( ) are the leads for the size 32 top mounting, right/left side parallel types. (Equivalent leads which include the pulley ratio [1.25:1])

❻ Stroke [mm]

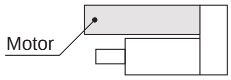
30	30
to	to
500	500

* For details, refer to the applicable stroke table below.

❼ Motor option

—	Without option
B	With lock*1

*1 When "With lock" is selected for the top mounting and right/left side parallel types, the motor body will stick out from the end of the body for size 25 with strokes of 30 mm or less. Check for interference with workpieces before selecting a model.



❽ Rod end thread

—	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

❾ Mounting*1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
—	Ends tapped/ Body bottom tapped *2	●	●
L	Foot	●	—
F	Rod flange*2	●*4	●
G	Head flange*2	●*5	—
D	Double clevis*3	●	—

*1 The mounting bracket is shipped together with the product but does not come assembled.

*2 For the horizontal cantilever mounting of the rod flange, head flange, or ends tapped types, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 100 mm or less

*3 For the mounting of the double clevis type, use the actuator within the following stroke range.
· LEY25: 200 mm or less · LEY32: 200 mm or less

*4 The rod flange type is not available for the LEY25 with a 30 mm stroke and motor option "With lock."

*5 The head flange type is not available for the LEY32.

Mounting Bracket Part Nos. for the 25A- Series

Applicable size	Foot*1	Flange	Double clevis
25	25-LEY-L025	25-LEY-F025	25-LEY-D025
32	25-LEY-L032	25-LEY-F032	25-LEY-D032
Surface treatment	RAYDENT®	RAYDENT®	Coating (Size 16: Electroless nickel plating)

*1 When ordering foot brackets, order 2 pieces per actuator.

* Parts belonging to each bracket are as follows.
Foot, Flange: Body mounting bolt, Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

Solid state auto switches should be ordered separately. For details on auto switches, refer to the Web Catalogue**.**

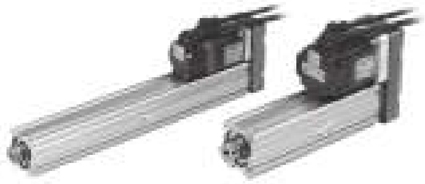
Applicable auto switches
D-M9N(V)-900, D-M9P(V)-900, D-M9B(V)-900
D-M9NW(V)-900, D-M9PW(V)-900, D-M9BW(V)-900

Applicable Stroke Table

●: Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	Manufacturable stroke range [mm]
25A-LEY25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
25A-LEY32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

* Please consult with SMC for non-standard strokes as they are produced as special orders.



Motor mounting position:
Top/Parallel

Motor mounting position:
In-line

⑩ Cable type[1] [2]

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

[1] The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)

[2] Standard cable entry direction is
· Top/Parallel: (A) Axis side
· In-line: (B) Counter axis side

⑪ Cable length [m][1]

—	Without cable
3	3
5	5
A	10
C	20

[1] The length of the motor and encoder cables are the same. (For with lock)

⑫ Driver type

	Compatible driver	Power supply voltage [V]
—	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

* When a driver type is selected, a cable is included. Select the cable type and cable length.

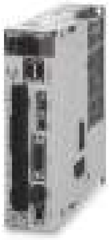
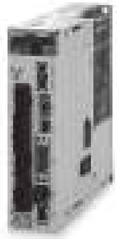
⑬ I/O cable length [m][1]

—	Without cable
H	Without cable (Connector only)
1	1.5

[1] When "Without driver" is selected for driver type, only "—: Without cable" can be selected. Refer to page 278 if I/O cable is required.

* The 25A- series specifications and dimensions are the same as those of the standard model.

Compatible Driver

Driver type	MECHATROLINK-Ⅱ **type** 	MECHATROLINK-Ⅲ **type** 
Series	**LECYM**	**LECYU**
Applicable network	MECHATROLINK-Ⅱ	MECHATROLINK-Ⅲ
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	271	

* Copper and zinc materials are used for the motors, cables, controllers/drivers.

LEY/LEYG Series
Electric Actuators
Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

Design/Selection

⚠Warning

1. Do not apply a load in excess of the specification limits.

Select a suitable actuator by work load and allowable lateral load on the rod end. If a load in excess of the specification limits is applied to the piston rod, the generation of play in the piston rod sliding parts, reduced accuracy, etc., may occur and adversely affect the operation and service life of the product.

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

This can cause a malfunction.

3. When used as a stopper, select the LEYG series "Sliding bearing" for strokes of 30 mm or less.

4. When used as a stopper, fix the main body with a guide attachment ("Top mounting" or "Bottom mounting").

If the end of the actuator is used to fix the main body (end mounting), the excessive load acts on the actuator, which may adversely affect the operation and service life of the product.

Handling

⚠Caution

1. INP output signal

1) Positioning operation

When the product comes within the set range of the 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 force exceeds the step data [Trigger LV], the INP output signal will turn ON.

Use the product within the specified range of the [Pushing force] and [Trigger LV].

a) To ensure that the actuator pushes the workpieces with the set [Pushing force], it is recommended that the [Trigger LV] be set to the same value as the [Pushing force].

b) When the [Pushing force] and the [Trigger LV] are set below the specified range, the INP output signal will turn ON from the pushing start position.

<Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed>
Without Load

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY□16□	A/B/C	21 to 50	60 to 85 %
LEY□25□	A/B/C	21 to 35	50 to 65 %
LEY□32□	A	24 to 30	60 to 85 %
	B/C	21 to 30	
LEY□40□	A	24 to 30	50 to 65 %
	B/C	21 to 30	

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LEY□16□A	A/B/C	21 to 50	80 to 95 %
LEY□25□A	A/B/C	21 to 35	80 to 95 %

There is a limit to the pushing force in relation to the pushing speed. If the product is operated outside of the range (low pushing force), the completion signal [INP] may be output before the pushing operation has been completed (during the moving operation).
If operating with the pushing speed below the min. speed, please check for operating problems before using the product.

Handling

⚠Caution

<Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	LEY16□			LEY25□			LEY32□			LEY40□		
Lead	A	B	C	A	B	C	A	B	C	A	B	C
Work load [kg]	1	1.5	3	2.5	5	10	4.5	9	18	7	14	28
Pushing force	85 %			65 %			85 %			65 %		

Model	LEY16□A			LEY25□A		
Lead	A	B	C	A	B	C
Work load [kg]	1	1.5	3	1.2	2.5	5
Pushing force	95 %			95 %		

Model	LEYG16$^{M}_{L}$□			LEYG25$^{M}_{L}$□			LEYG32$^{M}_{L}$□			LEYG40$^{M}_{L}$□		
Lead	A	B	C	A	B	C	A	B	C	A	B	C
Work load [kg]	0.5	1	2.5	1.5	4	9	2.5	7	16	5	12	26
Pushing force	85 %			65 %			85 %			65 %		

Model	LEYG16$^{M}_{L}$□A			LEYG25$^{M}_{L}$□A		
Lead	A	B	C	A	B	C
Work load [kg]	0.5	1	2.5	0.5	1.5	4
Pushing force	95 %			95 %		

2. To conduct a pushing operation, be sure to set the product to [Pushing operation].

Also, refrain from bumping the workpiece during a positioning operation or when in the range of the positioning operation. Failure to do so may result in a malfunction.

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

Failure to do so may result in damage or malfunction.

4. The moving force should be the initial value (LEY16□/25□/32□/40□: 100 %, LEY16A□: 150 %, and LEY25A□: 200 %).

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

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

Check the model selection section of the catalogue.

6. 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 the detected motor torque.

7. For pushing operations, set the product to a position at least 2 mm away from a workpiece. (This position is referred to as the pushing start position.)

The following alarms may be generated and operation may become unstable if setting is not done correctly.

a. "Posn failed"

The product cannot reach the pushing start position due to variations in the target positions.

b. "Pushing ALM"

The product is pushed back from the pushing start position after starting to push.

LEY/LEYG Series
Electric Actuators Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

Handling

⚠Caution

8. **Do not scratch or dent the sliding parts of the piston rod by bumping them or placing objects on them.**

   The piston rod and guide rod are manufactured to precise tolerances, so even a slight deformation may cause a malfunction.

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

   Use a freely moving connector (such as a floating joint).

10. **Do not operate by fixing the piston rod and moving the actuator body.**

    Excessive load will be applied to the piston rod, resulting in damage to the actuator and a reduced service life of the product.

11. **When an actuator is operated with one end fixed and the other free (ends tapped or flange), a bending moment may act on the actuator due to vibration generated at the stroke end, which can damage the actuator. In such cases, install a mounting bracket to suppress the vibration of the actuator body or reduce the speed so that the actuator does not vibrate at the stroke end.**

    Also, use a mounting bracket when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.

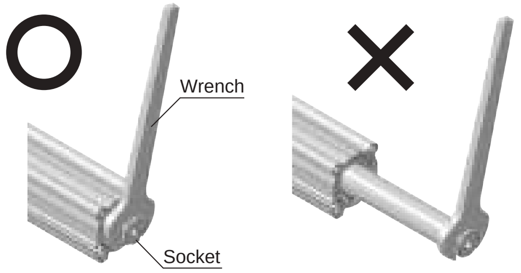
12. **Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.**

    This may cause the deformation of the non-rotating guide, abnormal auto switch responses, play 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	LEY16□□	LEY25□□	LEY32/40□□	LEY63
	0.8	1.1	1.4	2.8

When screwing a bracket or nut into the piston rod end, hold the flats of the end of the "socket" with a wrench (the piston rod should be fully retracted). Do not apply tightening torque to the non-rotating mechanism.



13. **When rotational torque is applied to the end of the plate, use it within the allowable range. [LEYG series]**

    Failure to do so may cause the deformation of the guide rod and bushing, play in the guide, or an increase in the sliding resistance.

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

    The duty ratio is the fraction of time that the product can keep pushing.

• Step motor (Servo/24 VDC)

LEY16□

Pushing force [%]	Ambient temperature: 25 °C or less		Ambient temperature: 40 °C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
40 or less	100	—	100	—
50			70	12
70			20	1.3
85			15	0.8

LEY25□/40□

Pushing force [%]	Ambient temperature: 25 °C or less		Ambient temperature: 40 °C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
65 or less	100	—	100	—

LEY32□

Pushing force [%]	Ambient temperature: 25 °C or less		Ambient temperature: 40 °C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
65 or less	100	—	100	—
85			50	15

• Servo motor (24 VDC)

LEY16A□

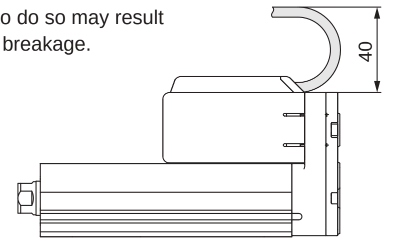
Pushing force [%]	Ambient temperature: 25 °C or less		Ambient temperature: 40 °C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
95 or less	100	—	100	—

LEY25A□

Pushing force [%]	Ambient temperature: 25 °C or less		Ambient temperature: 40 °C	
	Duty ratio [%]	Continuous pushing time [minute]	Duty ratio [%]	Continuous pushing time [minute]
95 or less	100	—	100	—

15. **When mounting the product, secure a space of 40 mm or more to allow for bends in the cable.**

* Failure to do so may result in cable breakage.



16. **When mounting a bolt, workpiece, or jig, hold the flats of the piston rod end with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.**

    Failure to do so may cause abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

LEY/LEYG Series
Electric Actuators
Specific Product Precautions 3

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

Handling

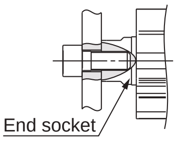
⚠Caution

17. When mounting the product and/or a workpiece, tighten the mounting screws within the specified torque range.

Tightening the screws with a higher torque than recommended may cause a malfunction, while tightening with a lower torque can cause the displacement of the mounting position or, in extreme conditions, the actuator could become detached from its mounting position.

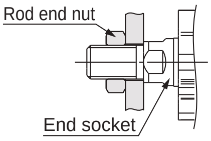
<LEY series>

Workpiece fixed/Rod end female thread

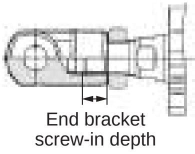


Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]	End socket width across flats [mm]
LEY16	M5 x 0.8	3.0	10	14
LEY25	M8 x 1.25	12.5	13	17
LEY32/40	M8 x 1.25	12.5	13	22
LEY63	M16 x 2	106	21	36

Workpiece fixed/Rod end male thread (When "Rod end male thread" is selected)



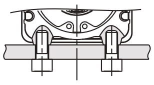
Model	Thread size	Max. tightening torque [N·m]	Effective thread length [mm]	End socket width across flats [mm]
LEY16	M8 x 1.25	12.5	12	14
LEY25	M14 x 1.5	65.0	20.5	17
LEY32/40	M14 x 1.5	65.0	20.5	22
LEY63	M18 x 1.5	97.0	26	36



Model	Rod end nut		End bracket screw-in depth [mm]
	Width across flats [mm]	Length [mm]	
LEY16	13	5	5 or more
LEY25	22	8	8 or more
LEY32/40	22	8	8 or more
LEY63	27	11	18

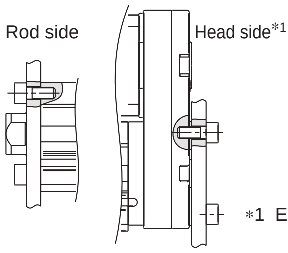
* The rod end nut is an accessary.

Body fixed/Body bottom tapped type (When "Body bottom tapped" is selected)



Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY16	M4 x 0.7	1.5	5.5
LEY25	M5 x 0.8	3.0	6.5
LEY32/40	M6 x 1.0	5.2	8.8
LEY63	M8 x 1.25	12.5	10

Body fixed/Rod side/Head side tapped type

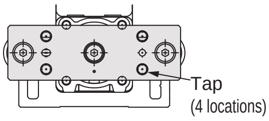


Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEY16	M4 x 0.7	1.5	7
LEY25	M5 x 0.8	3.0	8
LEY32/40	M6 x 1.0	5.2	10
LEY63	M8 x 1.25	12.5	16

*1 Excludes the LEY□D

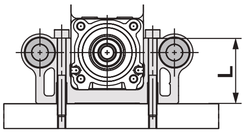
<LEYG series>

Workpiece fixed/Plate tapped type



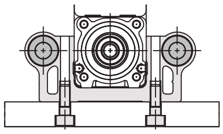
Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	11
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	12

Body fixed/Top mounting



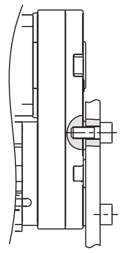
Model	Screw size	Max. tightening torque [N·m]	Length: L [mm]
LEYG16$^{M}_{L}$	M4 x 0.7	1.5	32
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	40.3
LEYG$^{32M}_{40L}$	M5 x 0.8	3.0	50.3

Body fixed/Bottom mounting



Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M5 x 0.8	3.0	10
LEYG25$^{M}_{L}$	M6 x 1.0	5.2	12
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	12

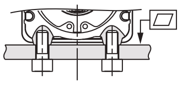
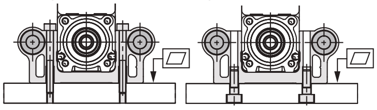
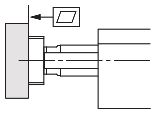
Body fixed/Head side tapped type



Model	Screw size	Max. tightening torque [N·m]	Max. screw-in depth [mm]
LEYG16$^{M}_{L}$	M4 x 0.7	1.5	7
LEYG25$^{M}_{L}$	M5 x 0.8	3.0	8
LEYG$^{32M}_{40L}$	M6 x 1.0	5.2	10

18. Keep the flatness of the mounting surface within the following ranges when mounting the actuator body and workpiece.

Mounting the product on an uneven workpiece or base may cause an increase in the sliding resistance.

Model	Mounting position	Flatness
LEY□	Body/Body bottom 	0.1 mm or less
LEYG□	Top mounting/Bottom mounting 	0.02 mm or less
	Workpiece/Plate mounting 	0.02 mm or less

19. When using auto switches with the guide rod type LEYG series, the following limits apply. Please consider the following before selecting the product.

- Auto switches must be inserted from the front side with the rod (plate) sticking out.
- Auto switches with perpendicular electrical entries cannot be used.
- Auto switches cannot be fixed with the parts hidden behind the guide attachment (the side of the rod that sticks out).
- Please consult with SMC when using auto switches on the side of the rod that sticks out.

LEY/LEYG Series
Electric Actuators
Specific Product Precautions 4

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: https://www.smc.eu

Handling

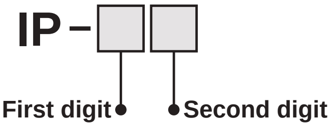
⚠Caution

20. When using the product with the IP65 or equivalent specifications, be sure to mount the tubing to the vent hole, and then place the end of the tubing in an area where it is not exposed to dust or water. When the actuator is used without mounting the fitting and tubing to the vent hole, water or dust may enter the inside of the actuator, causing a malfunction.

21. When fluctuations in the load are caused during operation, malfunction, noise, or alarm generation may occur. (In the case of the AC servo motor)

The gain tuning may not be suitable for fluctuating loads.
Adjust the gain properly by following the instructions in the driver manual.

Enclosure



- **First Digit:**
Degree of protection against solid foreign objects

0	Not protected
1	Protected against solid foreign objects of 50 mmØ and larger
2	Protected against solid foreign objects of 12 mmØ and larger
3	Protected against solid foreign objects of 2.5 mmØ and larger
4	Protected against solid foreign objects of 1.0 mmØ and larger
5	Dust protected
6	Dust-tight

- **Second Digit:**
Degree of protection against water

0	Not protected	—
1	Protected against vertically falling water droplets	Dripproof type 1
2	Protected against vertically falling water droplets when enclosure is tilted up to 15°	Dripproof type 2
3	Protected against rainfall when enclosure is tilted up to 60°	Rainproof type
4	Protected against splashing water	Splashproof type
5	Protected against water jets	Water-jet-proof type
6	Protected against powerful water jets	Powerful water-jet-proof type
7	Protected against the effects of temporary immersion in water	Immersible type
8	Protected against the effects of continuous immersion in water	Submersible type

Example) IP65: Dust-tight, Water-jet-proof type
“Water-jet-proof” means that no water enters the equipment that could hinder it from operating normally when water is applied for 3 minutes in the prescribed manner. Take appropriate protective measures as the device is not usable in environments where droplets of water are splashed constantly.

Maintenance

⚠Warning

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

- **Maintenance frequency**

Perform maintenance according to the table below.

Frequency	Appearance check	Belt check
Inspection before daily operation	○	—
Inspection every 6 months/ 250 km/5 million cycles*1	○	○

*1 Select whichever comes first.

- **Items for visual appearance check**

1. Loose set screws, Abnormal amount of dirt, etc.
2. Check for visible damage, Check of cable joint
3. Vibration, Noise

- **Items for belt check**

Stop operation immediately and replace the belt when any of the following occur. In addition, ensure your operating environment and conditions satisfy the requirements specified for the product.

a. Tooth shape canvas is worn out
Canvas fiber becomes fuzzy, Rubber is coming off and the fiber has become whitish, Lines of fibers have become unclear

b. Peeling off or wearing of the side of the belt
Belt corner has become rounded and frayed threads stick out

c. Belt is partially cut
Belt is partially cut, Foreign matter caught in the teeth of other parts is causing damage

d. A vertical line on belt teeth is visible
Damage which is made when the belt runs on the flange

e. Rubber back of the belt is softened and sticky

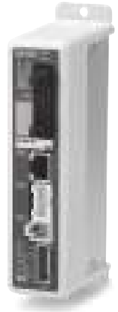
f. Cracks on the back of the belt are visible

Controller/Driver
LEC□/JXC□ Series

<Single Axis Controllers>

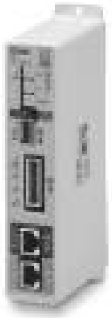
Step Data Input Type ·········· p. 191

Servo Motor
(24 VDC)
LECA6 Series



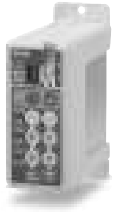
Gateway Unit ························· p. 203

LEC-G Series



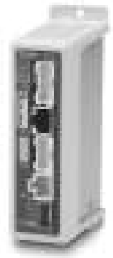
Programless Type ··············· p. 207

Step Motor
(Servo/24 VDC)
LECP1 Series



Pulse Input Type ················· p. 214

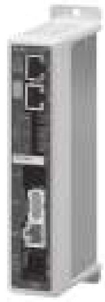
Step Motor
(Servo/24 VDC)
LECPA Series



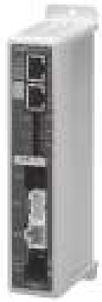
EtherCAT®/EtherNet/IP™/PROFINET/DeviceNet™/IO-Link Direct Input Type ··· p. 2224

JXC□ Series

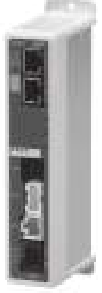
EtherCAT.



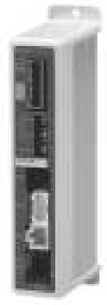
EtherNet/IP™



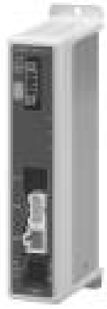
PROFI NET



DeviceNet™



IO-Link



<Multi-Axis Controllers>

EtherNet/IP™ Direct Input Type ······ p. 233

For 3 axes **JXC92** Series

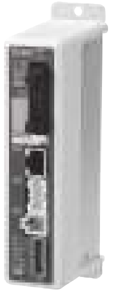
Parallel I/O/EtherNet/IP™ Direct Input Type ······················· p. 235

For 4 axes

JXC73 Series
JXC83 Series

JXC93 Series
EtherNet/IP™

Controller (Step Data Input Type)
Servo Motor (24 VDC)
LECA6 Series



LECA6 Series

How to Order

⚠Caution

[CE-compliant products]

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

② For the LECA6 series (servo motor controller), EMC compliance was tested by installing a noise filter set (LEC-NFA). Refer to page 199 for the noise filter set. Refer to the LECA Operation Manual for installation.

[UL-compliant products]

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

LE C A 6 P ☐ ☐ – ☐

Controller — C

Compatible motor

A	Servo motor (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

Option

—	Screw mounting
D*1	DIN rail mounting

*1 The DIN rail is not included. Order it separately.

Actuator part number

Without cable specifications and actuator options Example: Enter "LEY16B-100" for the LEY16B-100B-R16N1.	
BC	Blank controller*1

*1 Requires dedicated software (LEC-BCW)

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

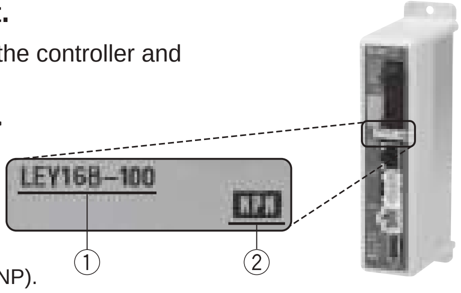
The controller is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

① Check the actuator label for the model number. This number should match that of the controller.

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



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

Precautions for blank controllers (LEC☐6☐☐-BC)

A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. Use the dedicated software (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.smc.eu

Specifications

Basic Specifications

Item	LECA6	
Compatible motor	Servo motor (24 VDC)	
Power supply*1	Power voltage: 24 VDC ±10 %*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)	Incremental A/B (800 pulse/rotation)/Z phase
Serial communication	RS485 (Modbus protocol compliant)	
Memory	EEPROM	
LED indicator	LED (Green/Red) one of each	
Lock control	Forced-lock release terminal*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)	

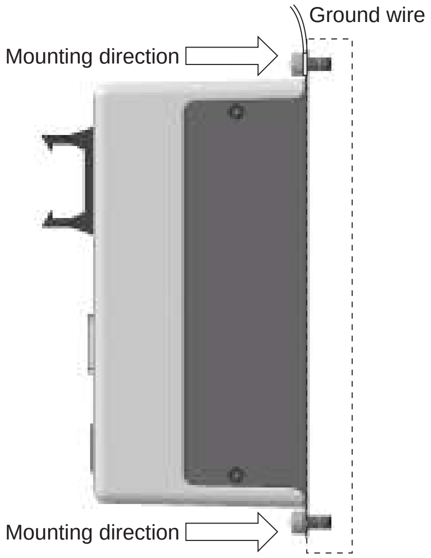
*1 Do not use the power supply of "inrush current prevention type" for the controller power supply. When compliance with UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.

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

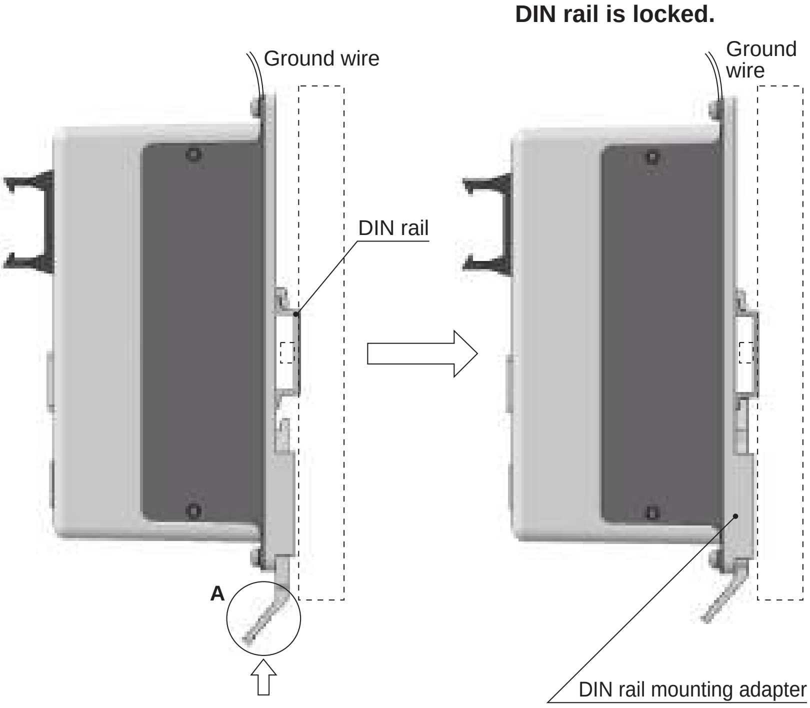
*3 Applicable to non-magnetising locks

How to Mount

a) Screw mounting (LEC□6□□-□)
(Installation with two M4 screws)


Ground wire
Mounting direction
Mounting direction

b) DIN rail mounting (LEC□6□□D-□)
(Installation with the DIN rail)

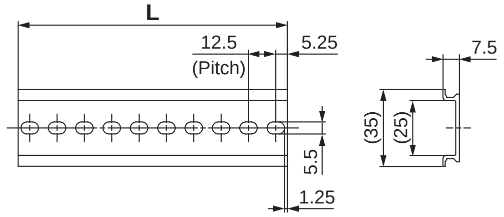

DIN rail is locked.
Ground wire
Ground wire
DIN rail
A
DIN rail mounting adapter

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

∗ When size 25 or more of the LE series are used, the space between the controllers 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 dimension drawings on page 193 for the mounting dimensions.


L
12.5
(Pitch)
5.25
7.5
(35)
(25)
5.5
1.25

L Dimensions [mm]

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

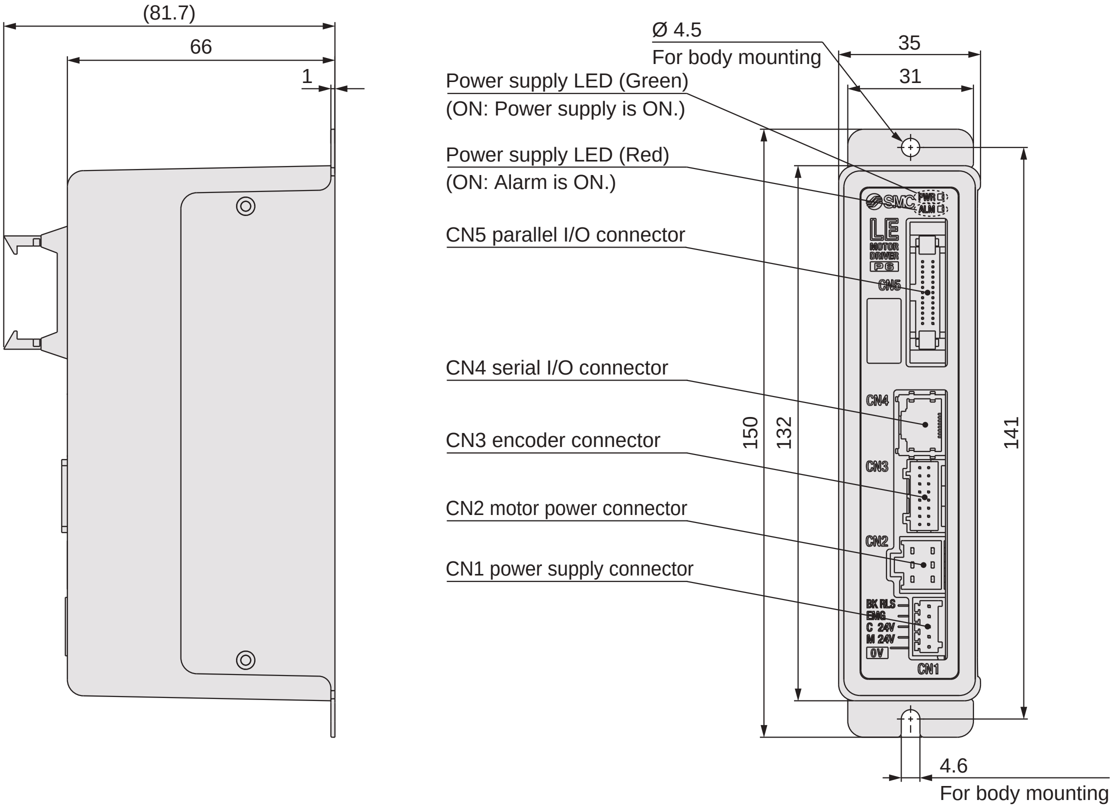
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

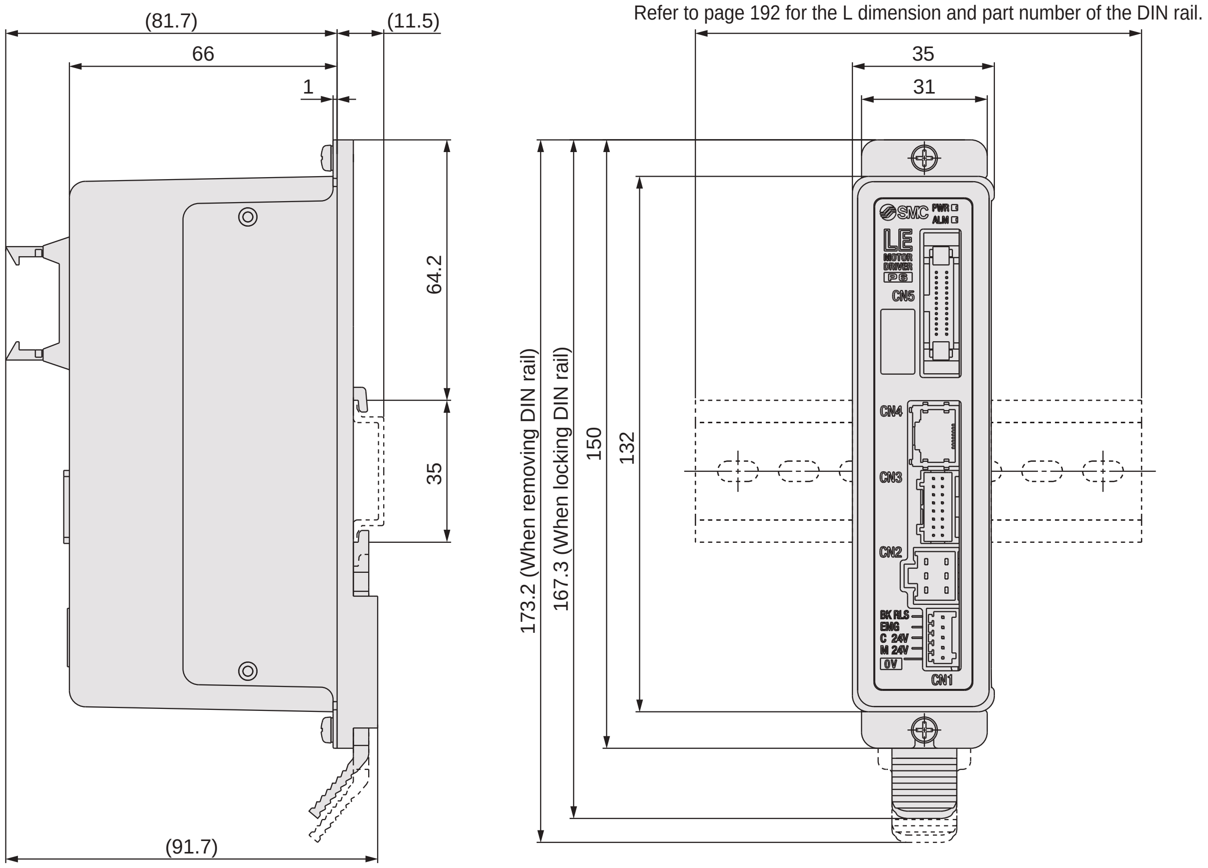
This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type controller afterward.

Dimensions

a) Screw mounting (LEC□6□□-□)


(81.7)
66
1
Ø 4.5
For body mounting
35
31
Power supply LED (Green)
(ON: Power supply is ON.)
Power supply LED (Red)
(ON: Alarm is ON.)
CN5 parallel I/O connector
CN4 serial I/O connector
CN3 encoder connector
CN2 motor power connector
CN1 power supply connector
150
132
141
4.6
For body mounting
SMC
PWR
ALM
LE
MOTOR DRIVER
P6
CN5
CN4
CN3
CN2
BK RLS
EMG
C 24V
M 24V
0V
CN1

b) DIN rail mounting (LEC□6□□D-□)


(81.7)
(11.5)
66
1
64.2
35
(91.7)
35
31
173.2 (When removing DIN rail)
167.3 (When locking DIN rail)
150
132
SMC
PWR
ALM
LE
MOTOR DRIVER
P6
CN5
CN4
CN3
CN2
BK RLS
EMG
C 24V
M 24V
0V
CN1

Refer to page 192 for the L dimension and part number of the DIN rail.

Wiring Example 1

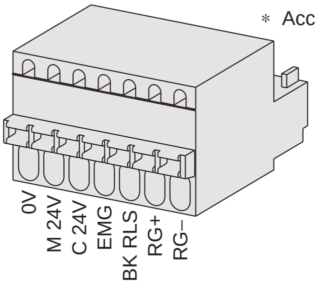
Power Supply Connector: CN1

∗ The power supply plug is an accessory.
<Applicable cable size> AWG20 (0.5 mm^2), cover diameter 2.0 mm or less

CN1 Power Supply Connector Terminal for LECA6 (PHOENIX CONTACT FK-MC0.5/7-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 controller
C 24V	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
RG+	Regenerative output 1	Regenerative output terminals for external connection (Not necessary to connect them in the combination with the LE series standard specifications.)
RG–	Regenerative output 2	

Power supply plug for LECA6: LEC-D-1-2
∗ Accessory


0V
M 24V
C 24V
EMG
BK RLS
RG+
RG–

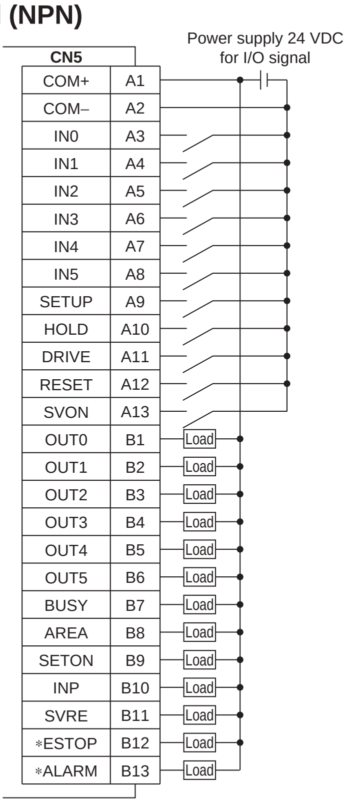
Wiring Example 2

Parallel I/O Connector: CN5

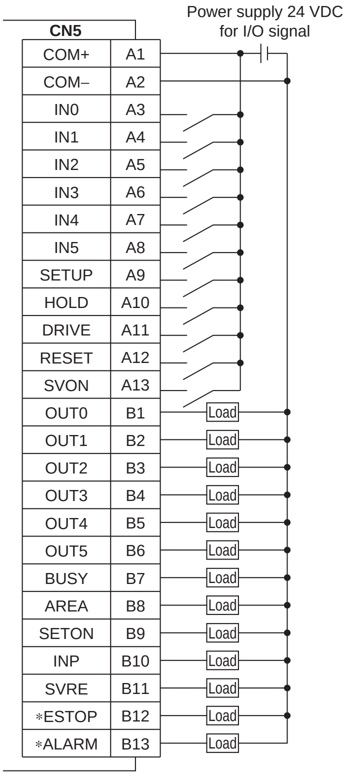
∗ When you connect a PLC to the CN5 parallel I/O connector, use the I/O cable (LEC-CN5-□).
∗ The wiring changes depending on the type of parallel I/O (NPN or PNP).

Wiring diagram

LEC□6N□□-□ (NPN)


Power supply 24 VDC for I/O signal
CN5
COM+ A1
COM– A2
IN0 A3
IN1 A4
IN2 A5
IN3 A6
IN4 A7
IN5 A8
SETUP A9
HOLD A10
DRIVE A11
RESET A12
SVON A13
OUT0 B1
OUT1 B2
OUT2 B3
OUT3 B4
OUT4 B5
OUT5 B6
BUSY B7
AREA B8
SETON B9
INP B10
SVRE B11
∗ESTOP B12
∗ALARM B13
Load

LEC□6P□□-□ (PNP)


Power supply 24 VDC for I/O signal
CN5
COM+ A1
COM– A2
IN0 A3
IN1 A4
IN2 A5
IN3 A6
IN4 A7
IN5 A8
SETUP A9
HOLD A10
DRIVE A11
RESET A12
SVON A13
OUT0 B1
OUT1 B2
OUT2 B3
OUT3 B4
OUT4 B5
OUT5 B6
BUSY B7
AREA B8
SETON B9
INP B10
SVRE B11
∗ESTOP B12
∗ALARM B13
Load

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 by combining IN0 to 5.)
SETUP	Instruction to return to origin
HOLD	Temporarily stops operation
DRIVE	Instruction to drive
RESET	Resets alarm and interrupts operation
SVON	Servo ON instruction

Output Signal

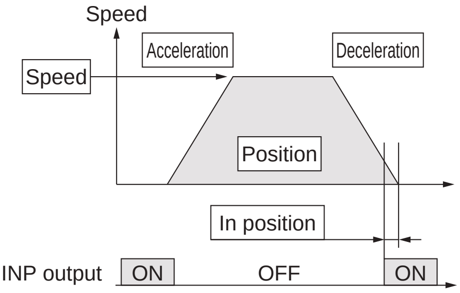
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or pushing is completed.)
SVRE	Outputs when servo is on
∗ESTOP∗1	OFF when EMG stop is instructed
∗ALARM∗1	OFF when alarm is generated

∗1 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.



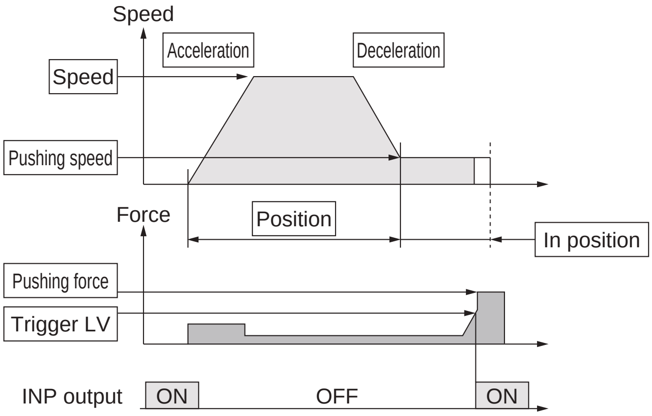
Step Data (Positioning)

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

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.



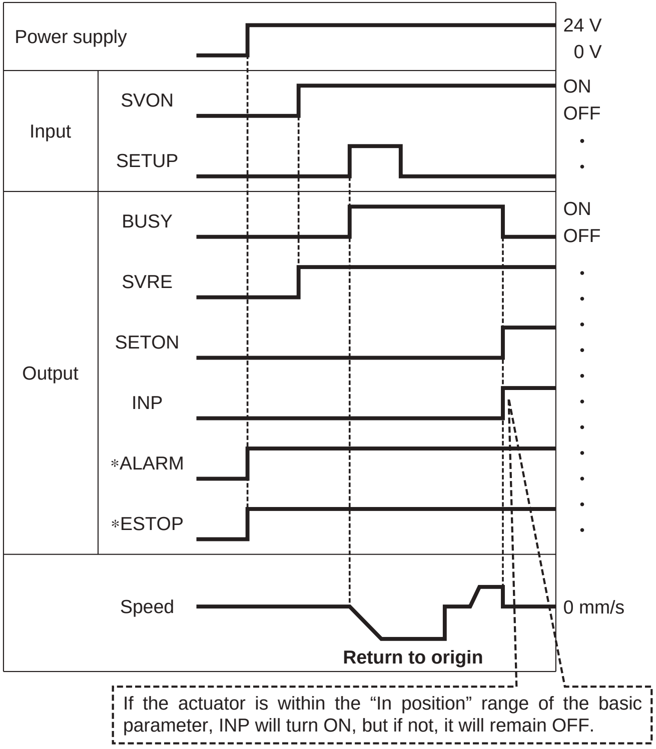
Step Data (Pushing)

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

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

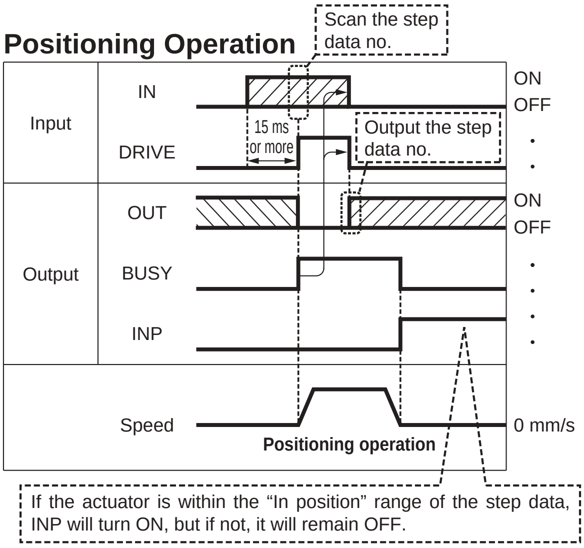
Return to Origin


Power supply
24 V
0 V
Input
SVON
SETUP
ON
OFF
Output
BUSY
SVRE
SETON
INP
∗ALARM
∗ESTOP
ON
OFF
Speed
0 mm/s
Return to origin

If the actuator is within the “In position” range of the basic parameter, INP will turn ON, but if not, it will remain OFF.

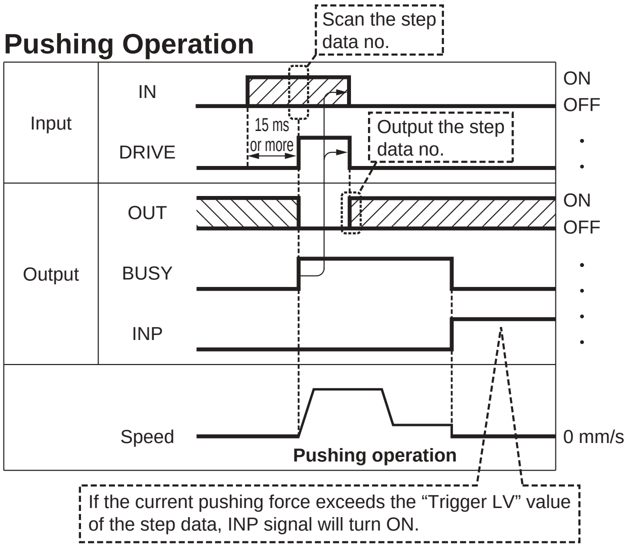
∗ “∗ALARM” and “∗ESTOP” are expressed as negative-logic circuits.

Positioning Operation


Scan the step data no.
Input
IN
DRIVE
15 ms or more
Output the step data no.
ON
OFF
Output
OUT
BUSY
INP
ON
OFF
Speed
0 mm/s
Positioning operation

If the actuator is within the “In position” range of the step data, INP will turn ON, but if not, it will remain OFF.

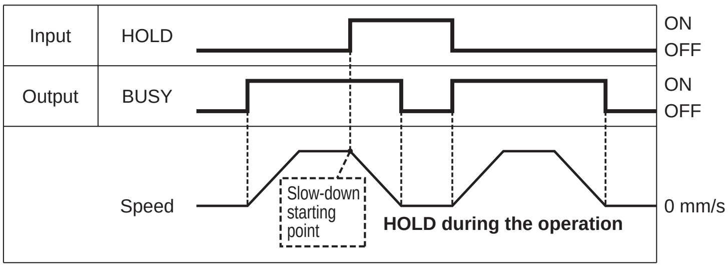
Pushing Operation


Scan the step data no.
Input
IN
DRIVE
15 ms or more
Output the step data no.
ON
OFF
Output
OUT
BUSY
INP
ON
OFF
Speed
0 mm/s
Pushing operation

If the current pushing force exceeds the “Trigger LV” value of the step data, INP signal will turn ON.

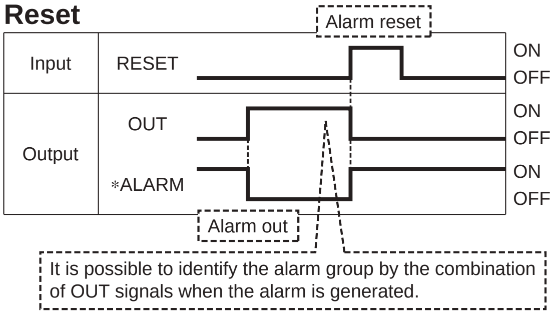
∗ “OUT” is output when “DRIVE” is changed from ON to OFF.
Refer to the operation manual for details on the controller for the LEM series.
(When power supply is applied, “DRIVE” or “RESET” is turned ON or “∗ESTOP” is turned OFF, all of the “OUT” outputs are OFF.)

HOLD


Input
HOLD
ON
OFF
Output
BUSY
ON
OFF
Speed
Slow-down starting point
HOLD during the operation
0 mm/s

∗ When the actuator is within the “In position” range in the pushing operation, it does not stop even if HOLD signal is input.

Reset


Alarm reset
Input
RESET
ON
OFF
Output
OUT
∗ALARM
ON
OFF
ON
OFF
Alarm out

It is possible to identify the alarm group by the combination of OUT signals when the alarm is generated.

∗ “∗ALARM” is expressed as a 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*1
A	10*1
B	15*1
C	20*1

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

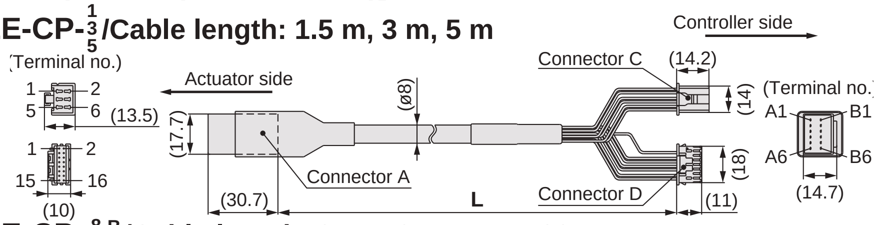
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

Weight

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

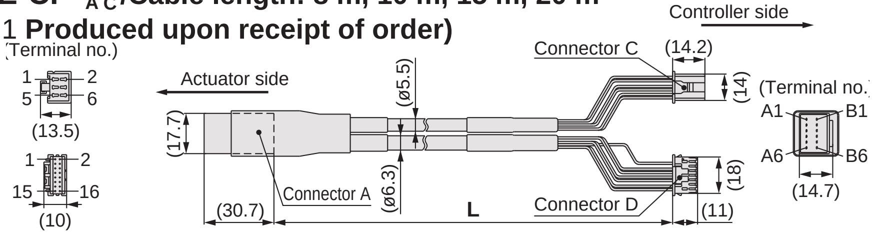
LE-CP-$\substack{1\\3\\5}$/Cable length: 1.5 m, 3 m, 5 m



(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(ø8)
Connector A
(30.7)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)

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

(*1 Produced upon receipt of order)



(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(ø5.5)
(ø6.3)
Connector A
(30.7)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)

Signal	Connector A terminal no.	Cable color	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 color	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

[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*1
A	10*1
B	15*1
C	20*1

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

With lock and sensor

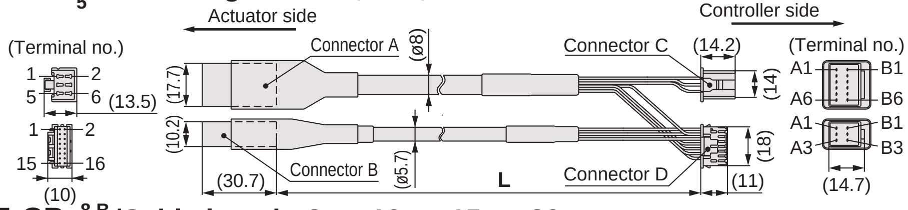
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

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	
LE-CP-1-B	190	Robotic cable
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	

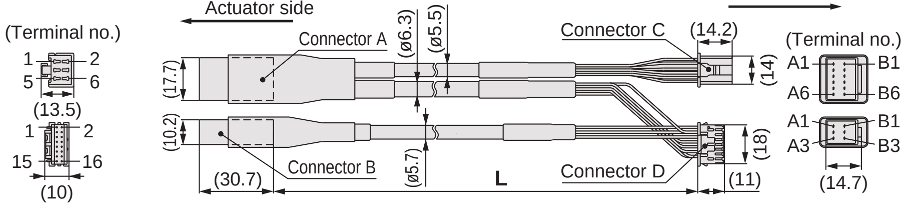
LE-CP-$\substack{1\\3\\5}$/Cable length: 1.5 m, 3 m, 5 m



Actuator side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø8)
Connector B
(ø5.7)
(30.7)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)

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

(*1 Produced upon receipt of order)



Actuator side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø6.3)
(ø5.5)
Connector B
(ø5.7)
(30.7)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)

Signal	Connector A terminal no.	Cable color	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 color	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

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

[Robotic cable for servo motor (24 VDC)]

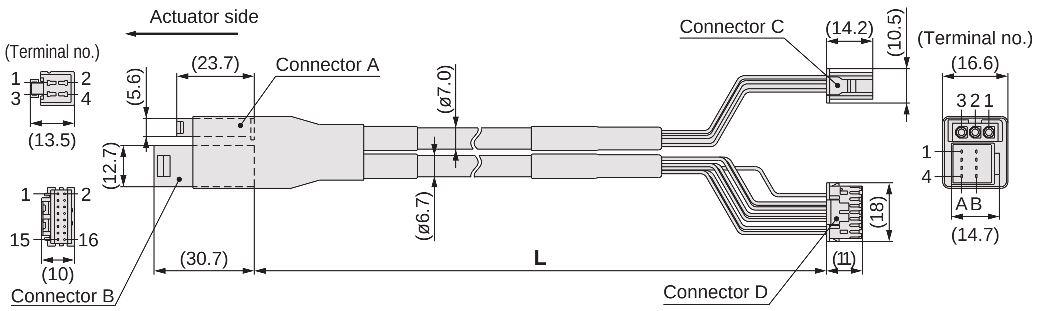
LE – CA – 1

Cable length (L) [m]

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

*1 Produced upon receipt of order

LE-CA-□


Controller side
Actuator side
(Terminal no.)
1
2
3
4
(13.5)
1
2
15
16
(10)
Connector B
(5.6)
(23.7)
Connector A
(12.7)
(30.7)
(ø7.0)
(ø6.7)
L
Connector C
(14.2)
(10.5)
(18)
(11)
Connector D
(Terminal no.)
(16.6)
3 2 1
1
4
A B
(14.7)

Weight

Product no.	Weight [g]
LE-CA-1	220
LE-CA-3	420
LE-CA-5	700
LE-CA-8	1100
LE-CA-A	1370
LE-CA-B	2050
LE-CA-C	2720

Signal	Connector A terminal no.	Cable color	Connector C terminal no.
U	1	Red	1
V	2	White	2
W	3	Black	3

Shield

Signal	Connector B terminal no.	Cable color	Connector D terminal no.
Vcc	B-1	Brown	12
GND	A-1	Black	13
$\overline{A}$	B-2	Red	7
A	A-2	Black	6
$\overline{B}$	B-3	Orange	9
B	A-3	Black	8
$\overline{Z}$	B-4	Yellow	11
Z	A-4	Black	10
		—	3

Connection of shield material

[Robotic cable with lock and sensor for servo motor (24 VDC)]

LE – CA – 1 – B

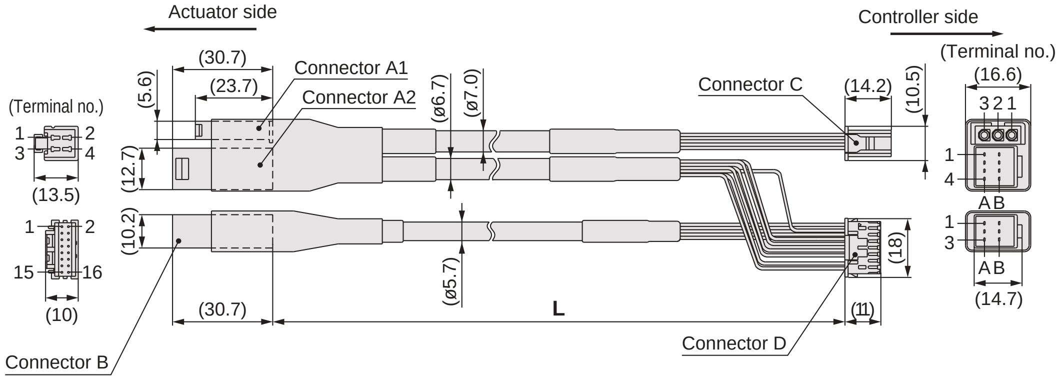
Cable length (L) [m]

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

*1 Produced upon receipt of order

With lock and sensor

LE-CA-□-B


Actuator side
Controller side
(Terminal no.)
1
2
3
4
(13.5)
1
2
15
16
(10)
(30.7)
Connector A1
(23.7)
Connector A2
(5.6)
(12.7)
(10.2)
(ø6.7)
(ø7.0)
(ø5.7)
L
Connector C
(14.2)
(10.5)
(18)
(11)
Connector D
Connector B
(Terminal no.)
(16.6)
3 2 1
1
4
A B
1
3
A B
(14.7)

Weight

Product no.	Weight [g]
LE-CA-1-B	270
LE-CA-3-B	520
LE-CA-5-B	870
LE-CA-8-B	1370
LE-CA-A-B	1710
LE-CA-B-B	2560
LE-CA-C-B	3400

Signal	Connector A1 terminal no.	Cable color	Connector C terminal no.
U	1	Red	1
V	2	White	2
W	3	Black	3

Shield

Signal	Connector A2 terminal no.	Cable color	Connector D terminal no.
Vcc	B-1	Brown	12
GND	A-1	Black	13
$\overline{A}$	B-2	Red	7
A	A-2	Black	6
$\overline{B}$	B-3	Orange	9
B	A-3	Black	8
$\overline{Z}$	B-4	Yellow	11
Z	A-4	Black	10
		—	3

Connection of shield material

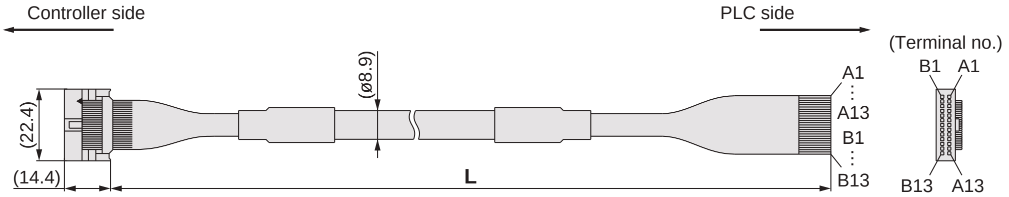
Signal	Connector B terminal no.		
Lock (+)	B-1	Red	4
Lock (–)	A-1	Black	5
Sensor (+)	B-3	Brown	1
Sensor (–)	A-3	Black	2

Option: 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	Gray	■	Black
A8	Gray	■	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	Gray	■ ■	Black
B5	Gray	■ ■	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		

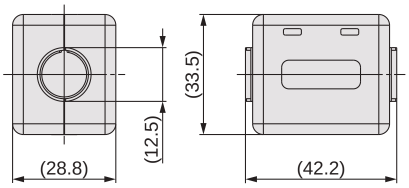
Weight

Product no.	Weight [g]
LEC-CN5-1	170
LEC-CN5-3	320
LEC-CN5-5	520

Option: Noise Filter Set for Servo Motor (24 VDC)

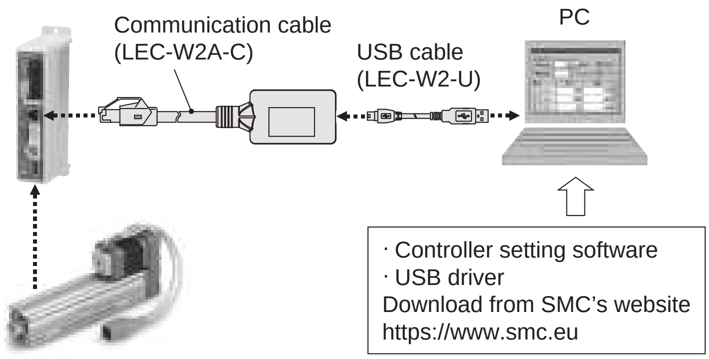
LEC − NFA

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



∗ Refer to the LECA6 series Operation Manual for installation.

LEC Series
Communication Cable for Controller Setting/LEC-W2A-□



· Controller setting software
· USB driver
Download from SMC's website
https://www.smc.eu

How to Order

LEC − W2A − C
- C: **Communication cable**

LEC − W2 − U
- U: **USB cable**

Compatible Controller/Driver

Step data input type	**LECA6 Series**
Pulse input type	**LECPA Series**
Step Motor Controller	**JXCE1/91/P1/D1/L1 Series**

∗ When connecting to a JXCE1/91/P1/D1/L1 series product, use a conversion cable (P5062-5) as a relay.

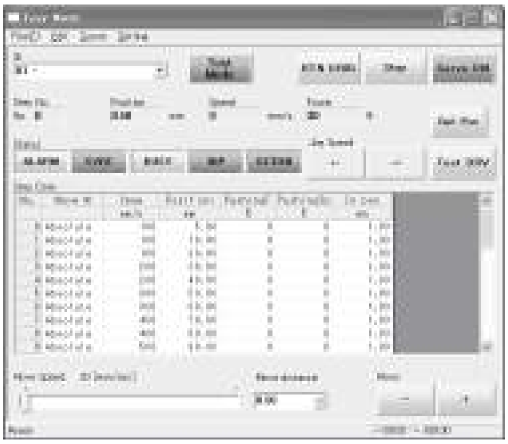
Hardware Requirements

OS	Windows®7, Windows®8.1, Windows®10
Communication interface	USB 1.1 or USB 2.0 ports
Display	1024 x 768 or more

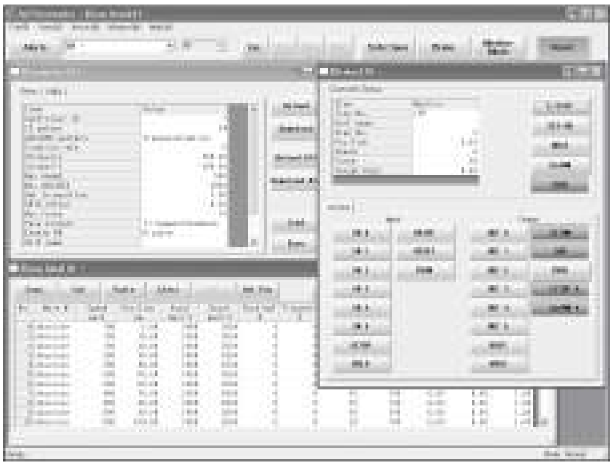
∗ Windows®7, Windows®8.1 and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

Screen Example

Easy mode screen example



Normal 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 test drive can be performed on the same page.
- Can be used to jog and move at a constant rate

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 drive and testing of forced output can be performed.

LEC Series
Teaching Box/LEC-T1

Enable switch
(Option)
Stop switch

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

Option
- Enable switch is provided.

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

Specifications

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

[CE-compliant products]
The EMC compliance of the teaching box was tested with a step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When compliance with 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 (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
1 step operation

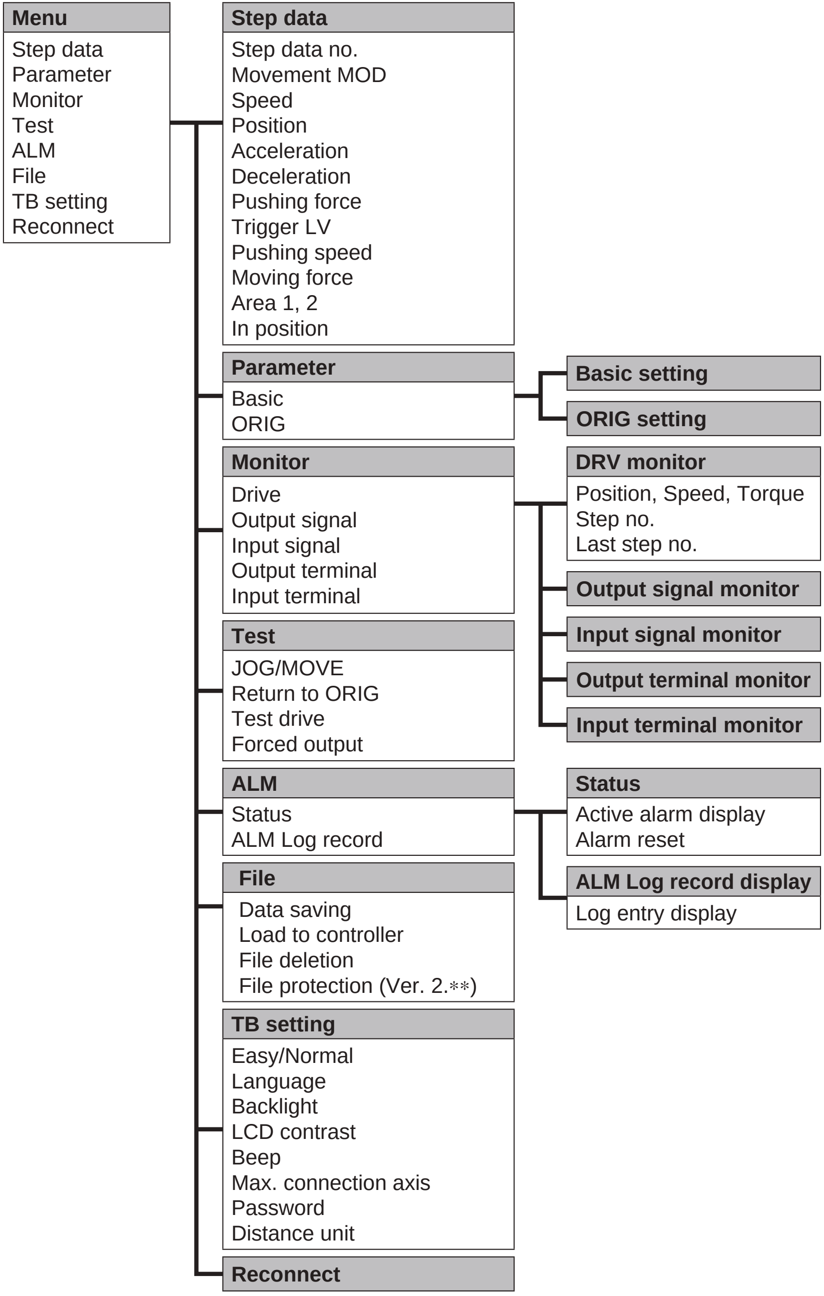
ALM
Active alarm display
Alarm reset

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

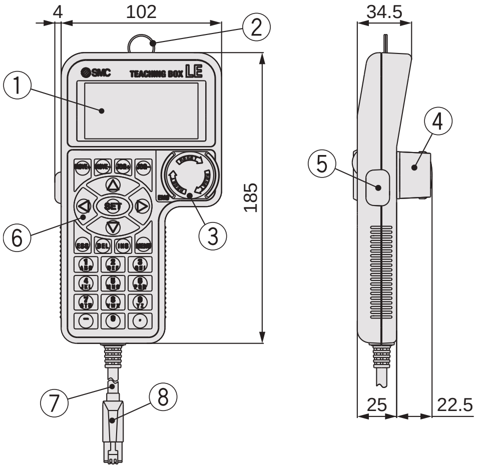
Normal Mode

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. • 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
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
File protection (Ver. 2.**)
TB setting
Easy/Normal
Language
Backlight
LCD contrast
Beep
Max. connection axis
Password
Distance unit
Reconnect

Dimensions


4
102
34.5
185
25
22.5
①
②
③
④
⑤
⑥
⑦
⑧
SMC
TEACHING BOX LE
SET

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

LEC-G Series

CE cULus RoHS

How to Order

⚠Caution

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

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

Gateway unit

LEC − G MJ2 □

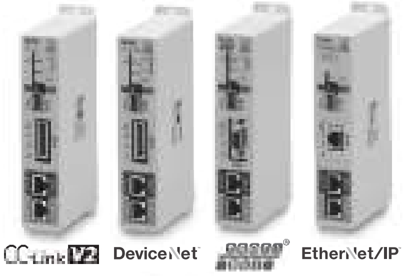
Applicable Fieldbus protocols

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

Mounting

—	Screw mounting
D[1]	DIN rail

[1] The DIN rail is not included. Order it separately.



Cable

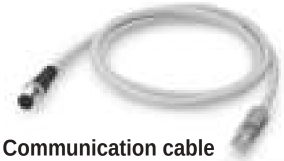
LEC − CG 1 − L

Cable type

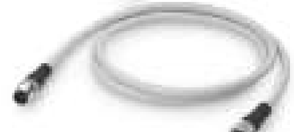
1	Communication cable
2	Cable between branches

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

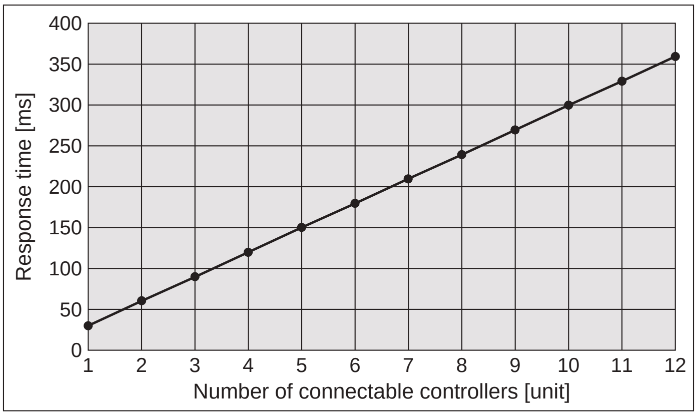
Specifications

Model			LEC-GMJ2□	LEC-GDN1□	LEC-GPR1□	LEC-GEN1□
Communication specifications	Applicable system	**Fieldbus**	CC-Link	DeviceNet™	PROFIBUS DP	EtherNet/IP™
		Version[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[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][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][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**		LECA6 Series			
	Communication speed [bps][3]		115.2 k/230.4 k			
	Max. number of connectable controllers[4]		12	8[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)			

[1] Please note that versions are subject to change.
[2] Each file can be downloaded from the SMC website.
[3] When using a teaching box (LEC-T1-□), set the communication speed to 115.2 kbps.
[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.
[5] For step data input, up to 12 controllers connectable.
[6] When compliance with 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.

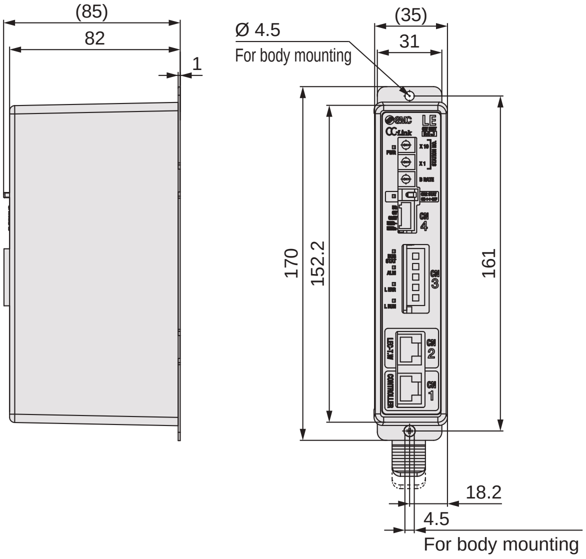


⁎ This graph shows delay times between gateway unit and controllers.
Fieldbus network delay time is not included.

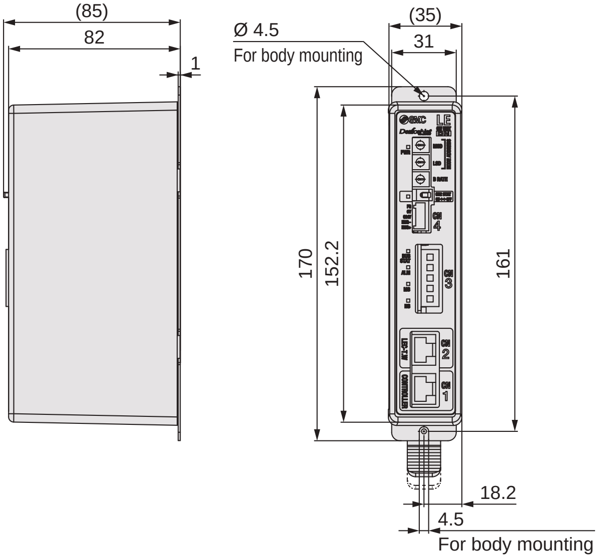
Dimensions

Screw mounting (LEC-G□□□)

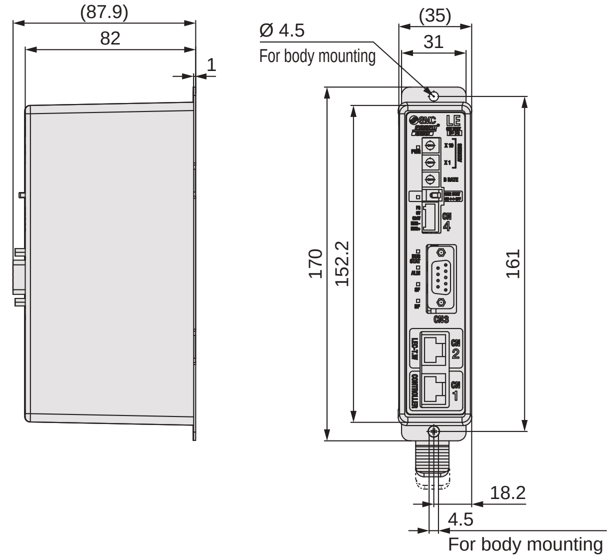
Applicable Fieldbus protocol: CC-Link Ver. 2.0


(85)
82
1
Ø 4.5
For body mounting
(35)
31
170
152.2
161
18.2
4.5
For body mounting

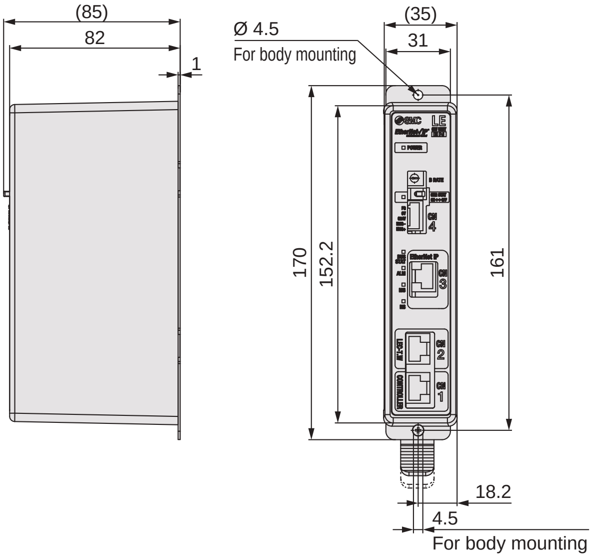
Applicable Fieldbus protocol: DeviceNet™


(85)
82
1
Ø 4.5
For body mounting
(35)
31
170
152.2
161
18.2
4.5
For body mounting

Applicable Fieldbus protocol: PROFIBUS DP


(87.9)
82
1
Ø 4.5
For body mounting
(35)
31
170
152.2
161
18.2
4.5
For body mounting

Applicable Fieldbus protocol: EtherNet/IP™

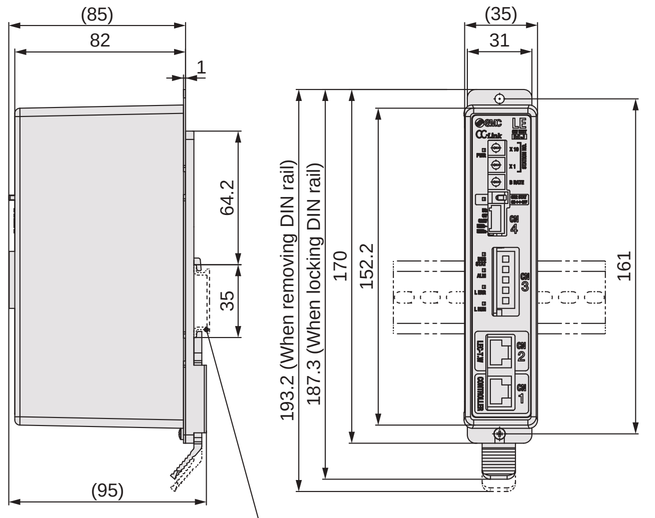

(85)
82
1
Ø 4.5
For body mounting
(35)
31
170
152.2
161
18.2
4.5
For body mounting

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

Dimensions

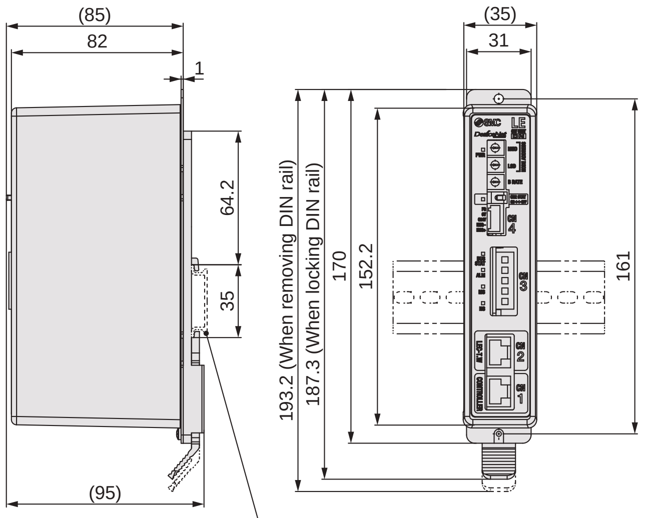
DIN rail mounting (LEC-G□□□D)

Applicable Fieldbus protocol: CC-Link Ver. 2.0


(85)
82
1
64.2
35
(95)
(35)
31
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.2
161

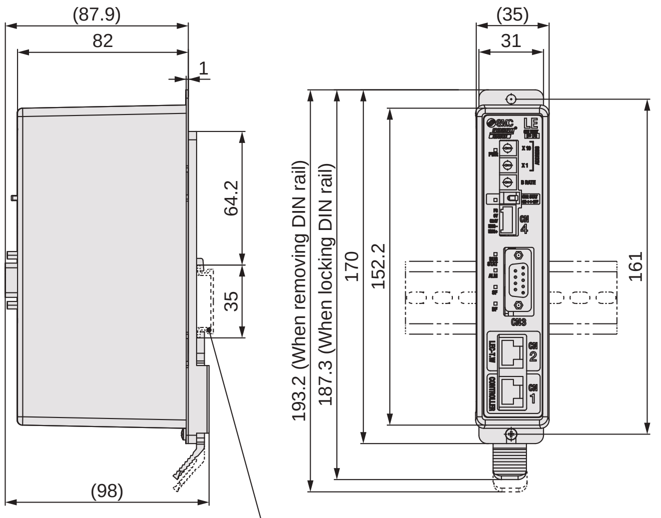
* Mountable on DIN rail (35 mm)

Applicable Fieldbus protocol: DeviceNet™


(85)
82
1
64.2
35
(95)
(35)
31
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.2
161

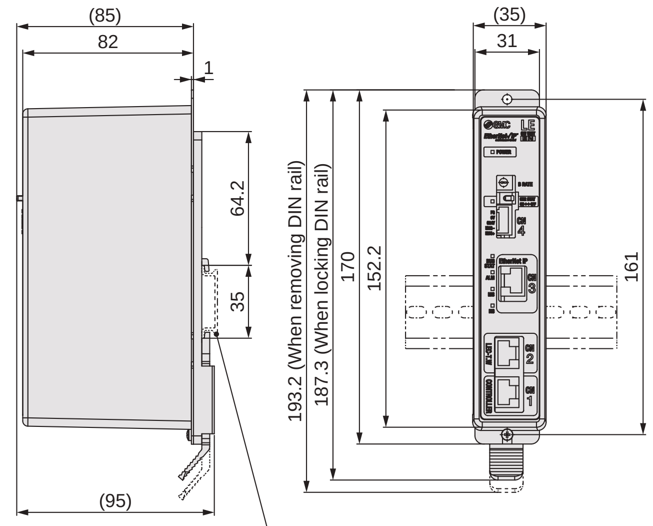
* Mountable on DIN rail (35 mm)

Applicable Fieldbus protocol: PROFIBUS DP


(87.9)
82
1
64.2
35
(98)
(35)
31
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.2
161

* Mountable on DIN rail (35 mm)

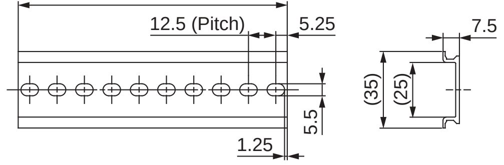
Applicable Fieldbus protocol: EtherNet/IP™


(85)
82
1
64.2
35
(95)
(35)
31
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.2
161

* Mountable on DIN rail (35 mm)

DIN rail
AXT100-DR-□

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


L
12.5 (Pitch)
5.25
7.5
(35)
(25)
5.5
1.25

L Dimensions [mm]

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

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

Wiring Example

Power Supply Connector: CN1

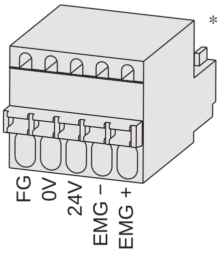
∗ The power supply plug is an accessory.
<Applicable cable size> AWG20 (0.5 mm^2), cover diameter 2.0 mm or less

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

Terminal name	Function	Details
EMG +	EMG signal output +	Output terminal of the emergency stop switch of the teaching box
EMG −	EMG signal output –	
24V	Power supply + terminal	Power supply terminal of the Gateway unit (Power to the teaching box is supplied from this terminal)
0V	Power supply − terminal	
FG	FG terminal	Grounding terminal

Power supply plug for LEC-G: LEC-D-1-1

∗ Accessory



Programless Controller

LECP1 Series

How to Order

LE C P 1 P 1 □ – LEY16B-100

Controller

Compatible motor

P	Step motor (Servo/24 VDC)

Number of step data (Points)

1	14 (Programless)

Parallel I/O type

N	NPN
P	PNP

I/O cable length [m]

—	Without cable
1	1.5
3	3
5	5

Option

—	Screw mounting
D*1	DIN rail mounting

*1 The DIN rail is not included. Order it separately.

Actuator part number

Without cable specifications and actuator options
Example: Enter "LEY16B-100"
for the LEY16B-100B-R16N1.

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

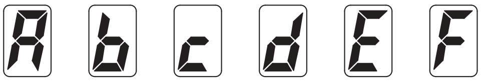
* Refer to the operation manual for using the products. Please download it via our website, https://www.smc.eu

Specifications

Basic Specifications

Item	LECP1
Compatible motor	Step motor (Servo/24 VDC)
Power supply*1	Power supply voltage: 24 VDC ±10 %*2 [Including the motor drive power, control power supply, stop, lock release]
Parallel input	6 inputs (Photo-coupler isolation)
Parallel output	6 outputs (Photo-coupler isolation)
Stop points	14 points (Position number 1 to 14(E))
Compatible encoder	Incremental A/B phase (800 pulse/rotation)
Memory	EEPROM
LED indicator	LED (Green/Red) one of each
7-segment LED display*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*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)

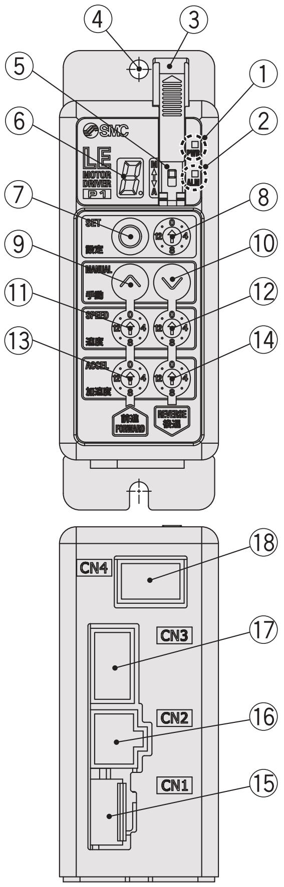
*1 Do not use the power supply of "inrush current prevention type" for the controller input power supply. When compliance with UL is required, the electric actuator and controller should be used with a UL1310 Class 2 power supply.
*2 The power consumption changes depending on the actuator model. Refer to the each actuator's operation manual, etc., for details.
*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

*4 Applicable to non-magnetising locks

Controller Details



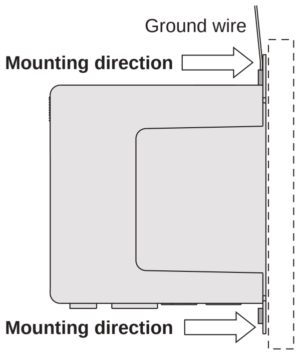
No.	Display	Description	Details
①	**PWR**	Power supply LED	Power supply ON/Servo ON : Green turns on Power supply ON/Servo OFF: Green flashes
②	**ALM**	Alarm LED	With alarm : Red turns on Parameter setting : Red flashes
③	—	Cover	Change and protection of the mode switch (Close the cover after changing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

How to Mount

Controller mounting shown below.

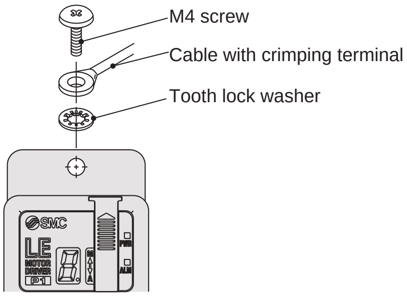
1. Mounting screw (LECP1□□-□)

(Installation with two M4 screws)



2. Grounding

Tighten the screw with the washer when mounting the ground wire as shown below.



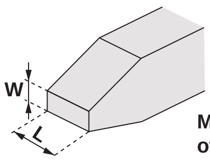
Controller

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

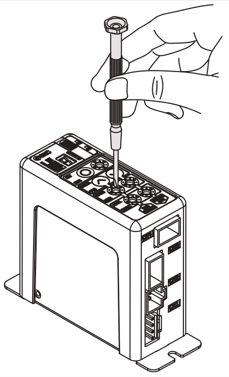
⚠Caution

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

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

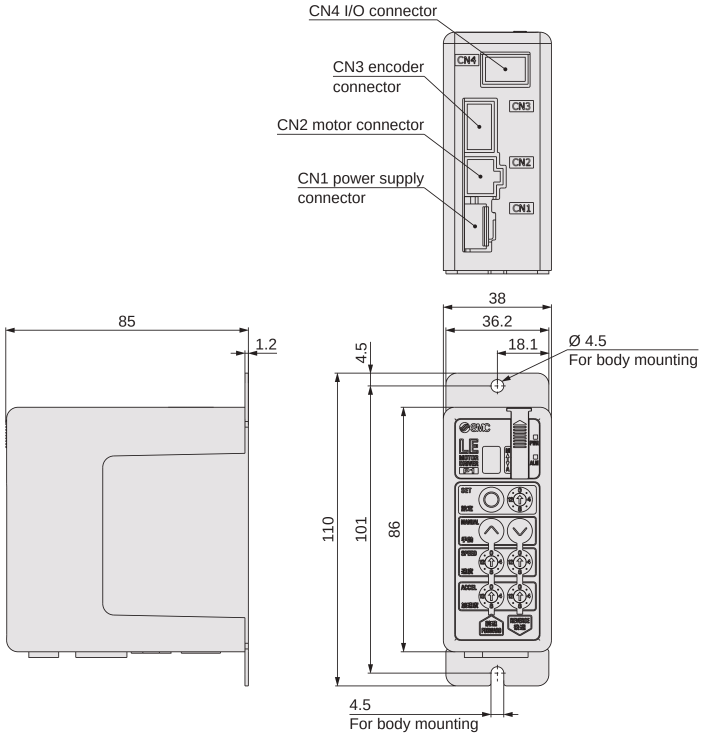


Magnified view of the end of the screwdriver

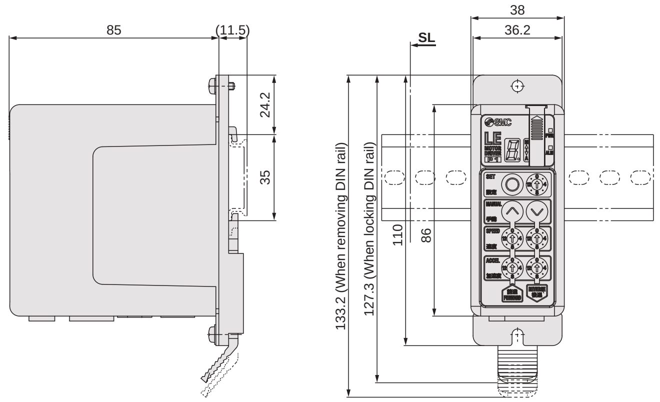


Dimensions

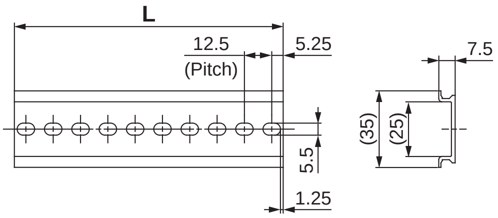
Screw mounting (LEC□1□□-□)


CN4 I/O connector
CN3 encoder connector
CN2 motor connector
CN1 power supply connector
CN4
CN3
CN2
CN1
85
1.2
38
36.2
18.1
Ø 4.5
For body mounting
4.5
110
101
86
4.5
For body mounting

DIN rail mounting (LEC□1□□D-□)


85
(11.5)
24.2
35
38
36.2
SL
133.2 (When removing DIN rail)
127.3 (When locking DIN rail)
110
86

DIN rail
AXT100-DR-□


L
12.5
(Pitch)
5.25
7.5
5.5
1.25
(35)
(25)

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

L Dimensions [mm]

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

DIN rail mounting adapter
LEC-1-D0 (with 2 mounting screws)

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

Wiring Example 1

Power Supply Connector: CN1

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

CN1 Power Supply Connector Terminal for LECP1

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

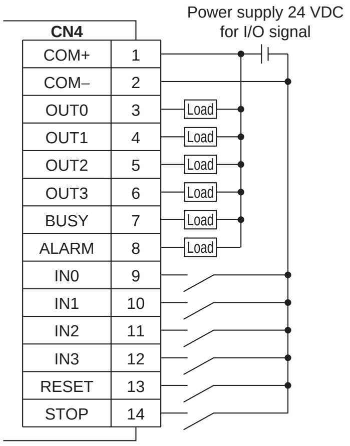
Power supply cable for LECP1 (LEC-CK1-1)

Wiring Example 2

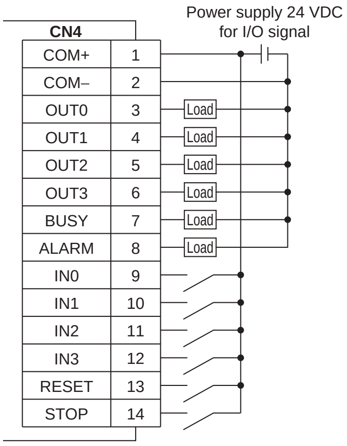
Parallel I/O Connector: CN4

∗ When you connect a PLC to the CN4 parallel I/O connector, use the I/O cable (LEC-CK4-☐).
∗ The wiring changes depending on the type of parallel I/O (NPN or PNP).

■NPN


Power supply 24 VDC for I/O signal
CN4
COM+ 1
COM– 2
OUT0 3
OUT1 4
OUT2 5
OUT3 6
BUSY 7
ALARM 8
IN0 9
IN1 10
IN2 11
IN3 12
RESET 13
STOP 14
Load
Load
Load
Load
Load
Load

■PNP


Power supply 24 VDC for I/O signal
CN4
COM+ 1
COM– 2
OUT0 3
OUT1 4
OUT2 5
OUT3 6
BUSY 7
ALARM 8
IN0 9
IN1 10
IN2 11
IN3 12
RESET 13
STOP 14
Load
Load
Load
Load
Load
Load

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[∗1]	Not output when alarm is active or servo OFF

∗1 Signal of negative-logic circuit (N.C.)

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

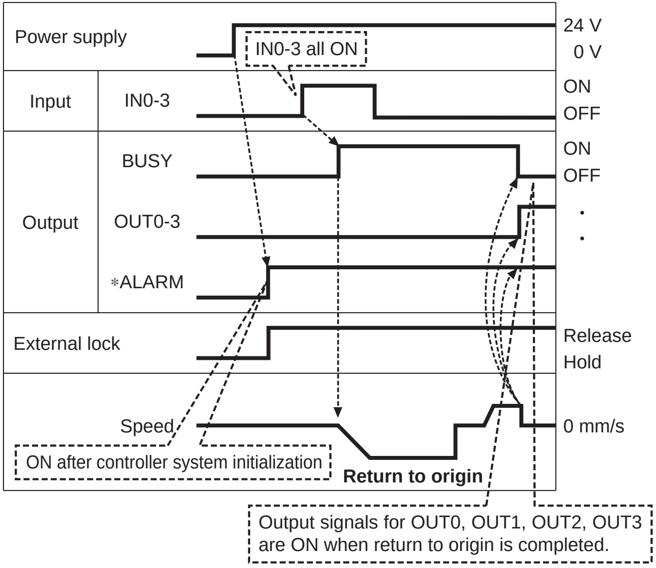
Position number	IN3	IN2	IN1	IN0
1	○	○	○	●
2	○	○	●	○
3	○	○	●	●
4	○	●	○	○
5	○	●	○	●
6	○	●	●	○
7	○	●	●	●
8	●	○	○	○
9	●	○	○	●
10 (A)	●	○	●	○
11 (B)	●	○	●	●
12 (C)	●	●	○	○
13 (D)	●	●	○	●
14 (E)	●	●	●	○
Return to origin	●	●	●	●

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

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

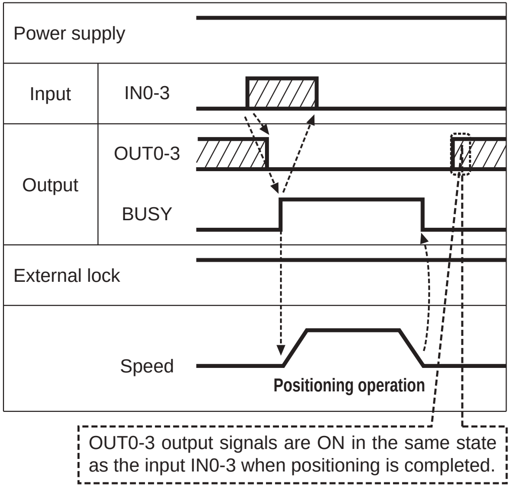
Signal Timing

(1) Return to Origin

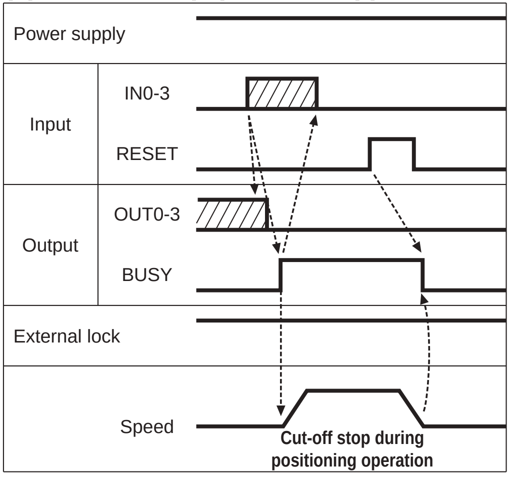

Power supply
IN0-3 all ON
24 V
0 V
Input
IN0-3
ON
OFF
Output
BUSY
ON
OFF
OUT0-3
*ALARM
External lock
Release
Hold
Speed
0 mm/s
ON after controller system initialization
Return to origin
Output signals for OUT0, OUT1, OUT2, OUT3 are ON when return to origin is completed.

* “*ALARM” is expressed as a negative-logic circuit.

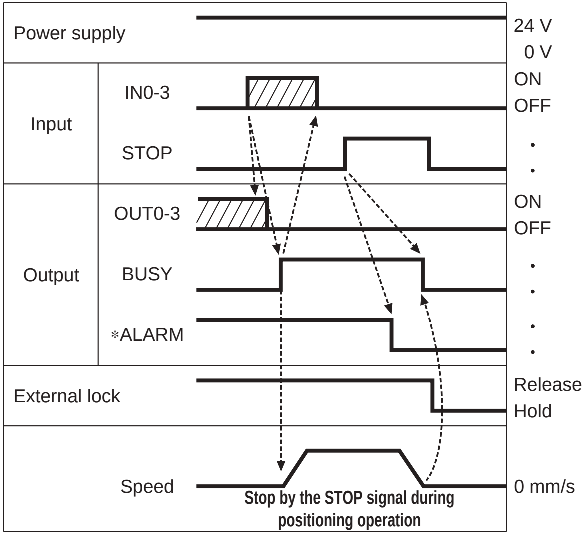
(2) Positioning Operation


Power supply
24 V
0 V
Input
IN0-3
ON
OFF
Output
OUT0-3
ON
OFF
BUSY
External lock
Release
Hold
Speed
0 mm/s
Positioning operation
OUT0-3 output signals are ON in the same state as the input IN0-3 when positioning is completed.

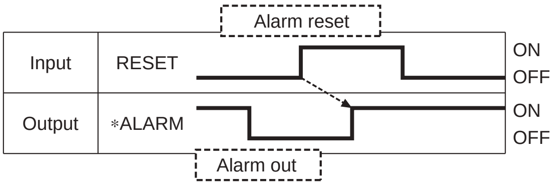
(3) Cut-off Stop (Reset Stop)


Power supply
24 V
0 V
Input
IN0-3
ON
OFF
RESET
Output
OUT0-3
ON
OFF
BUSY
External lock
Release
Hold
Speed
0 mm/s
Cut-off stop during positioning operation

(4) Stop by the STOP Signal


Power supply
24 V
0 V
Input
IN0-3
ON
OFF
STOP
Output
OUT0-3
ON
OFF
BUSY
*ALARM
External lock
Release
Hold
Speed
0 mm/s
Stop by the STOP signal during positioning operation

(5) Alarm Reset


Alarm reset
Input
RESET
ON
OFF
Output
*ALARM
ON
OFF
Alarm out

* “*ALARM” is expressed as a 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*1
A	10*1
B	15*1
C	20*1

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

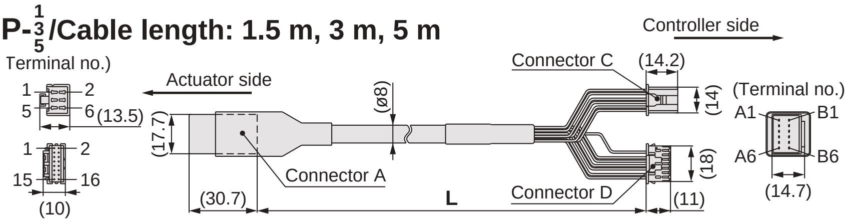
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

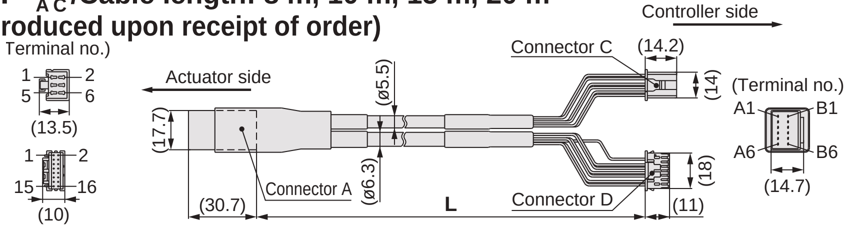
Weight

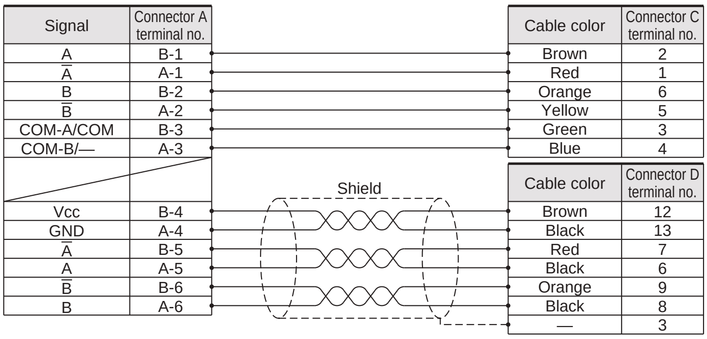
Product no.	Weight [g]	Note
LE-CP-1-S	190	Standard cable
LE-CP-3-S	280	
LE-CP-5-S	460	
LE-CP-1	140	Robotic cable
LE-CP-3	260	
LE-CP-5	420	
LE-CP-8	790	
LE-CP-A	980	
LE-CP-B	1460	
LE-CP-C	1940	

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


Controller side
Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(ø8)
Connector A
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)

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


Controller side
Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(ø5.5)
(ø6.3)
Connector A
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)



Signal	Connector A terminal no.	Cable color	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

Signal	Connector A terminal no.	Cable color	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

[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*1
A	10*1
B	15*1
C	20*1

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

With lock and sensor

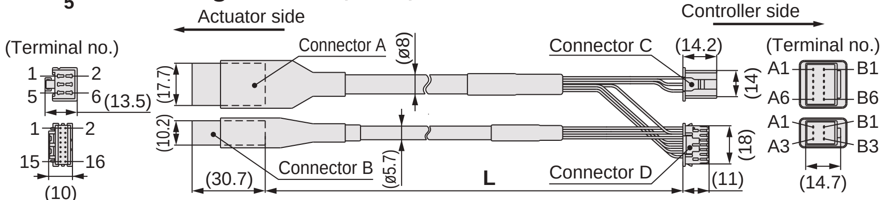
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

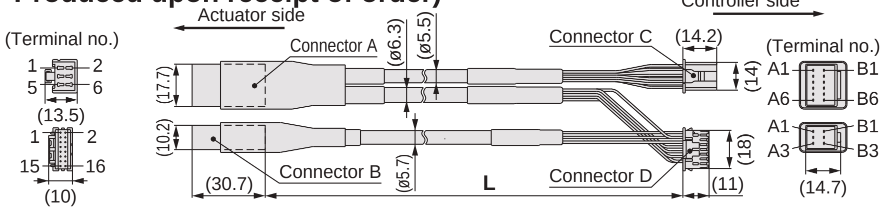
Weight

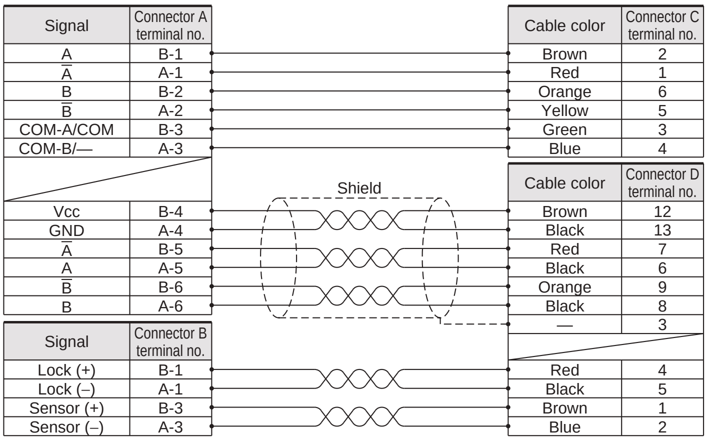
Product no.	Weight [g]	Note
LE-CP-1-B-S	240	Standard cable
LE-CP-3-B-S	380	
LE-CP-5-B-S	630	
LE-CP-1-B	190	Robotic cable
LE-CP-3-B	360	
LE-CP-5-B	590	
LE-CP-8-B	1060	
LE-CP-A-B	1320	
LE-CP-B-B	1920	
LE-CP-C-B	2620	

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


Actuator side
Controller side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø8)
Connector B
(ø5.7)
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)

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


Actuator side
Controller side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø6.3)
(ø5.5)
Connector B
(ø5.7)
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)



Signal	Connector A terminal no.	Cable color	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

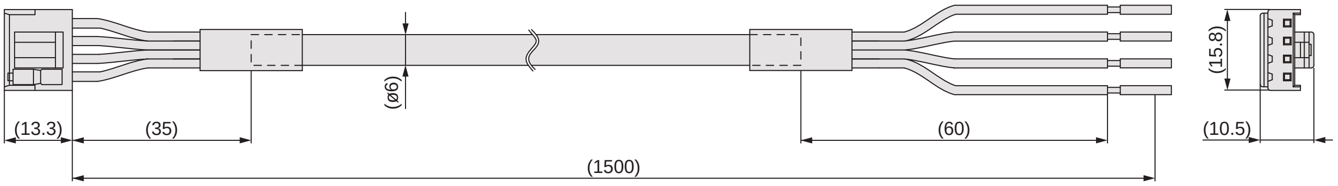
Signal	Connector A terminal no.	Cable color	Connector D terminal no.
Vcc	B-4	Brown	12
GND	A-4	Black	13
$\overline{A}$	B-5	Red	7
A	A-5	Black	6
$\overline{B}$	B-6	Orange	9
B	A-6	Black	8
		—	3

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

Options

[Power supply cable]

LEC−CK1−1



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

∗ Conductor size: AWG20

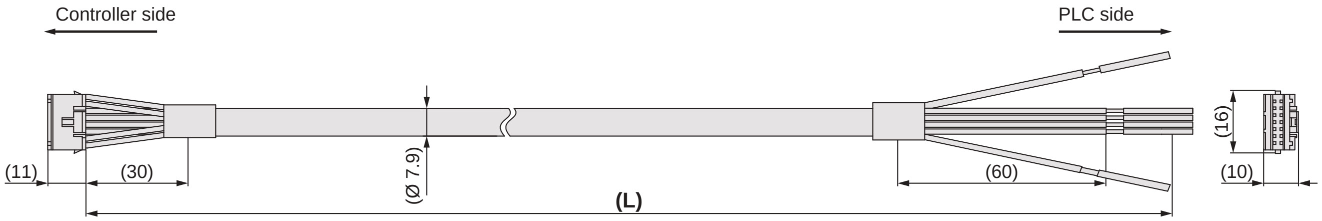
Weight: 90 g

[I/O cable]

LEC−CK4−☐

Cable length (L) [m]

1	1.5
3	3
5	5



Terminal no.	Insulation colour	Dot mark	Dot colour	Function
1	Light brown	■	Black	COM+
2	Light brown	■	Red	COM–
3	Yellow	■	Black	OUT0
4	Yellow	■	Red	OUT1
5	Light green	■	Black	OUT2
6	Light green	■	Red	OUT3
7	Gray	■	Black	BUSY
8	Gray	■	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.

∗ Conductor size: AWG26

Weight

Product no.	Weight [g]
LEC-CK4-1	100
LEC-CK4-3	200
LEC-CK4-5	330

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, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

② For the LECPA series (step motor driver), EMC compliance was tested by installing a noise filter set (LEC-NFA).
Refer to page 220 for the noise filter set. Refer to the LECPA Operation Manual for installation.

[UL-compliant products]

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

LECP AP 1 □ – LEY16B-100

Driver type

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

I/O cable length [m]

—	None
1	1.5
3	3*1
5	5*1

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

Driver mounting

—	Screw mounting
D*1	DIN rail

*1 The DIN rail is not included. Order it separately.

Actuator part number

Without cable specifications and actuator options Example: Enter "LEY16B-100" for the LEY16B-100B-R16N1.	
BC	Blank controller*1

*1 Requires dedicated software (LEC-BCW)

* 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.

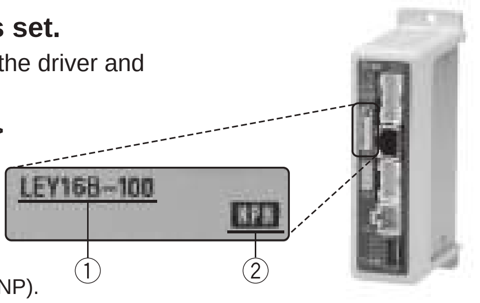
The driver is sold as single unit after the compatible actuator is set.

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

<Check the following before use.>

① Check the actuator label for the model number. This number should match that of the driver.

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



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

Precautions for blank controllers (LECPA□□-BC)

A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. Use the dedicated software (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.smc.eu

Specifications

Item	LECPA
Compatible motor	Step motor (Servo/24 VDC)
Power supply*1	Power voltage: 24 VDC ±10 %*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*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)

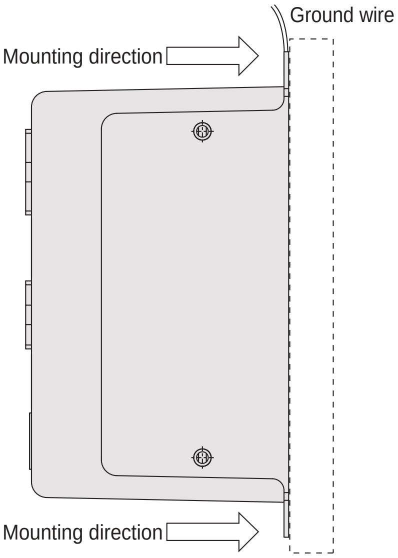
*1 Do not use the power supply of "inrush current prevention type" for the driver power supply. When compliance with UL is required, the electric actuator and driver should be used with a UL1310 Class 2 power supply.

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

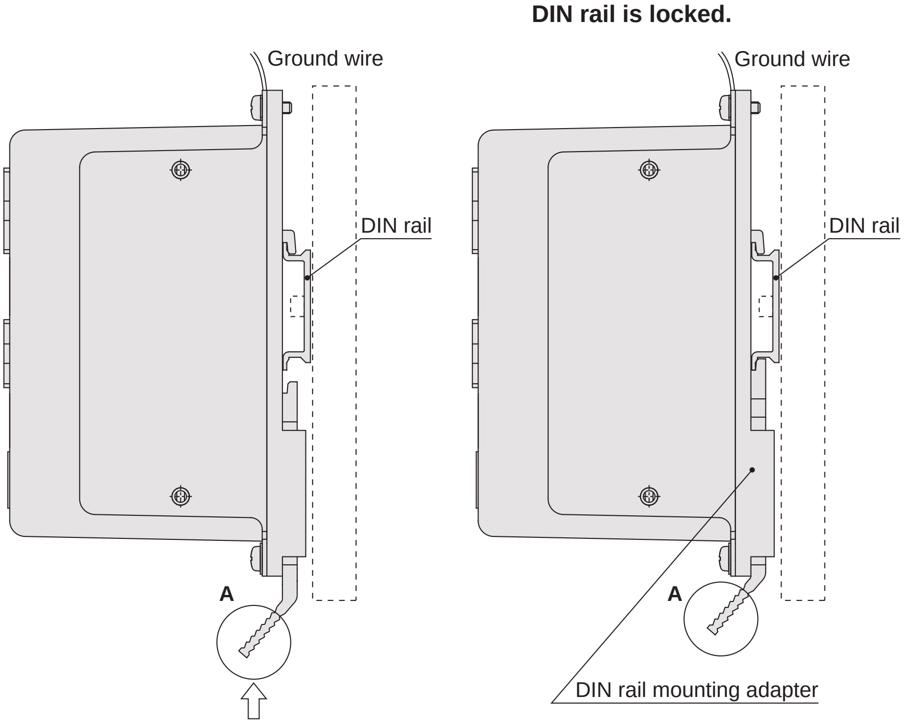
*3 Applicable to non-magnetising locks

How to Mount

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


Ground wire
Mounting direction
Mounting direction

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

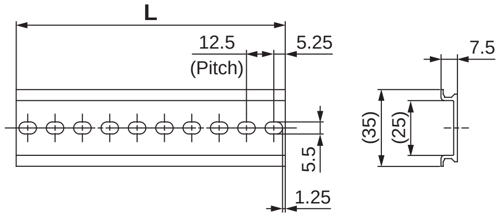

DIN rail is locked.
Ground wire
DIN rail
A
Ground wire
DIN rail
A
DIN rail mounting adapter

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

∗ 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 dimension drawings on page 216 for the mounting dimensions.


L
12.5
(Pitch)
5.25
5.5
1.25
7.5
(35)
(25)

L Dimensions [mm]

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

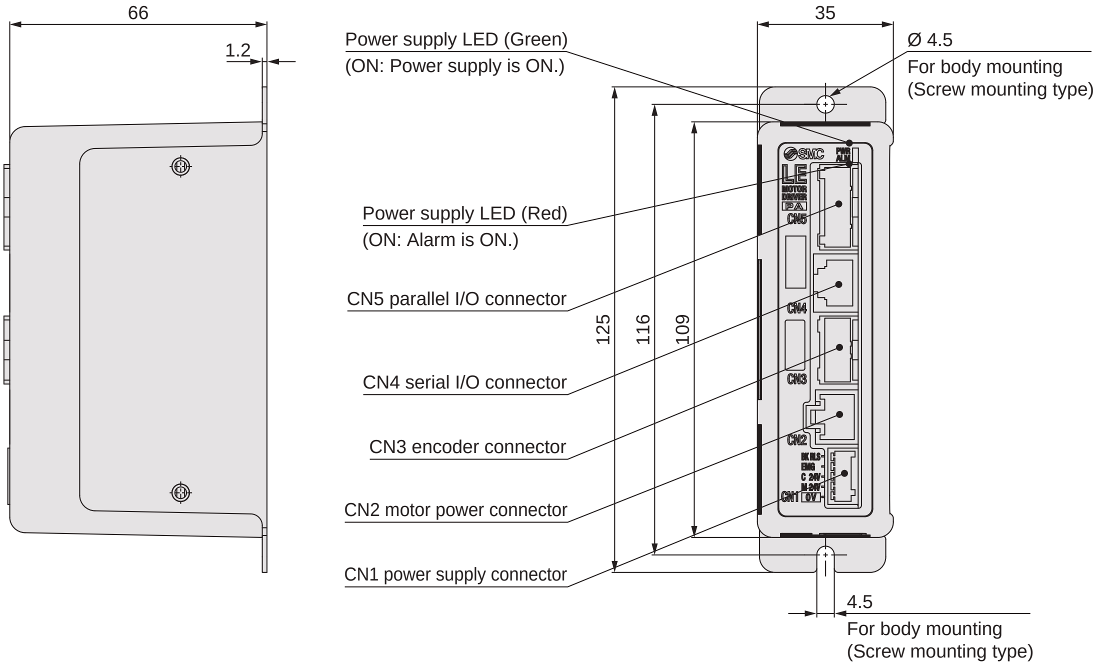
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

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

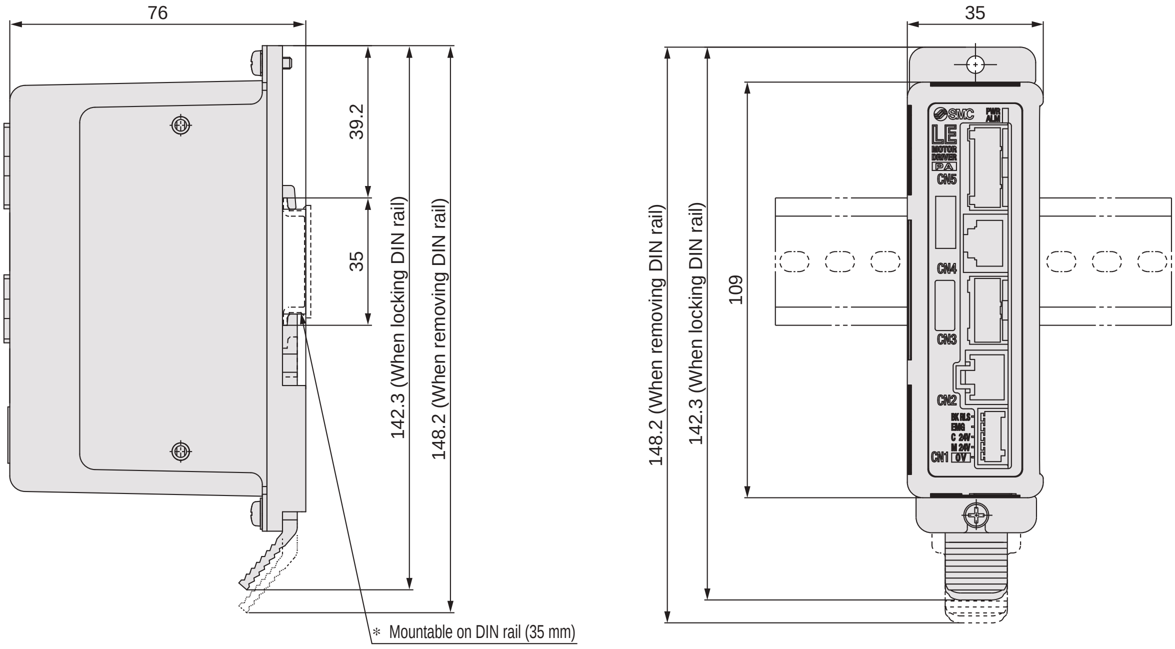
This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type driver afterward.

Dimensions

a) Screw mounting (LECPA□□-□)


66
1.2
35
Power supply LED (Green)
(ON: Power supply is ON.)
Ø 4.5
For body mounting
(Screw mounting type)
SMC
PWR
ALM
LE
MOTOR DRIVER
PA
CN5
CN4
CN3
CN2
BK RLS
EMG
C 24V
M 24V
CN1
0V
Power supply LED (Red)
(ON: Alarm is ON.)
CN5 parallel I/O connector
CN4 serial I/O connector
CN3 encoder connector
CN2 motor power connector
CN1 power supply connector
125
116
109
4.5
For body mounting
(Screw mounting type)

b) DIN rail mounting (LECPA□□D-□)


76
39.2
35
142.3 (When locking DIN rail)
148.2 (When removing DIN rail)
35
109
148.2 (When removing DIN rail)
142.3 (When locking DIN rail)
SMC
PWR
ALM
LE
MOTOR DRIVER
PA
CN5
CN4
CN3
CN2
BK RLS
EMG
C 24V
M 24V
CN1
0V

* Mountable on DIN rail (35 mm)

Wiring Example 1

Power Supply Connector: CN1

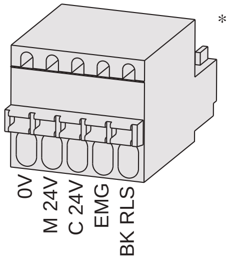
* The power supply plug is an accessory.
<Applicable cable size> AWG20 (0.5 mm^2), cover diameter 2.0 mm or less

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


0V
M 24V
C 24V
EMG
BK RLS

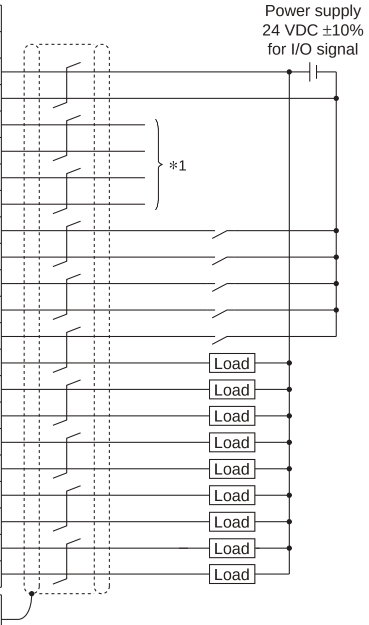
Wiring Example 2

Parallel I/O Connector: CN5

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

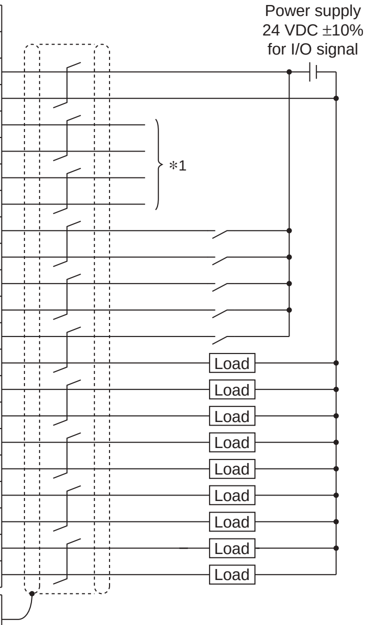
LECPAN□□-□ (NPN)

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*2	Output	18
*ALARM*2	Output	19
AREA	Output	20
FG		Round terminal 0.5-5


Power supply
24 VDC ±10%
for I/O signal
*1
Load
Load
Load
Load
Load
Load
Load
Load
Load

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*2	Output	18
*ALARM*2	Output	19
AREA	Output	20
FG		Round terminal 0.5-5


Power supply
24 VDC ±10%
for I/O signal
*1
Load
Load
Load
Load
Load
Load
Load
Load
Load

*1 For pulse signal wiring method, refer to “Pulse Signal Wiring Details”.
*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

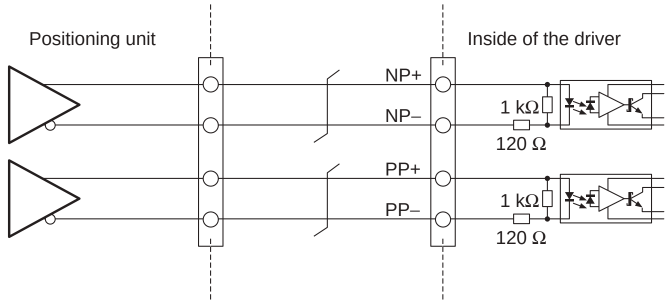
Output Signal

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*3	Not output when EMG stop is instructed
*ALARM*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

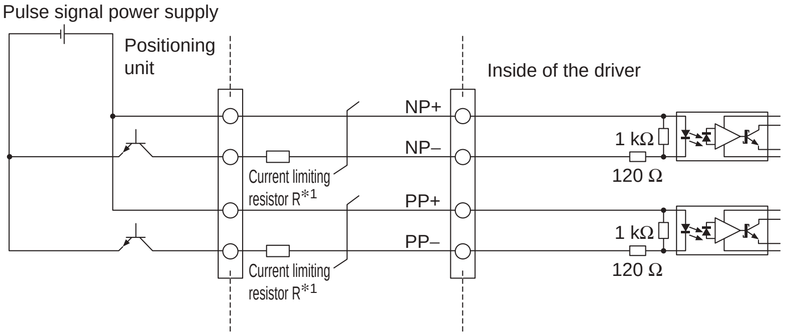
*3 Signal of negative-logic circuit ON (N.C.)

Pulse Signal Wiring Details

●Pulse signal output of positioning unit is differential output


Positioning unit
Inside of the driver
NP+
NP–
PP+
PP–
1 kΩ
120 Ω
1 kΩ
120 Ω

●Pulse signal output of positioning unit is open collector output

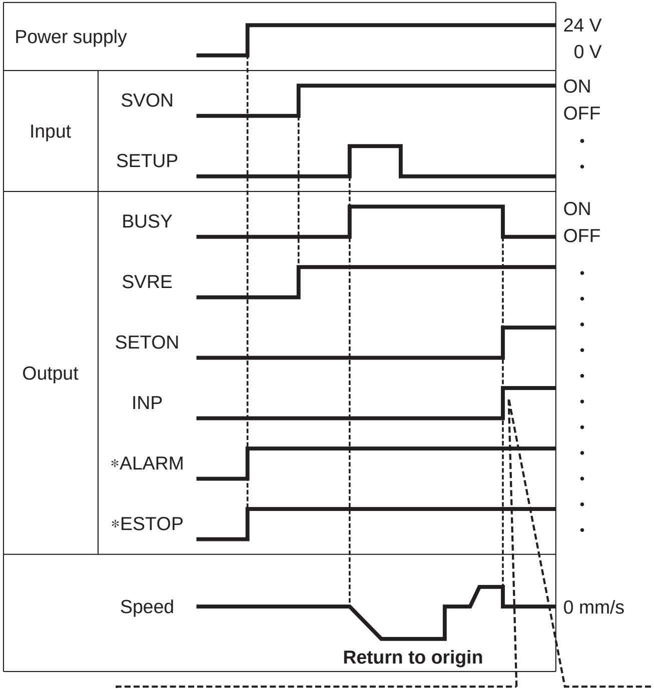

Pulse signal power supply
Positioning unit
Inside of the driver
NP+
NP–
PP+
PP–
Current limiting resistor R*1
Current limiting resistor R*1
1 kΩ
120 Ω
1 kΩ
120 Ω

*1 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

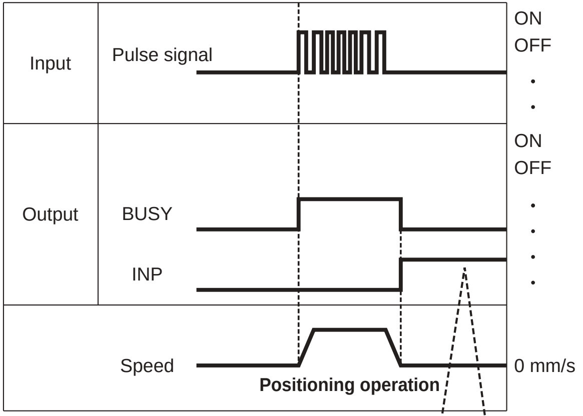
Return to Origin


Power supply
24 V
0 V
Input
SVON
SETUP
ON
OFF
Output
BUSY
SVRE
SETON
INP
*ALARM
*ESTOP
ON
OFF
Speed
0 mm/s
Return to origin

If the actuator is within the “In position” range of the basic parameter, INP will turn ON, but if not, it will remain OFF.

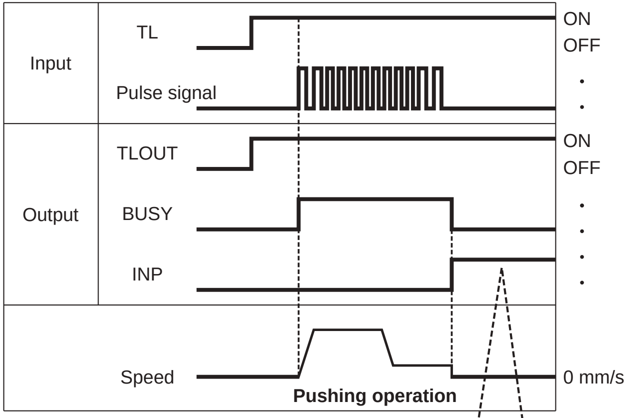
* “*ALARM” and “*ESTOP” are expressed as negative-logic circuits.

Positioning Operation


Input
Pulse signal
ON
OFF
Output
BUSY
INP
ON
OFF
Speed
0 mm/s
Positioning operation

If the actuator is within the “In position” range of the step data, INP will turn ON, but if not, it will remain OFF.

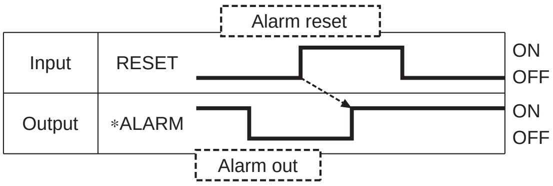
Pushing Operation


Input
TL
Pulse signal
ON
OFF
Output
TLOUT
BUSY
INP
ON
OFF
Speed
0 mm/s
Pushing operation

If the current pushing force exceeds the “Trigger LV” value of the step data, INP signal will turn ON.

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

Alarm Reset


Alarm reset
Input
RESET
ON
OFF
Output
*ALARM
ON
OFF
Alarm out

* “*ALARM” is expressed as a 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*1
A	10*1
B	15*1
C	20*1

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

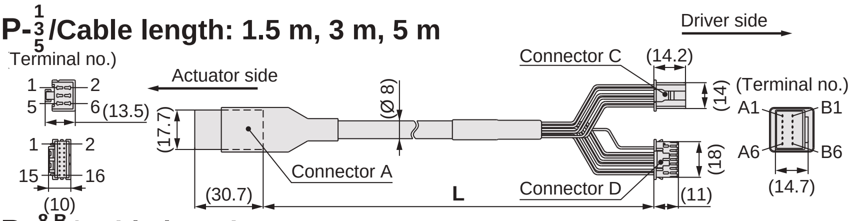
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

Weight

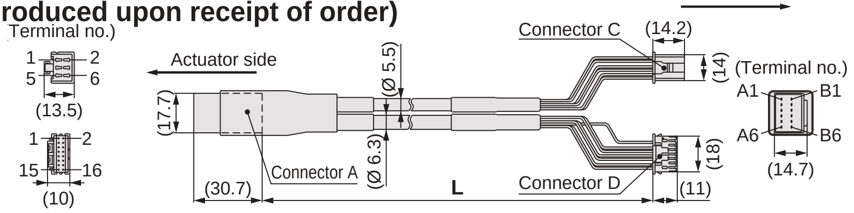
Product no.	Weight [g]	Note
LE-CP-1-S	190	Standard cable
LE-CP-3-S	280	
LE-CP-5-S	460	
LE-CP-1	140	Robotic cable
LE-CP-3	260	
LE-CP-5	420	
LE-CP-8	790	
LE-CP-A	980	
LE-CP-B	1460	
LE-CP-C	1940	

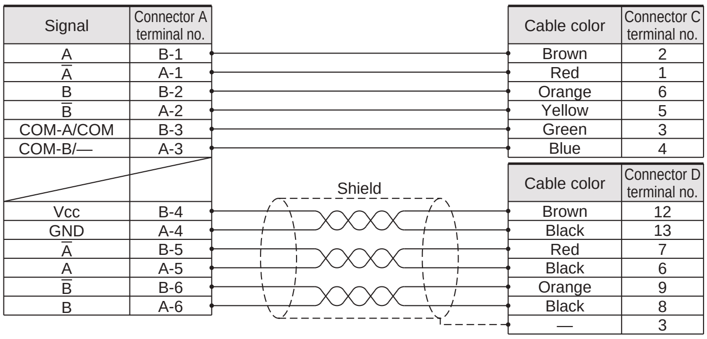
LE-CP-$\substack{1\\3\\5}$/Cable length: 1.5 m, 3 m, 5 m


Driver side
Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(ø 8)
Connector A
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)

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

(*1 Produced upon receipt of order)


Driver side
Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(ø 5.5)
(ø 6.3)
Connector A
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)



Signal	Connector A terminal no.	Cable color	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

Signal	Connector A terminal no.	Cable color	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

[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*1
A	10*1
B	15*1
C	20*1

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

With lock and sensor

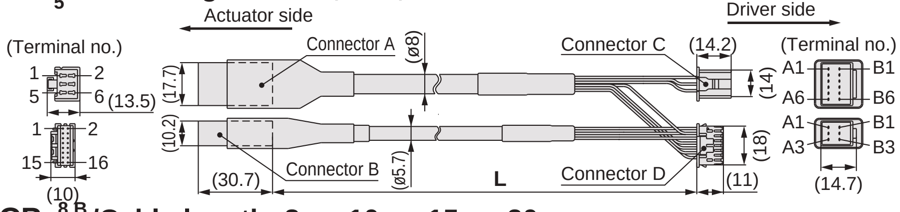
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

Weight

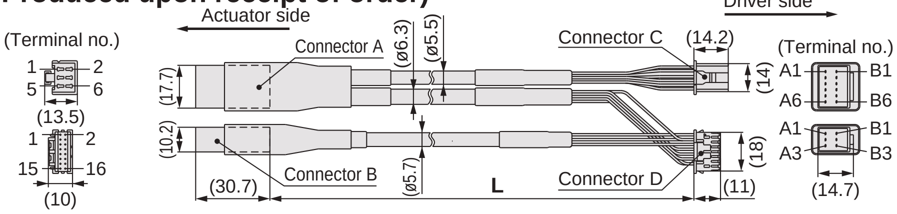
Product no.	Weight [g]	Note
LE-CP-1-B-S	240	Standard cable
LE-CP-3-B-S	380	
LE-CP-5-B-S	630	
LE-CP-1-B	190	Robotic cable
LE-CP-3-B	360	
LE-CP-5-B	590	
LE-CP-8-B	1060	
LE-CP-A-B	1320	
LE-CP-B-B	1920	
LE-CP-C-B	2620	

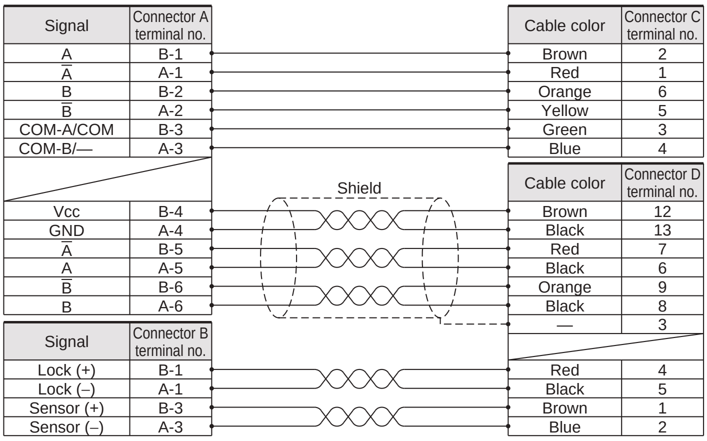
LE-CP-$\substack{1\\3\\5}$/Cable length: 1.5 m, 3 m, 5 m


Actuator side
Driver side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø8)
Connector B
(ø5.7)
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)

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

(*1 Produced upon receipt of order)


Actuator side
Driver side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø6.3)
(ø5.5)
Connector B
(ø5.7)
(30.7)
L
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)



Signal	Connector A terminal no.	Cable color	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

Signal	Connector A terminal no.	Cable color	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

Signal	Connector B terminal no.	Cable color	Connector D terminal no.
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

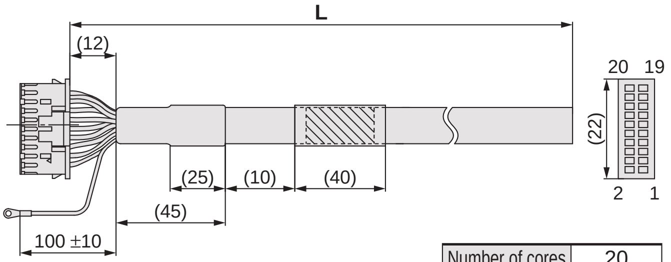
I/O cable type

L5	For LECPA

I/O cable length (L)

1	1.5 m
3	3 m*1
5	5 m*1

*1 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	Gray	■	Black
8	Gray	■	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	Gray	■ ■	Black
18	Gray	■ ■	Red
19	White	■ ■	Black
20	White	■ ■	Red

Round terminal 0.5-5	Green

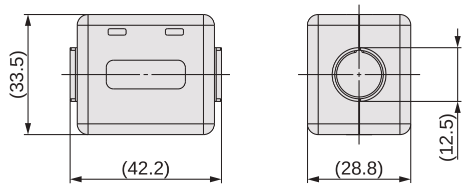
Weight

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 − □

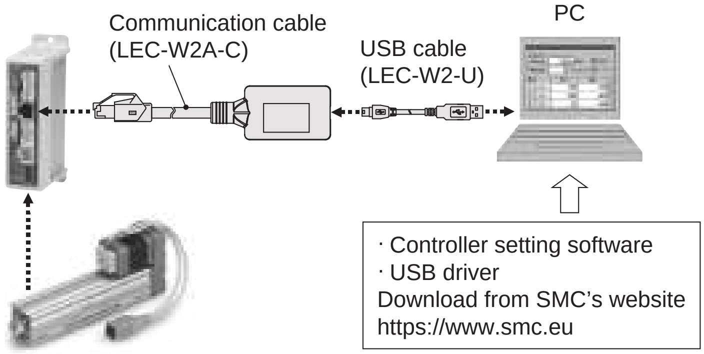
Current limiting resistor

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 217.

LEC Series

Communication Cable for Controller Setting/LEC-W2A-□



· Controller setting software
· USB driver
Download from SMC's website
https://www.smc.eu

How to Order

LEC－W2A－C
- **C**: **Communication cable**

LEC－W2－U
- **U**: **USB cable**

Compatible Controller/Driver

Step data input type	**PLECA6 Series**
Pulse input type	**LECPA Series**
PStep Motor Controller	**JXCE1/91/P1/D1/L1 Series**

∗ When connecting to a JXCE1/91/P1/D1/L1 series product, use a conversion cable (P5062-5) as a relay.

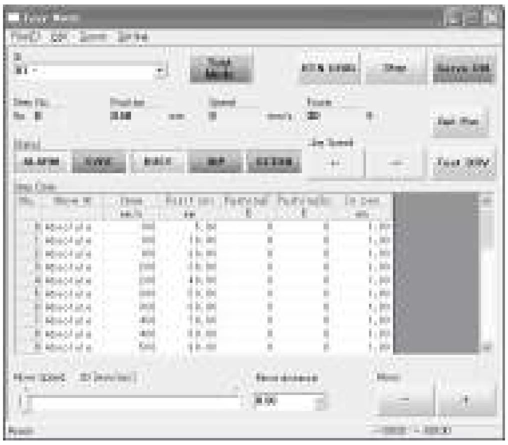
Hardware Requirements

OS	Windows®7, Windows®8.1, Windows®10
Communication interface	USB 1.1 or USB 2.0 ports
Display	1024 x 768 or more

∗ Windows®7, Windows®8.1 and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

Screen Example

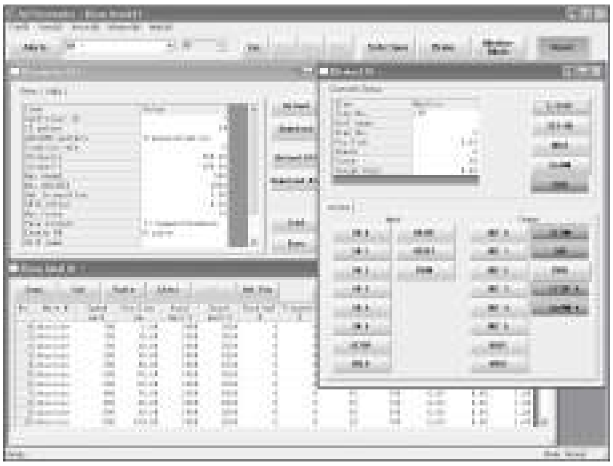
Easy mode screen example



Easy operation and simple setting

- Allowing to set and display actuator step data such as position, speed, force, etc.
- Setting of step data and test 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 drive and testing of forced output can be performed.

LEC Series

Teaching Box/LEC-T1

RoHS

Enable switch
(Option)
Stop switch

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

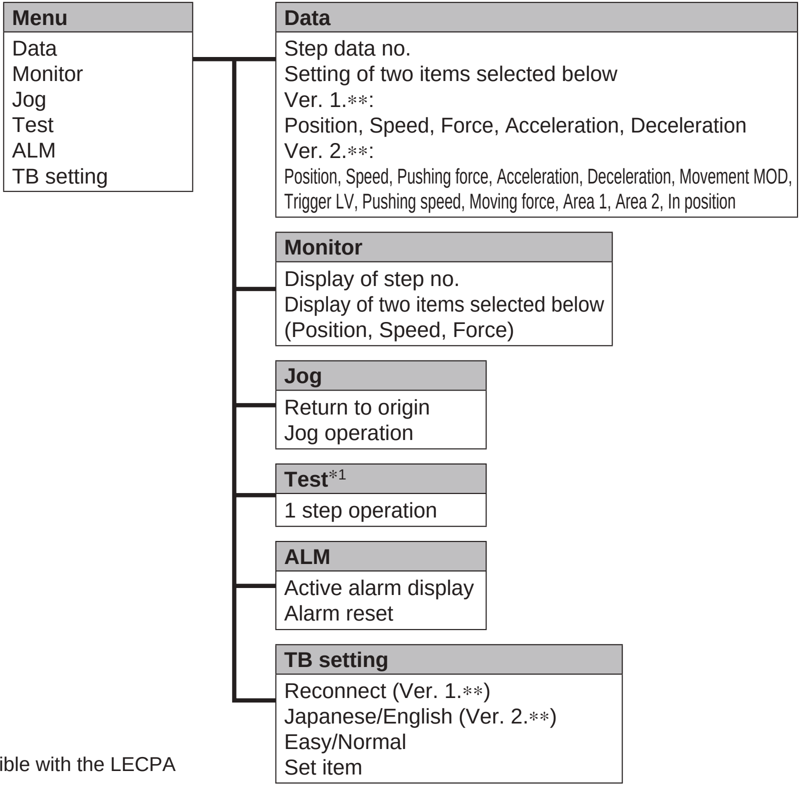
Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

[CE-compliant products]
The EMC compliance of the teaching box was tested with a step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When compliance with 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[*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[*1]
1 step operation

ALM
Active alarm display
Alarm reset

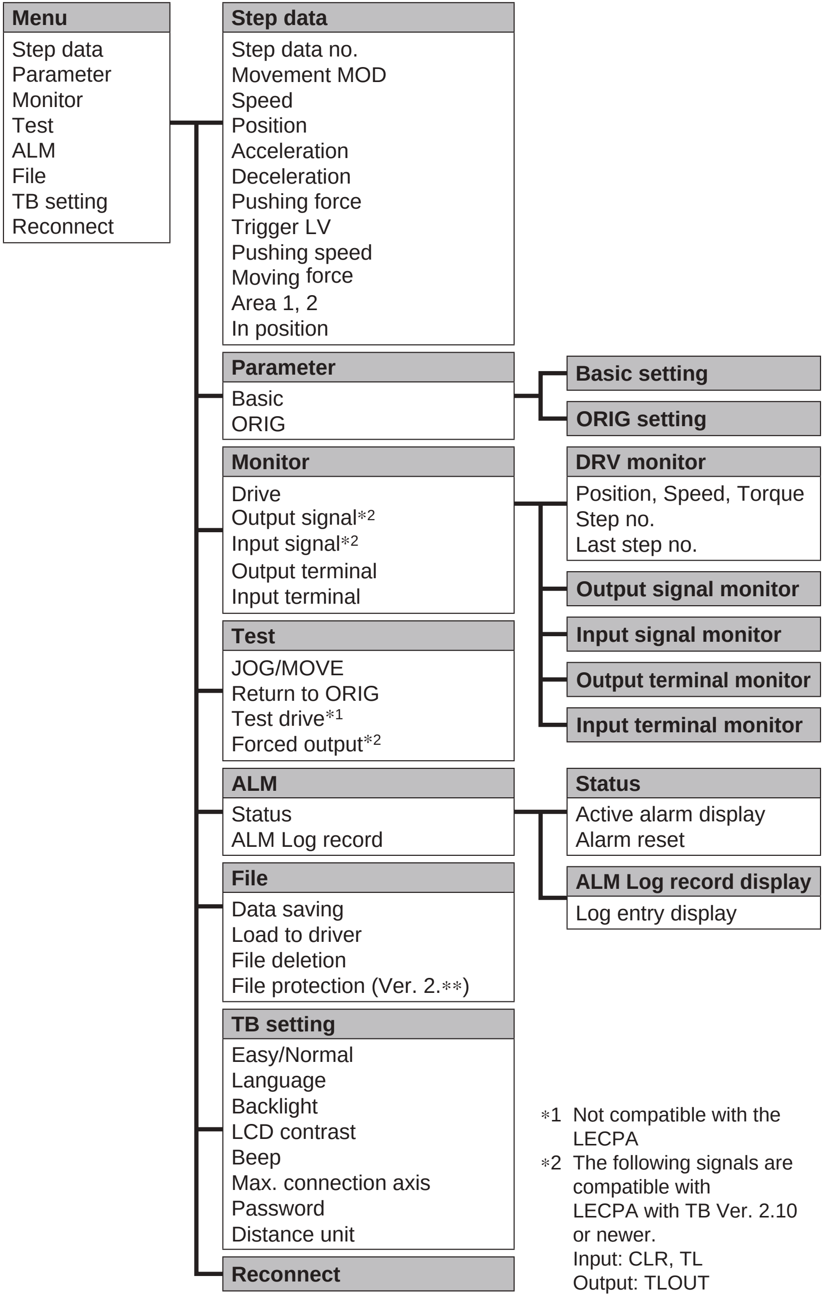
TB setting
Reconnect (Ver. 1.**)
Japanese/English (Ver. 2.**)
Easy/Normal
Set item

[*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*1 (Specify a maximum of 5 step data and operate.) • Forced output (Forced signal output, Forced terminal output)*2
Monitor	• Drive monitor • Output signal monitor*2 • Input signal monitor*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

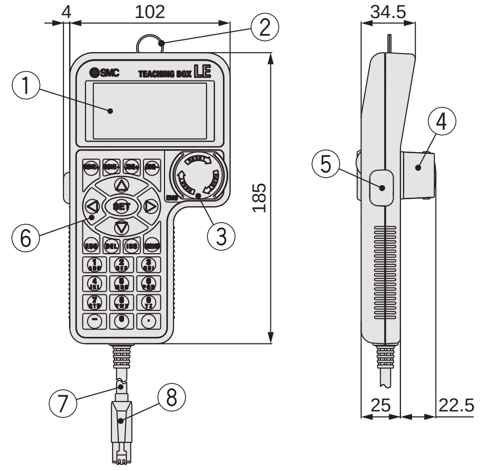


- **Menu**: Step data, Parameter, Monitor, Test, ALM, File, TB setting, Reconnect
  - **Step data**: Step data no., Movement MOD, Speed, Position, Acceleration, Deceleration, Pushing force, Trigger LV, Pushing speed, Moving force, Area 1, 2, In position
  - **Parameter**: Basic, ORIG
    - **Basic setting**
    - **ORIG setting**
  - **Monitor**: Drive, Output signal*2, Input signal*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*1, Forced output*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**

*1 Not compatible with the LECPA

*2 The following signals are compatible with LECPA with TB Ver. 2.10 or newer.
Input: CLR, TL
Output: TLOUT

Dimensions



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

Step Motor Controller

JXCE1/91/P1/D1/L1 Series

CE cULus RoHS

How to Order

JXC D 1 7 T – ☐

Communication protocol

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

For single axis

Mounting

7	Screw mounting
8*1	DIN rail

*1 The DIN rail is not included. It must be ordered separately. (Refer to page 229.)

Option

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

* Select "—" for anything other than JXCD1.

EtherCAT
EtherNet/IP
PROFINET
DeviceNet
IO-Link

Actuator part number

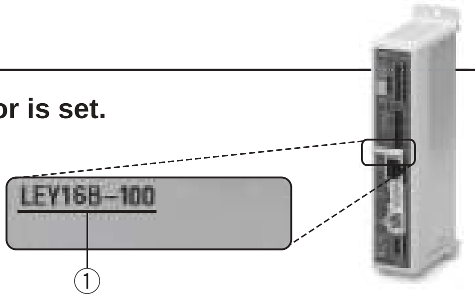
Without cable specifications and actuator options Example: Enter "LEY16B-100" for the LEY16B-100B-R16N1.	
BC	Blank controller*1

*1 Requires dedicated software (JXC-BCW)

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

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

① Check the actuator label for the model number. This number should match that of the controller.



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

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

A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. Use the dedicated software (JXC-BCW) for data writing.

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

SMC website: https://www.smc.eu

Specifications

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

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

■Trademark

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

Example of Operation Command

In addition to the step data input of 64 points maximum in each communication protocol, the changing of each parameter can be performed in real time via numerical data defined operation.

* Numerical values other than “Moving force,” “Area 1,” and “Area 2” can be used to perform operation under numerical instructions from JXCL1.

<Application example> Movement between 2 points

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

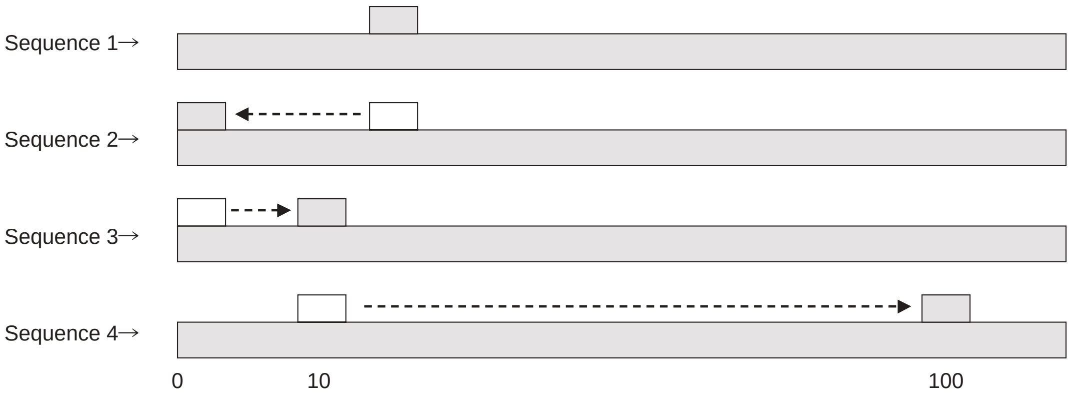
<Step no. defined operation>

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

<Numerical data defined operation>

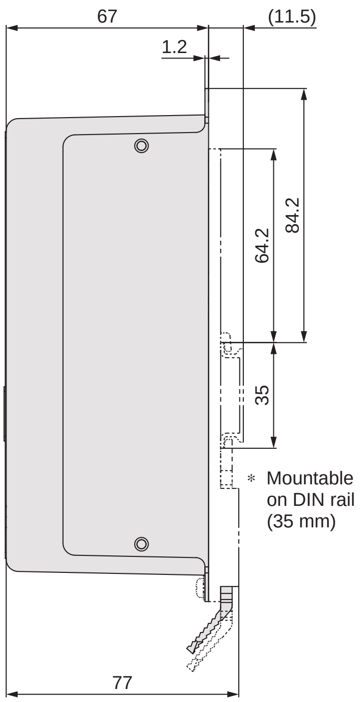
Sequence 1: Servo ON instruction
Sequence 2: Instruction to return to origin
Sequence 3: Specify step data No. 0 and turn ON the input instruction flag (position). Input 10 in the target position. Subsequently the start flag turns ON.
Sequence 4: Turn ON step data No. 0 and the input instruction flag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

The same operation can be performed with any operation command.

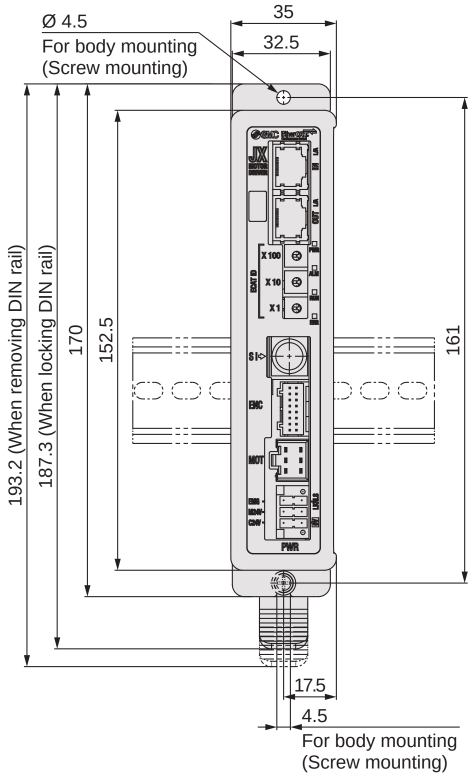


Dimensions

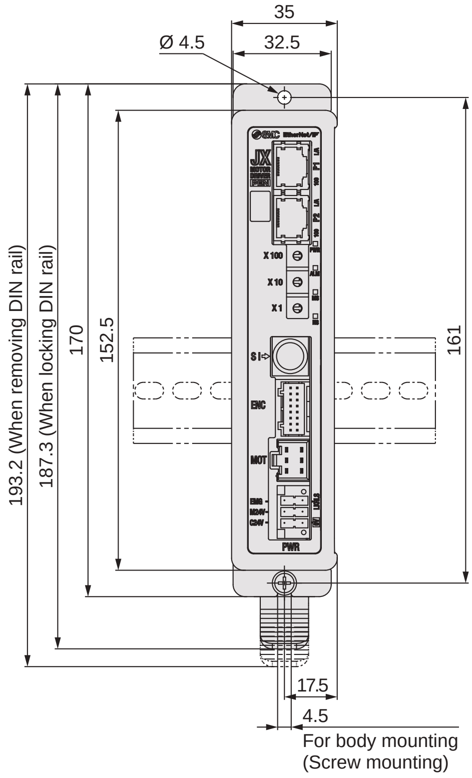
JXCE1/JXC91


67
(11.5)
1.2
84.2
64.2
35
＊ Mountable on DIN rail (35 mm)
77

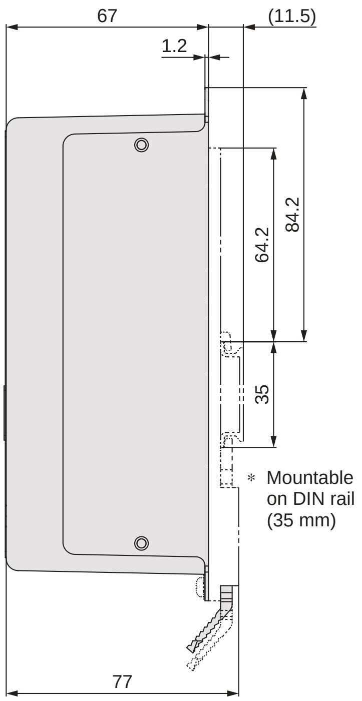
JXCE1


Ø 4.5
For body mounting (Screw mounting)
35
32.5
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.5
161
17.5
4.5
For body mounting (Screw mounting)

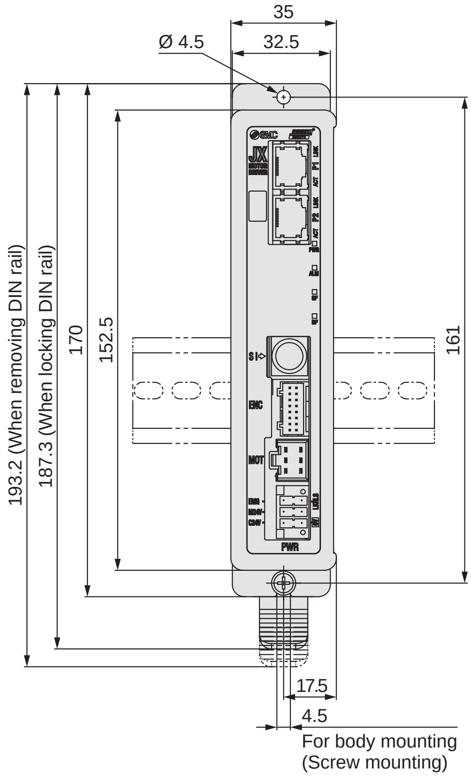
JXC91


Ø 4.5
35
32.5
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.5
161
17.5
4.5
For body mounting (Screw mounting)

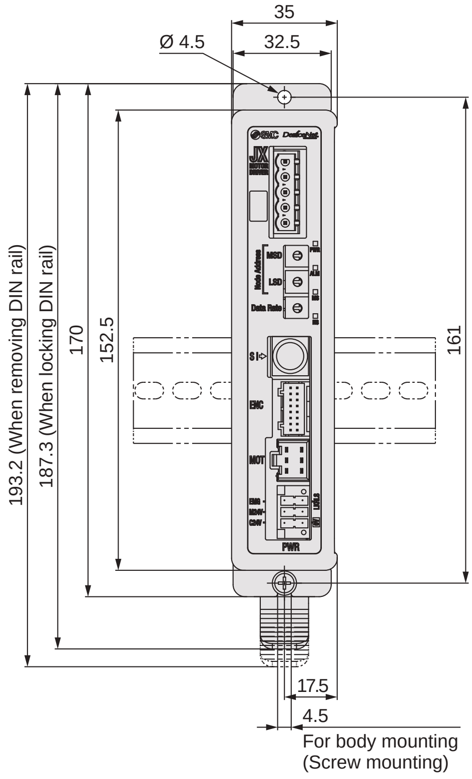
JXCP1/JXCD1


67
(11.5)
1.2
84.2
64.2
35
＊ Mountable on DIN rail (35 mm)
77

JXCP1

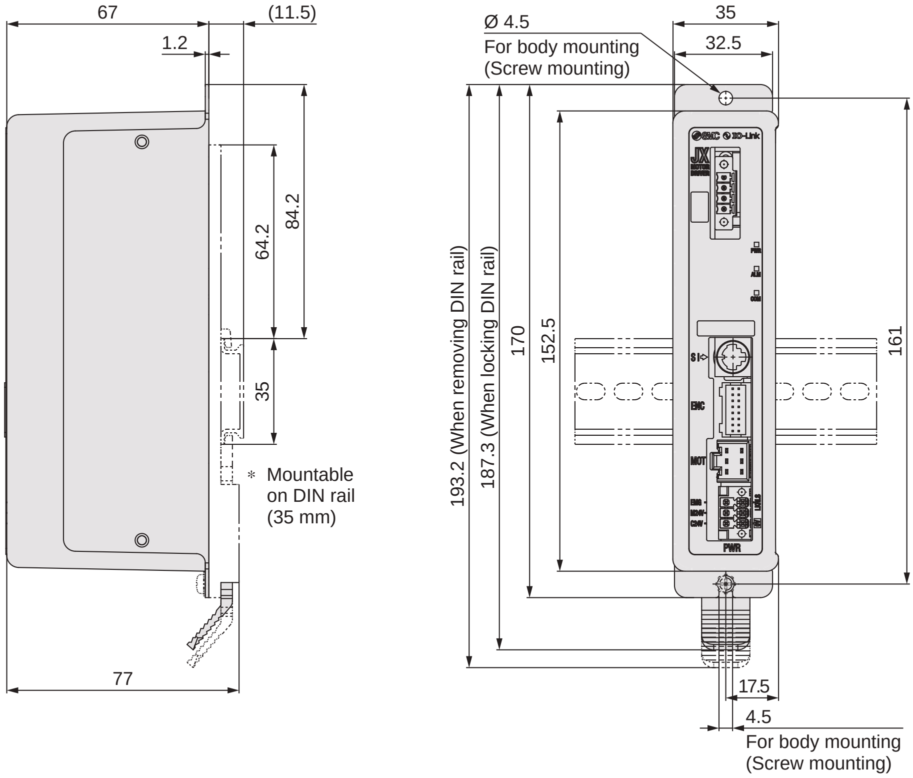

Ø 4.5
35
32.5
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.5
161
17.5
4.5
For body mounting (Screw mounting)

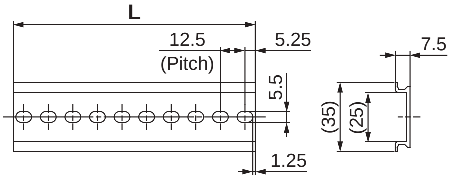
JXCD1


Ø 4.5
35
32.5
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.5
161
17.5
4.5
For body mounting (Screw mounting)

Dimensions

JXCL1


67
(11.5)
1.2
84.2
64.2
35
77
＊ Mountable on DIN rail (35 mm)
Ø 4.5
For body mounting (Screw mounting)
35
32.5
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.5
161
17.5
4.5
For body mounting (Screw mounting)
SMC
IO-Link
JX
PWR
ALM
COM
SI
ENC
MOT
PWR


L
12.5
(Pitch)
5.25
5.5
1.25
(35)
(25)
7.5

L Dimensions [mm]

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

Options: 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*1
A	10*1
B	15*1
C	20*1

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

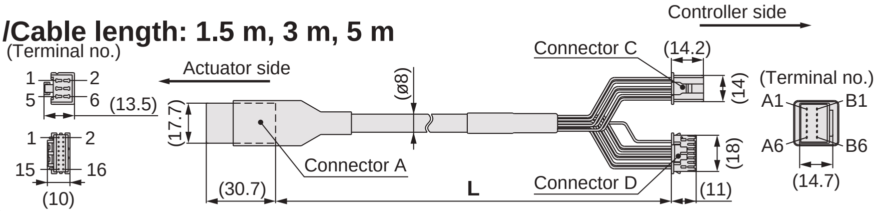
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

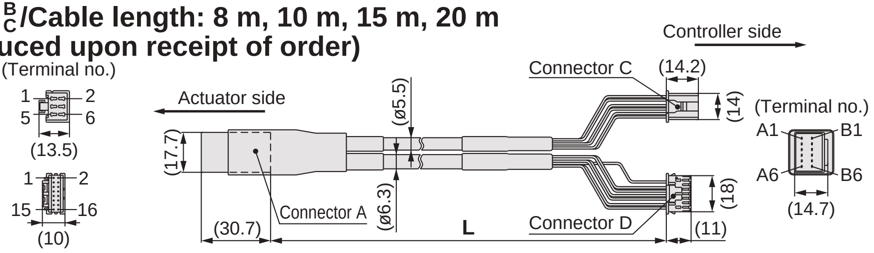
Weight

Product no.	Weight [g]	Note
LE-CP-1-S	190	Standard cable
LE-CP-3-S	280	
LE-CP-5-S	460	
LE-CP-1	140	Robotic cable
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-$\begin{smallmatrix}1\\3\\5\end{smallmatrix}$/Cable length: 1.5 m, 3 m, 5 m


(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(30.7)
Connector A
(ø8)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)

LE-CP-$\begin{smallmatrix}8 & B\\A & C\end{smallmatrix}$/Cable length: 8 m, 10 m, 15 m, 20 m
(*1 Produced upon receipt of order)


(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
Actuator side
(17.7)
(30.7)
Connector A
(ø5.5)
(ø6.3)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
(14.7)

Signal	Connector A terminal no.	Cable color	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 color	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

[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*1
A	10*1
B	15*1
C	20*1

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

With lock and sensor

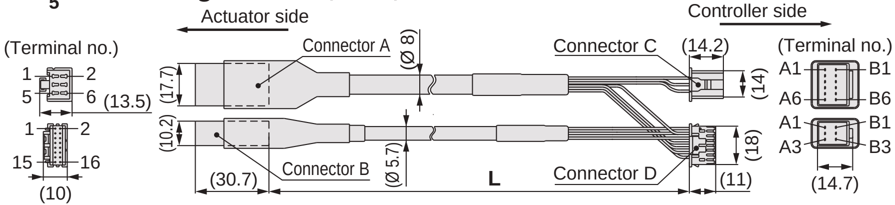
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

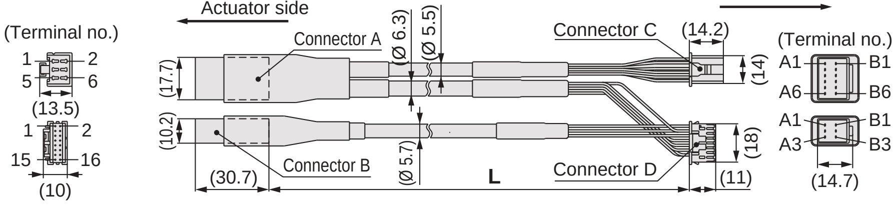
Weight

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	
LE-CP-1-B	190	Robotic cable
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-$\begin{smallmatrix}1\\3\\5\end{smallmatrix}$/Cable length: 1.5 m, 3 m, 5 m


Actuator side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø 8)
Connector B
(ø 5.7)
(30.7)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)

LE-CP-$\begin{smallmatrix}8 & B\\A & C\end{smallmatrix}$/Cable length: 8 m, 10 m, 15 m, 20 m
(*1 Produced upon receipt of order)


Actuator side
(Terminal no.)
1
2
5
6
(13.5)
1
2
15
16
(10)
(17.7)
(10.2)
Connector A
(ø 6.3)
(ø 5.5)
Connector B
(ø 5.7)
(30.7)
L
Controller side
Connector C
(14.2)
(14)
Connector D
(18)
(11)
(Terminal no.)
A1
B1
A6
B6
A1
B1
A3
B3
(14.7)

Signal	Connector A terminal no.	Cable color	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 color	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

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

Options

■Controller setting kit JXC-W2

[Contents]

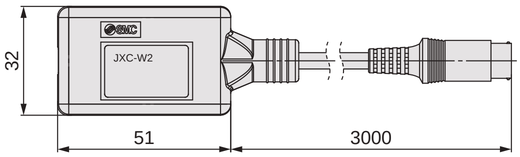
① Communication cable
② USB cable
③ Controller setting software
＊ A conversion cable (P5062-5) is not required.

JXC-W2-□

Contents

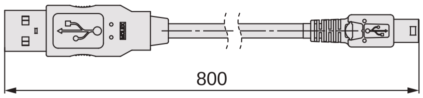
—	A kit includes: (Communication cable, USB cable, Controller setting software)
C	Communication cable
U	USB cable
S	Controller setting software (CD-ROM)

① Communication cable JXC-W2-C

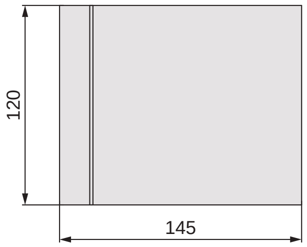


＊ It can be connected to the controller directly.

② USB cable JXC-W2-U



③ Controller setting software (CD-ROM) JXC-W2-S



■DIN rail mounting adapter LEC-3-D0

＊ With 2 mounting screws

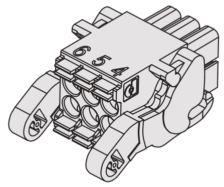
This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type controller afterward.

■DIN rail AXT100-DR-□

＊ For □, enter a number from the No. line in the table on page 227. Refer to the dimension drawings on pages 226 and 227 for the mounting dimensions.

■Power supply plug JXC-CPW

＊ The power supply plug is an accessory.



⑥ ⑤ ④
③ ② ①

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

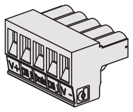
Power supply plug

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

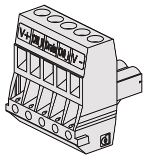
■Communication plug connector

For DeviceNet™

Straight type JXC-CD-S



T-branch type JXC-CD-T



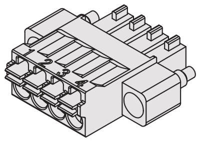
Communication plug connector for DeviceNet™

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

For IO-Link

Straight type JXC-CL-S

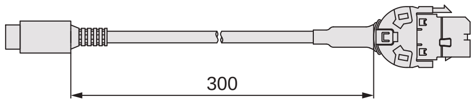
＊ The communication plug connector for IO-Link is an accessory.



Communication plug connector for IO-Link

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

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



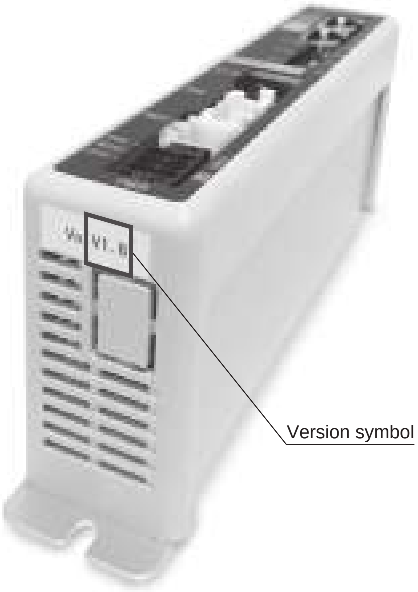
＊ To connect the teaching box (LEC-T1-3□G□) or controller setting kit (LEC-W2) to the controller, a conversion cable is required.

JXCE1/91/P1/D1/L1 Series
Precautions Related to Differences in Controller Versions

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

- If using the JXC□1□-BC, please use the latest version of the JXC-BCW (parameter writing tool).
- There are currently 3 versions available: version 1 products (V1.□ or S1.□), version 2 products (V2.□ or S2.□), and version 3 products (V3.□ or S3.□). Keep in mind that in order to write a backup file (.bkp) to another controller with the JXC-BCW, it needs to be the same version as the controller that created the file. (For example, a backup file created by a version 1 product can only be written to another version 1 product, and so on.)

Identifying Version Symbols



JXC□1 Series Version V3.□ or S3.□ Products

XR V3.0

Applicable models

JXC91□ Series

XR S3.0 T1.0

Applicable models

JXCD1□ Series
JXCE1□ Series
JXCP1□ Series
JXCL1□ Series

JXC□1 Series Version V2.□ or S2.□ Products

WP V2.1

Applicable models

JXC91□ Series

WP S2.2 T1.1

Applicable models

JXCD1□ Series
JXCE1□ Series
JXCP1□ Series
JXCL1□ Series

JXC□1 Series Version V1.□ or S1.□ Products

XR V1.0

Applicable models

JXC91□ Series

XR S1.0 T1.0

Applicable models

JXCD1□ Series
JXCE1□ Series
JXCP1□ Series
JXCL1□ Series

LEC *Series*

Teaching Box/LEC-T1

Enable switch
(Option)
Stop switch

Standard functions

- Chinese character display
- Stop switch is provided.

Option

- Enable switch is provided.

How to Order

LEC-T1-3 E G ☐

Teaching box: T1

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

Specifications

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

[CE-compliant products]
The EMC compliance of the teaching box was tested with a step motor controller (servo/24 VDC) and an applicable actuator.
[UL-compliant products]
When compliance with 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 (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
1 step operation

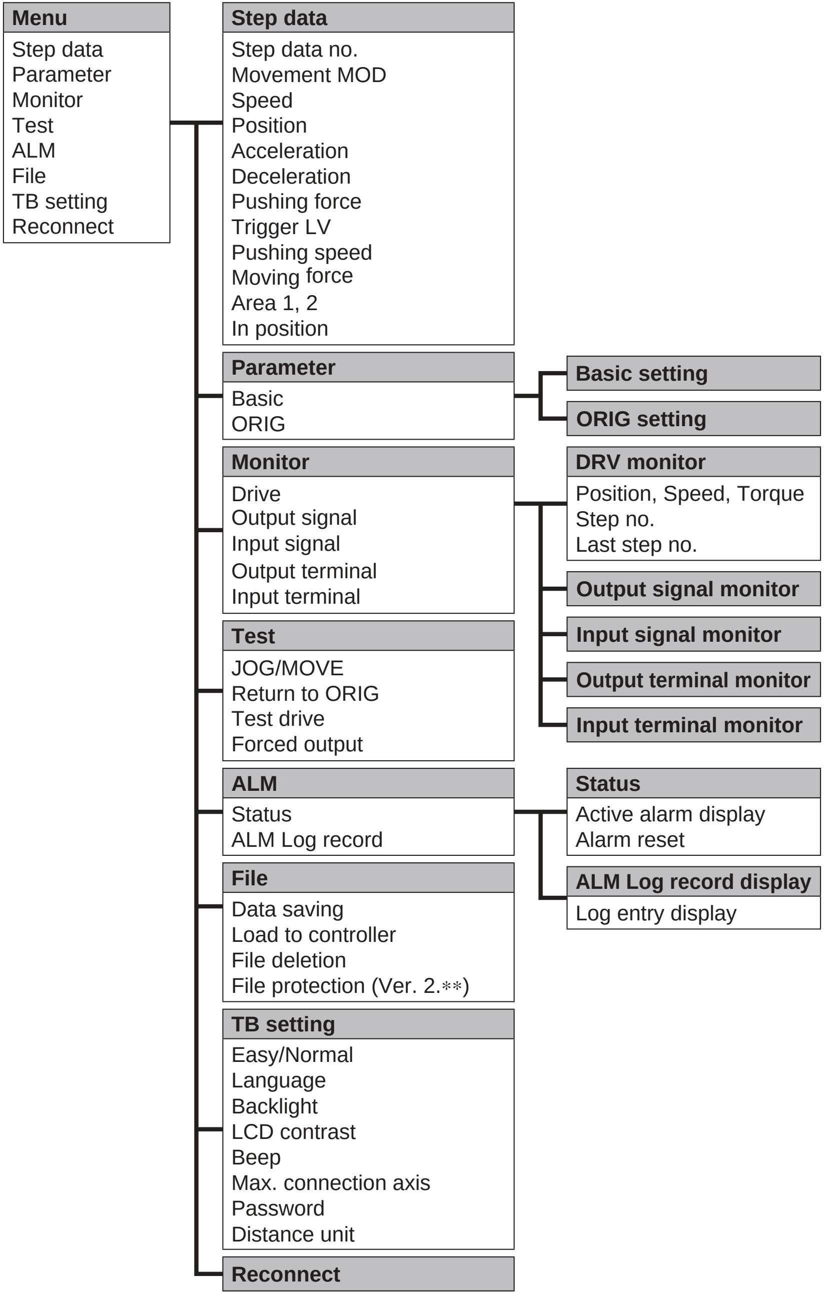
ALM
Active alarm display
Alarm reset

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

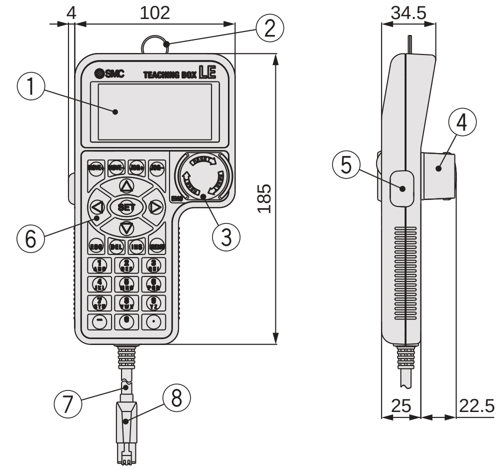
Normal Mode

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. • 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
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
File protection (Ver. 2.**)
TB setting
Easy/Normal
Language
Backlight
LCD contrast
Beep
Max. connection axis
Password
Distance unit
Reconnect

Dimensions


4
102
①
②
③
④
⑤
⑥
⑦
⑧
185
34.5
25
22.5
SMC
TEACHING BOX LE

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

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

How to Order

■ EtherNet/IP™ Type (JXC92)

Controller

JXC 9 2 7

- 9: EtherNet/IP™ type
- 2: 3-axis type
- 7: **Mounting**

Symbol	Mounting
7	Screw mounting
8	DIN rail

∗ Order the actuator separately, including the actuator cable.
(Example: LEY16B-100-S1)

∗ For the “Speed–Work Load” graph of the actuator, refer to page 38.

Specifications

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

EtherNet/IP™ Type (JXC92)

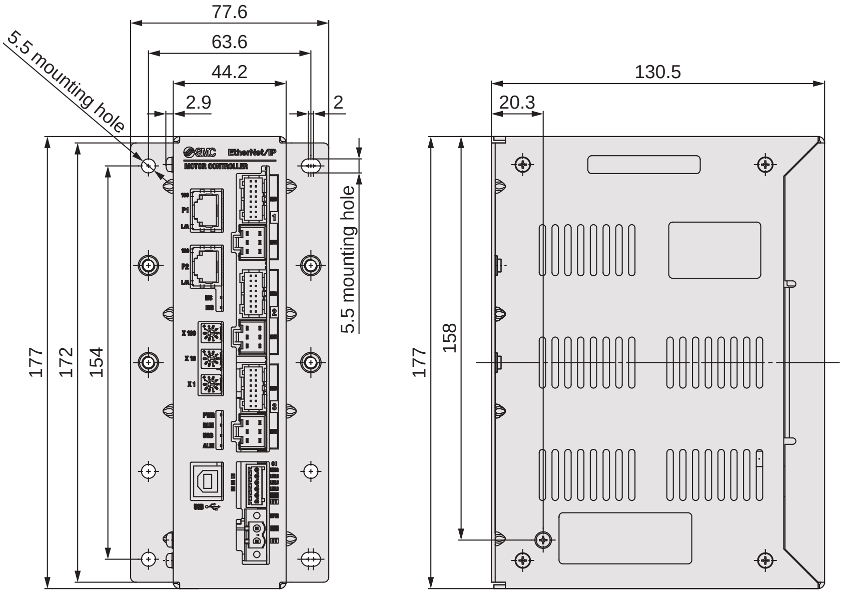
Item		Specifications
Number of axes		Max. 3 axes
Compatible motor		Step motor (Servo/24 VDC)
Compatible encoder		Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply∗1		Control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 500 mA Motor power supply Power voltage: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

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

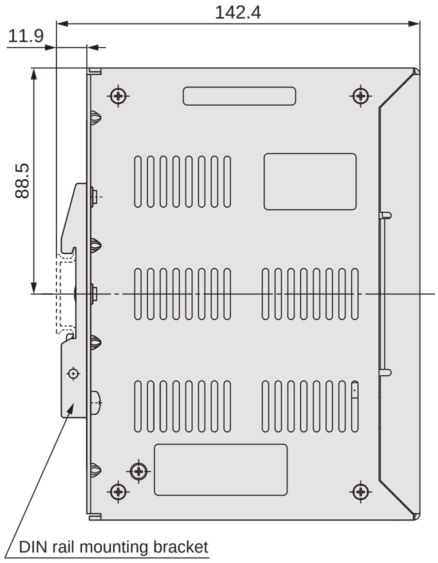
Dimensions

EtherNet/IP™ Type JXC92

Screw mounting

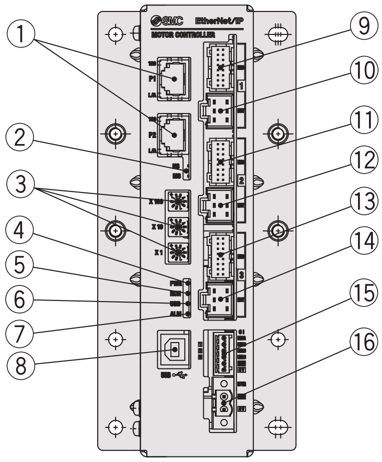


DIN rail mounting



Controller Details

EtherNet/IP™ Type JXC92



No.	Name	Description	Details
①	**P1, P2**	EtherNet/IP™ communication connector	Connect Ethernet cable.
②	**NS, MS**	Communication status LED	Displays the status of the EtherNet/IP™ communication
③	**X100** **X10** **X1**	IP address setting switches	Switch to set the 4th byte of the IP address by X1, X10 and X100.
④	**PWR**	Power supply LED (Green)	Power supply ON: Green turns on Power supply OFF: Green turns off
⑤	**RUN**	Operation LED (Green)	Running in EtherNet/IP™: Green turns on Running via USB communication: Green flashes Stopped: Green turns off
⑥	**USB**	USB connection LED (Green)	USB connected: Green turns on USB not connected: Green turns off
⑦	**ALM**	Alarm LED (Red)	With alarm: Red turns on Without alarm: Red turns off
⑧	**USB**	Serial communication connector	Connect to a PC via the USB cable.
⑨	**ENC1**	Encoder connector (16 pins)	Axis 1: Connect the actuator cable.
⑩	**MOT1**	Motor power connector (6 pins)	
⑪	**ENC2**	Encoder connector (16 pins)	Axis 2: Connect the actuator cable.
⑫	**MOT2**	Motor power connector (6 pins)	
⑬	**ENC3**	Encoder connector (16 pins)	Axis 3: Connect the actuator cable.
⑭	**MOT3**	Motor power connector (6 pins)	
⑮	**CI**	Control power supply connector*1	Control power supply (+), All axes stop (+), Axis 1 lock release (+), Axis 2 lock release (+), Axis 3 lock release (+), Common (−)
⑯	**M PWR**	Motor power supply connector*1	Motor power supply (+), Motor power supply (−)

*1 Connectors are included. (Refer to page 239.)

Model Selection
Step Motor (Servo/24 VDC)/Servo Motor (24 VDC) LEY LEYG
AC Servo Motor LEY LEYG
Environment LEY-X5 25A-LEY
Step Motor (Servo/24 VDC)/Servo Motor (24 VDC) LECA6 LEC-G LECP1 LECPA JXC□
AC Servo Motor LECS□ LECY□
Specific Product Precautions

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

How to Order

■ Parallel I/O (JXC73/83)

Controller

JXC 8 3 2

I/O type

Symbol	I/O type
7	NPN
8	PNP

4-axis type

I/O cable, mounting

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

∗ Two I/O cables are included.

■ EtherNet/IP™ Type (JXC93)

Controller

JXC 9 3 7

EtherNet/IP™ type

4-axis type

Mounting

Symbol	Mounting
7	Screw mounting
8	DIN rail

∗ Order the actuator separately, including the actuator cable.
(Example: LEY16B-100-S1)

∗ For the “Speed–Work Load” graph of the actuator, refer to page 38.

Specifications

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

Parallel I/O (JXC73/83)

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

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

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

EtherNet/IP™ Type (JXC93)

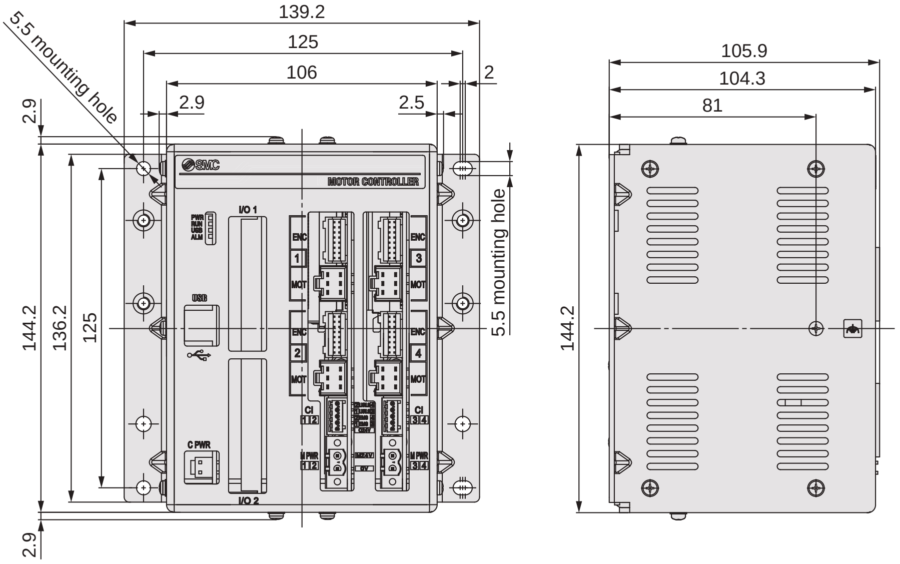
Item		Specifications
Number of axes		Max. 4 axes
Compatible motor		Step motor (Servo/24 VDC)
Compatible encoder		Incremental A/B phase (Encoder resolution: 800 pulse/rotation)
Power supply*1		Main control power supply Power voltage: 24 VDC ±10 % Max. current consumption: 350 mA Motor power supply, Motor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

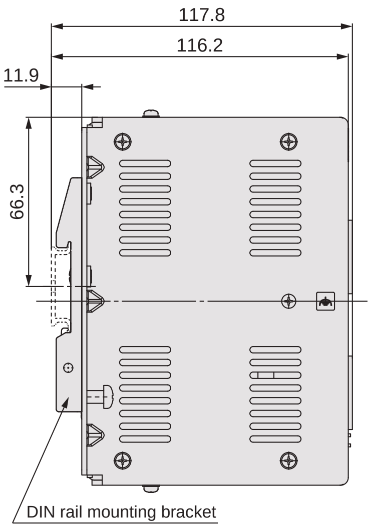
*1 Do not use a power supply with inrush current protection for the motor drive power and motor control power supply.
*2 Power consumption depends on the actuator connected. Refer to the actuator specifications for further details.
*3 Applicable to non-magnetising locks
*4 EtherNet/IP™ is a trademark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

Dimensions

Parallel I/O JXC73/83

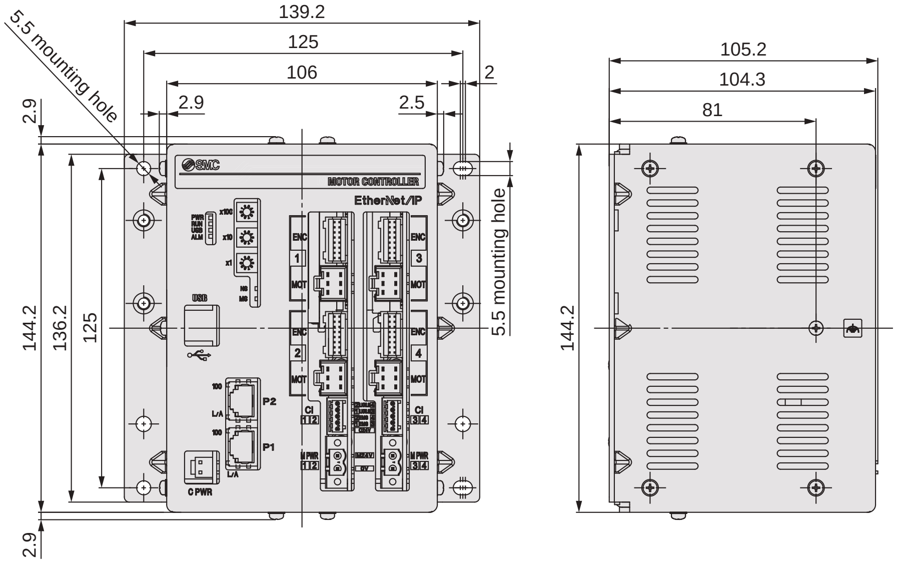
Screw mounting **DIN rail mounting**

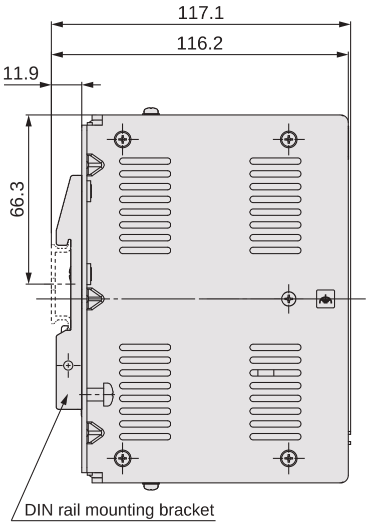

139.2
125
106
2
2.9
2.5
5.5 mounting hole
2.9
144.2
136.2
125
5.5 mounting hole
2.9
MOTOR CONTROLLER
I/O 1
I/O 2
USB
C PWR
ENC
MOT
CI
M PWR
105.9
104.3
81
144.2


117.8
116.2
11.9
66.3
DIN rail mounting bracket

EtherNet/IP™ Type JXC93

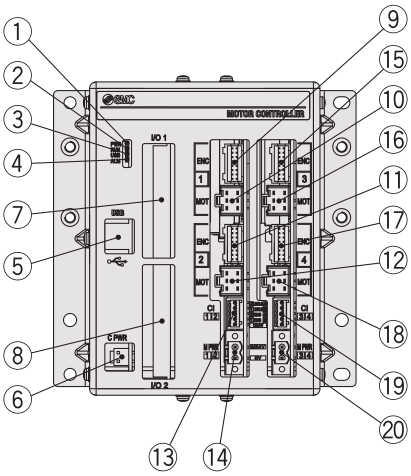
Screw mounting **DIN rail mounting**


139.2
125
106
2
2.9
2.5
5.5 mounting hole
2.9
144.2
136.2
125
5.5 mounting hole
2.9
MOTOR CONTROLLER
EtherNet/IP
USB
P2
P1
C PWR
ENC
MOT
CI
M PWR
105.2
104.3
81
144.2


117.1
116.2
11.9
66.3
DIN rail mounting bracket

Controller Details

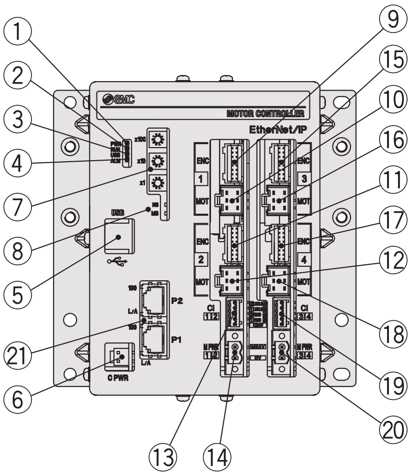
Parallel I/O JXC73/83



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

*1 Connectors are included. (Refer to page 239.)

EtherNet/IP™ Type JXC93



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

*1 Connectors are included. (Refer to page 239.)

Wiring Example 1

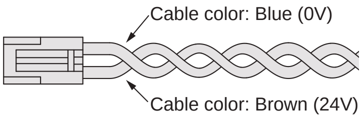
For 4 Axes
JXC73/83/93

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

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

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

Cable with main control power supply connector



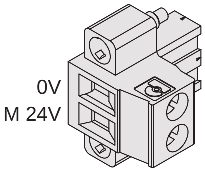
For 3 Axes | For 4 Axes
JXC92 | JXC73/83/93

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

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

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

Motor power supply connector



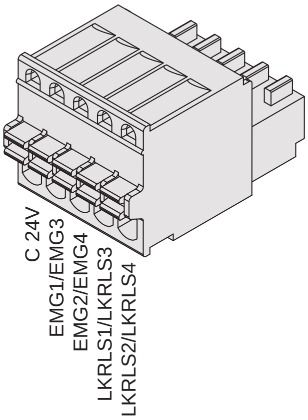
For 4 Axes
JXC73/83/93

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

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

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

Motor control power supply connector



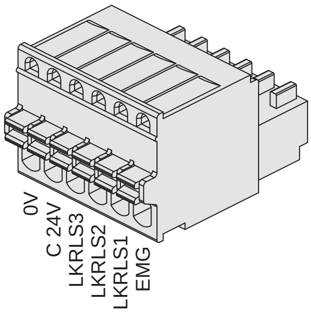
For 3 Axes
JXC92

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

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

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

Control power supply connector



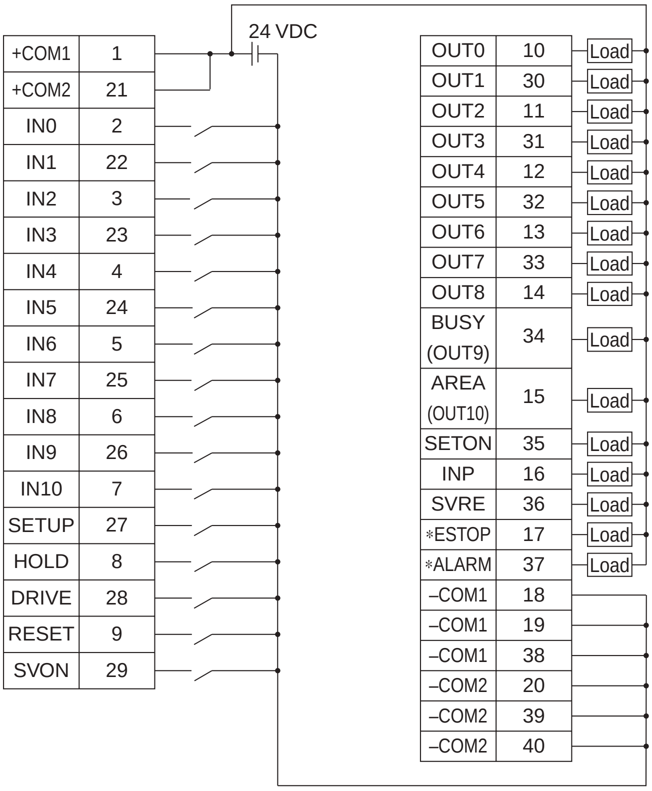
Wiring Example 2

Parallel I/O Connector

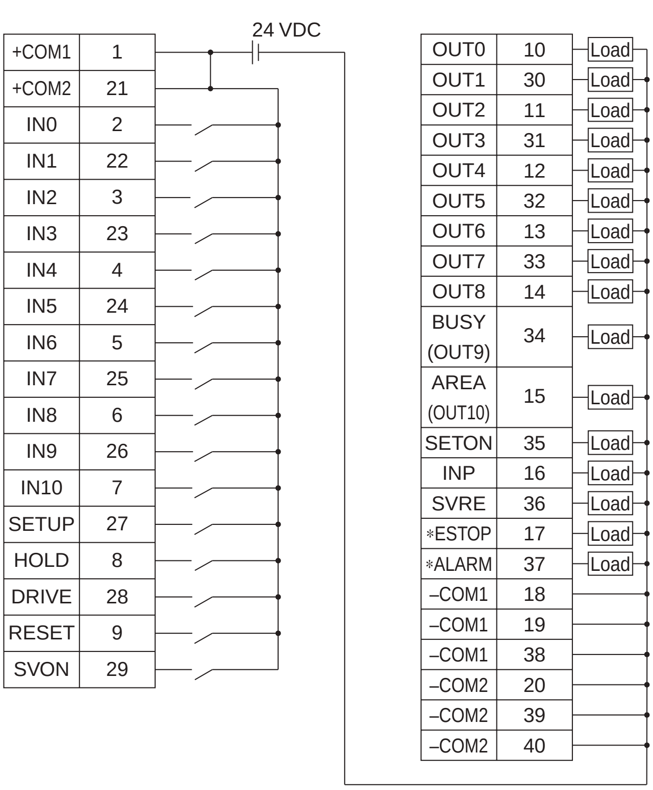
∗ When you connect a PLC to the I/O 1 or I/O 2 parallel I/O connector, use the I/O cable (JXC-C2-□).
∗ The wiring changes depending on the type of parallel I/O (NPN or PNP).

I/O 1 Wiring example

NPN JXC73


24 VDC
+COM1 1
+COM2 21
IN0 2
IN1 22
IN2 3
IN3 23
IN4 4
IN5 24
IN6 5
IN7 25
IN8 6
IN9 26
IN10 7
SETUP 27
HOLD 8
DRIVE 28
RESET 9
SVON 29
OUT0 10 Load
OUT1 30 Load
OUT2 11 Load
OUT3 31 Load
OUT4 12 Load
OUT5 32 Load
OUT6 13 Load
OUT7 33 Load
OUT8 14 Load
BUSY (OUT9) 34 Load
AREA (OUT10) 15 Load
SETON 35 Load
INP 16 Load
SVRE 36 Load
∗ESTOP 17 Load
∗ALARM 37 Load
–COM1 18
–COM1 19
–COM1 38
–COM2 20
–COM2 39
–COM2 40

PNP JXC83


24 VDC
+COM1 1
+COM2 21
IN0 2
IN1 22
IN2 3
IN3 23
IN4 4
IN5 24
IN6 5
IN7 25
IN8 6
IN9 26
IN10 7
SETUP 27
HOLD 8
DRIVE 28
RESET 9
SVON 29
OUT0 10 Load
OUT1 30 Load
OUT2 11 Load
OUT3 31 Load
OUT4 12 Load
OUT5 32 Load
OUT6 13 Load
OUT7 33 Load
OUT8 14 Load
BUSY (OUT9) 34 Load
AREA (OUT10) 15 Load
SETON 35 Load
INP 16 Load
SVRE 36 Load
∗ESTOP 17 Load
∗ALARM 37 Load
–COM1 18
–COM1 19
–COM1 38
–COM2 20
–COM2 39
–COM2 40

I/O 1 Input Signal

Name	Details
+COM1 +COM2	Connects the power supply 24 V for input/output signal
IN0 to IN8	Step data specified bit no. (Standard: When 512 points are used)
IN9 IN10	Step data specified extension bit no. (Extension: When 2048 points are used)
SETUP	Instruction to return to origin
HOLD	Temporarily stops operation
DRIVE	Instruction to drive
RESET	Resets alarm and interrupts operation
SVON	Servo ON instruction

I/O 1 Output Signal

Name	Details
OUT0 to OUT8	Outputs the step data no. during operation
BUSY (OUT9)	Outputs when the operation of the actuator is in progress
AREA (OUT10)	Outputs when all actuators are within the area output range
SETON	Outputs when the return to origin of all actuators is completed
INP	Outputs when the positioning or pushing of all actuators is completed
SVRE	Outputs when servo is ON
∗ESTOP∗1	OFF when EMG stop is instructed
∗ALARM∗1	OFF when alarm is generated
–COM1 –COM2	Connects the power supply 0 V for input/output signal

∗1 Negative-logic circuit signal

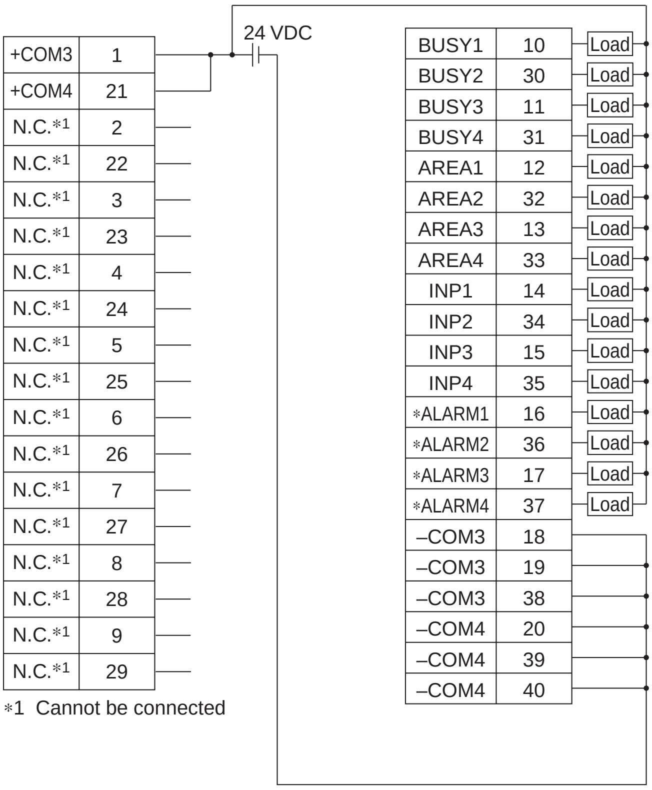
Wiring Example 2

Parallel I/O Connector

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

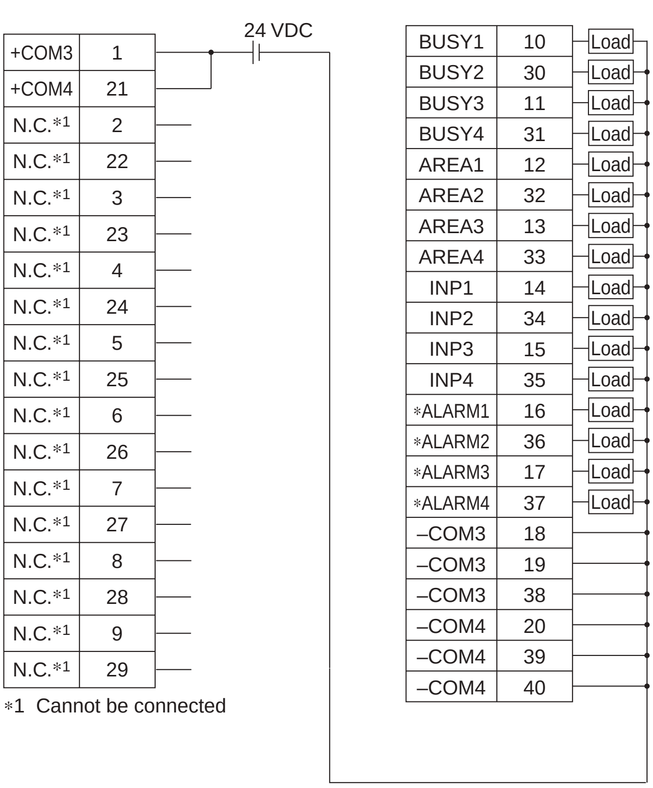
I/O 2 Wiring example

NPN JXC73


24 VDC
+COM3 1
+COM4 21
N.C.∗1 2
N.C.∗1 22
N.C.∗1 3
N.C.∗1 23
N.C.∗1 4
N.C.∗1 24
N.C.∗1 5
N.C.∗1 25
N.C.∗1 6
N.C.∗1 26
N.C.∗1 7
N.C.∗1 27
N.C.∗1 8
N.C.∗1 28
N.C.∗1 9
N.C.∗1 29
BUSY1 10
BUSY2 30
BUSY3 11
BUSY4 31
AREA1 12
AREA2 32
AREA3 13
AREA4 33
INP1 14
INP2 34
INP3 15
INP4 35
∗ALARM1 16
∗ALARM2 36
∗ALARM3 17
∗ALARM4 37
–COM3 18
–COM3 19
–COM3 38
–COM4 20
–COM4 39
–COM4 40
Load

∗1 Cannot be connected

PNP JXC83


24 VDC
+COM3 1
+COM4 21
N.C.∗1 2
N.C.∗1 22
N.C.∗1 3
N.C.∗1 23
N.C.∗1 4
N.C.∗1 24
N.C.∗1 5
N.C.∗1 25
N.C.∗1 6
N.C.∗1 26
N.C.∗1 7
N.C.∗1 27
N.C.∗1 8
N.C.∗1 28
N.C.∗1 9
N.C.∗1 29
BUSY1 10
BUSY2 30
BUSY3 11
BUSY4 31
AREA1 12
AREA2 32
AREA3 13
AREA4 33
INP1 14
INP2 34
INP3 15
INP4 35
∗ALARM1 16
∗ALARM2 36
∗ALARM3 17
∗ALARM4 37
–COM3 18
–COM3 19
–COM3 38
–COM4 20
–COM4 39
–COM4 40
Load

∗1 Cannot be connected

I/O 2 Input Signal

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

I/O 2 Output Signal

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

∗2 Negative-logic circuit signal

Options

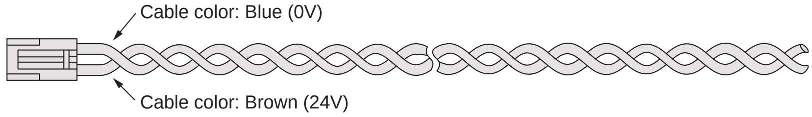
Cable with main control power supply connector

For 4 Axes
JXC73/83/93

JXC − C1

Cable length: 1.5 m (Accessory)

Number of cores	2
AWG size	AWG20



I/O cable (1 pc.)

For 4 Axes
JXC73/83

JXC − C2 − □

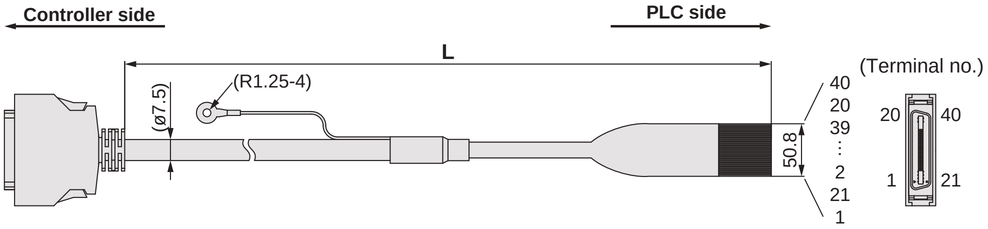
Cable length (L) [m]

1	1.5
3	3
5	5

Number of cores	40
AWG size	AWG28

Weight

Product no.	Weight [g]
JXC-C2-1	160
JXC-C2-3	300
JXC-C2-5	480



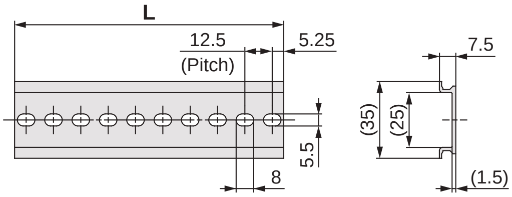
Pin no.	Wire colour	Pin no.	Wire colour	Pin no.	Wire colour	Pin no.	Wire colour
1	Orange (Black 1)	6	Orange (Black 2)	11	Orange (Black 3)	16	Orange (Black 4)
21	Orange (Red 1)	26	Orange (Red 2)	31	Orange (Red 3)	36	Orange (Red 4)
2	Gray (Black 1)	7	Gray (Black 2)	12	Gray (Black 3)	17	Gray (Black 4)
22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

DIN rail

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

AXT100 − DR − □

∗ For □, enter a number from the No. line in the table below. Refer to the dimension drawings on pages 234 and 237 for the mounting dimensions.



L Dimensions

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

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

DIN rail mounting bracket (with 6 mounting screws)

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

JXC − Z1

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

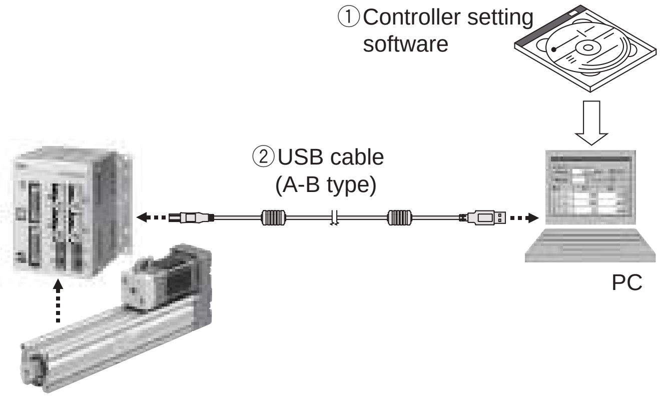
Options

Controller setting kit

For 4 Axes
JXC73/83/93

JXC − W1

- **Controller setting kit (Japanese and English are available.)**



Contents

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

	Description	Model
①	Controller setting software	JXC-W1-1
②	USB cable	JXC-W1-2 (The same cable as the JXC-MA1-2)

* Can be ordered separately

Hardware Requirements

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

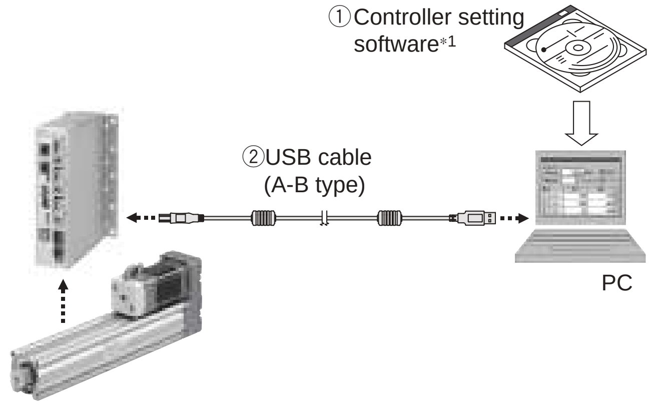
* Windows® is a registered trademark of Microsoft Corporation in the United States.

Controller setting kit

For 3 Axes
JXC92

JXC − MA1*1

- **Controller setting kit (Japanese and English are available.)**



Contents

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

	Description	Model
①	Controller setting software	JXC-MA1-1
②	USB cable	JXC-MA1-2 (The same cable as the JXC-W1-2)

* Can be ordered separately

Hardware Requirements

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

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

Options: Actuator Cable

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

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

LE − CP − 1 − □

Cable length (L) [m]

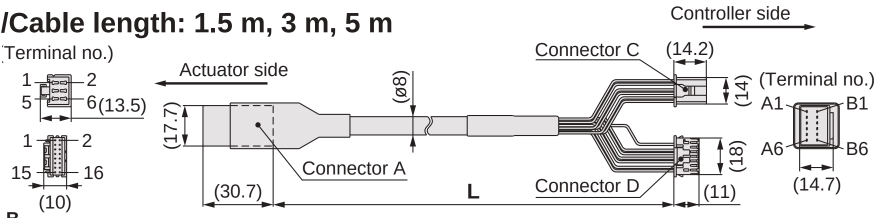
1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

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

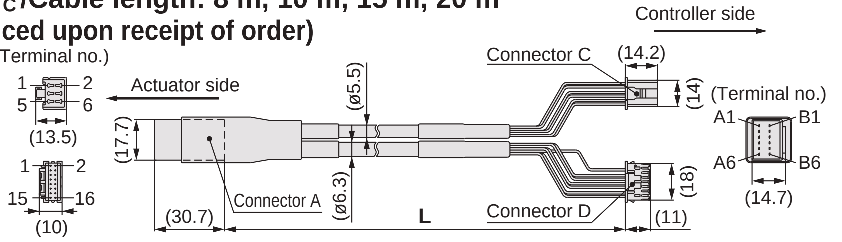
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

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


Controller side
(Terminal no.)
1 2
5 6
(13.5)
1 2
15 16
(10)
Actuator side
(ø8)
(17.7)
Connector A
(30.7)
L
Connector C
(14.2)
(14)
(Terminal no.)
A1 B1
A6 B6
(18)
Connector D
(11)
(14.7)

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


Controller side
Terminal no.)
1 2
5 6
(13.5)
1 2
15 16
(10)
Actuator side
(ø5.5)
(17.7)
Connector A
(ø6.3)
(30.7)
L
Connector C
(14.2)
(14)
(Terminal no.)
A1 B1
A6 B6
(18)
Connector D
(11)
(14.7)

Weight

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

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

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

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

LE − CP − 1 − B − □

Cable length (L) [m]

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

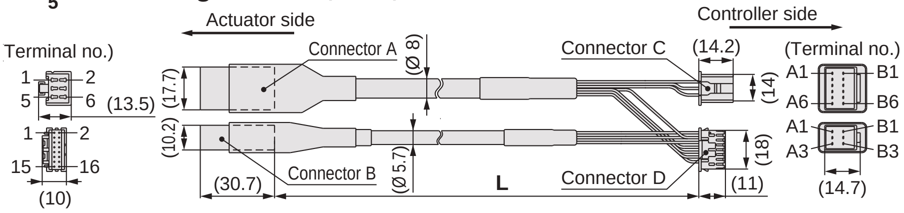
*1 Produced upon receipt of order (Robotic cable only)

With lock and sensor

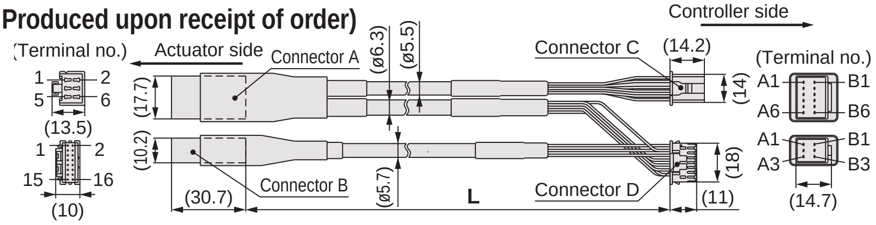
Cable type

—	Robotic cable (Flexible cable)
S	Standard cable

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


Controller side
Actuator side
Terminal no.)
1 2
5 6
(13.5)
1 2
15 16
(10)
(17.7)
(10.2)
Connector A
(Ø 8)
Connector B
(Ø 5.7)
(30.7)
L
Connector C
(14.2)
(14)
(Terminal no.)
A1 B1
A6 B6
A1 B1
A3 B3
(18)
Connector D
(11)
(14.7)

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


Controller side
(Terminal no.)
Actuator side
1 2
5 6
(13.5)
1 2
15 16
(10)
(17.7)
(10.2)
Connector A
(ø6.3)
(ø5.5)
Connector B
(ø5.7)
(30.7)
L
Connector C
(14.2)
(14)
(Terminal no.)
A1 B1
A6 B6
A1 B1
A3 B3
(18)
Connector D
(11)
(14.7)

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	
LE-CP-1-B	190	Robotic cable
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	

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

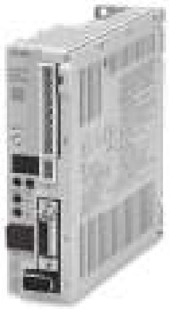
Signal	Connector B terminal no.	Cable colour	Connector D terminal no.
Lock (+)	B-1	Red	4
Lock (−)	A-1	Black	5
Sensor (+)	B-3	Brown	1
Sensor (−)	A-3	Blue	2

AC Servo Motor Driver

LECS□/LECY□ Series

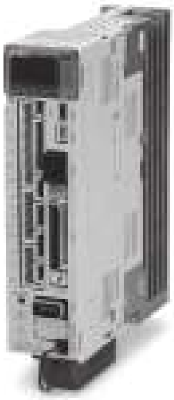
Pulse Input Type/Positioning Type

Incremental Type
LECSA Series



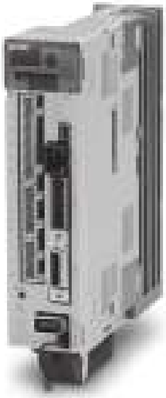
Pulse Input Type

Absolute Type
LECSB Series



CC-Link Direct Input Type

Absolute Type
LECSC Series

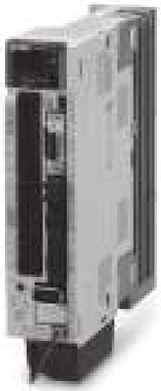


SSCNET Ⅲ Type

Absolute Type
LECSS Series

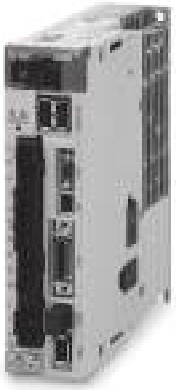
SSCNET Ⅲ/H Type

Absolute Type
LECSS-T Series



MECHATROLINK-Ⅱ Type

Absolute Type
LECYM Series



MECHATROLINK-Ⅲ Type

Absolute Type
LECYU Series

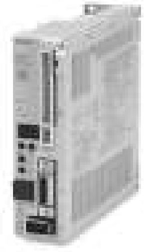
AC Servo Motor Driver

LECS□ Series

Power supply voltage	100 to 120 VAC 200 to 230 VAC
Motor capacity	100/200/400 W

Incremental Type

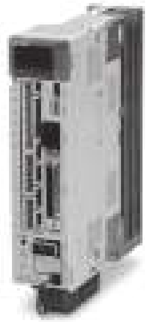
LECSA Series (Pulse input type/Positioning type)



- **Up to 7 positioning points by point table**
- **Input type:** Pulse input
- **Control encoder:** Incremental 17-bit encoder (Resolution: 131072 p/rev)
- **Parallel input:** 6 inputs
  output: 4 outputs

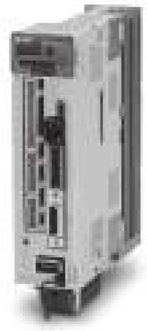
Absolute Type

LECSB Series (Pulse input type)



- **Input type:** Pulse input
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 p/rev)
- **Parallel input:** 10 inputs
  output: 6 outputs

LECSC Series (CC-Link direct input type)



- **Position data/speed data setting and operation start/stop**
- **Positioning by up to 255 point tables (when 2 stations are occupied)**
- **Up to 32 drivers can be connected (when 2 stations are occupied) with CC-Link communication.**
- **Applicable Fieldbus protocol:** CC-Link (Ver. 1.10, Max. communication speed: 10 Mbps)
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 p/rev)

LECSS Series (SSCNET Ⅲ type)

- **Compatible with Mitsubishi Electric's servo system controller network**
- **Reduced wiring and SSCNET Ⅲ optical cable for one-touch connection**
- **The SSCNET Ⅲ optical cable provides enhanced noise resistance.**
- **Up to 16 drivers can be connected with SSCNET Ⅲ communication.**
- **Applicable Fieldbus protocol:** SSCNET Ⅲ
  (High-speed optical communication, Max. bidirectional communication speed: 50 Mbps)
- **Control encoder:** Absolute 18-bit encoder (Resolution: 262144 p/rev)

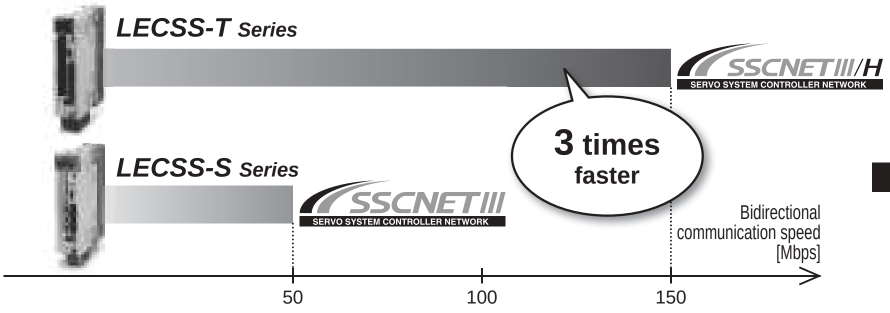
AC Servo Motor Driver

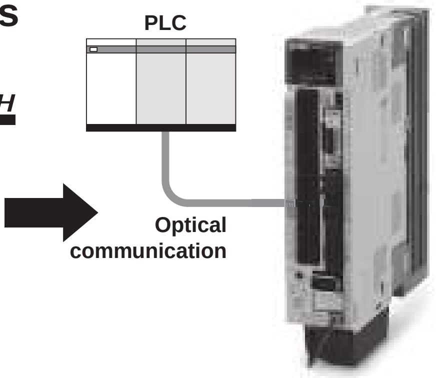
LECSS-T Series

Power supply voltage	200 to 230 VAC
Motor capacity	100/200/400 W

SSCNET Ⅲ/H Compatible *LECSS-T* Series

- **Applicable Fieldbus protocol: SSCNET Ⅲ/H** (High-speed optical communication, max. bidirectional communication speed: 150 Mbps)
- **Bidirectional communication speed: 3 times**



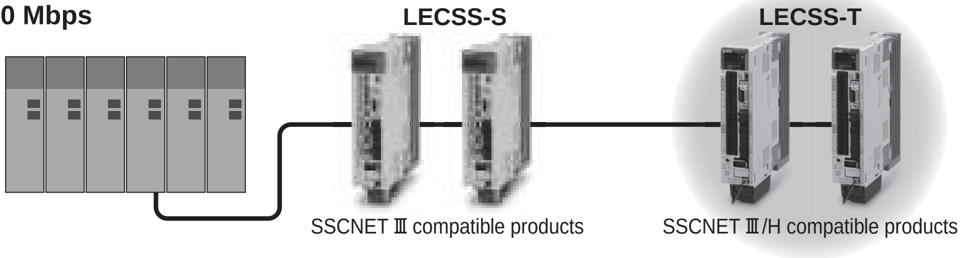


- **SSCNET Ⅲ/H and SSCNET Ⅲ products are compatible.**

SSCNET Ⅲ/H compatible products can be added to existing SSCNET Ⅲ systems for system expansion.
Reassembly of the system (new installation of master PLC) is not required.
＊ Note that the communication speed is that of SSCNET Ⅲ (50 Mbps).

■ **Communication speed: 50 Mbps**

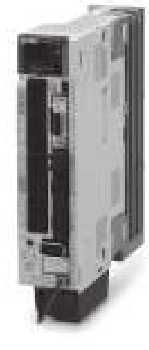
SSCNET Ⅲ/H compatible controllers
SSCNET Ⅲ compatible controllers



- **Improved noise resistance**
- **STO (Safe Torque Off) safety function available**
- **Control encoder: Absolute 22-bit encoder** (Resolution: 4194304 p/rev)

Absolute Type

LECSS-T Series (SSCNET Ⅲ/H type)



- **Applicable Fieldbus protocol**: SSCNET Ⅲ/H
  (High-speed optical communication, max. bidirectional communication speed: 150 Mbps)
- **Bidirectional communication speed**: 3 times
- **SSCNET Ⅲ/H and SSCNET Ⅲ products are compatible.**
- **Improved noise resistance**
- **STO (Safe Torque Off) safety function available**
- **Control encoder**: Absolute 22-bit encoder (Resolution: 4194304 p/rev)

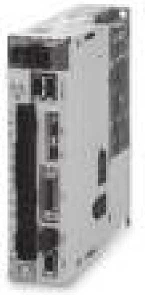
AC Servo Motor Driver

LECY□ Series

Power supply voltage	200 to 230 VAC
Motor capacity	100/200/400 W

Absolute Type

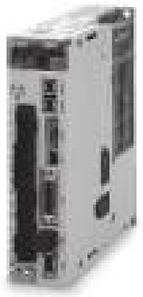
LECYM Series (MECHATROLINK-Ⅱ type)



MECHATROLINK-Ⅱ

- **Applicable Fieldbus protocol**: MECHATROLINK-Ⅱ
- **Number of connectable drivers**: 30 units (Transmission distance: Max. 50 m in total)
- **Max. transmission speed**: 10 Mbps
- **Min. transmission cycle**: 250 µs
- **Control encoder**: Absolute 20-bit encoder (Resolution: 1048576 p/rev)
- **STO (Safe Torque Off) safety function available**
- **Compliant with the SEMI F47 Standard (Torque limit for low DC power supply voltage for main circuit)**

LECYU Series (MECHATROLINK-Ⅲ type)



MECHATROLINK-Ⅲ

- **Applicable Fieldbus protocol**: MECHATROLINK-Ⅲ
- **Number of connectable drivers**: 62 units (Transmission distance: Max. 75 m between stations)
- **Max. transmission speed**: 100 Mbps
- **Min. transmission cycle**: 125 µs
- **Control encoder**: Absolute 20-bit encoder (Resolution: 1048576 p/rev)
- **STO (Safe Torque Off) safety function available**
- **Compliant with the SEMI F47 Standard (Torque limit for low DC power supply voltage for main circuit)**

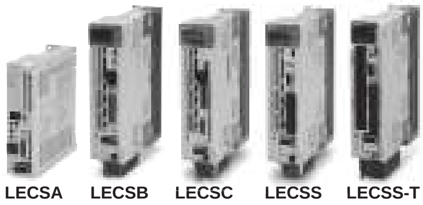
AC Servo Motor Driver

Incremental Type

***LECSA* Series** (Pulse Input Type/Positioning Type)

Absolute Type

LECSB (Pulse Input Type)***/LECSC*** (CC-Link Direct Input Type)
LECSS (SSCNET Ⅲ Type)***/LECSS-T*** (SSCNET Ⅲ/H Type) ***Series***



RoHS

∗ LECSS-T only

How to Order

LECSA/LECSB/LECSC/LECSS

LECS A 1 − S1

Driver type

A	Pulse input type/Positioning type (For incremental encoder)
B	Pulse input type (For absolute encoder)
C	CC-Link direct input type (For absolute encoder)
S	SSCNET Ⅲ type (For absolute encoder)

Power supply voltage

1	100 to 120 VAC, 50/60 Hz
2	200 to 230 VAC, 50/60 Hz

∗ If an I/O connector (CN1) is required, order the part number "LE-CSN□" separately.
∗ If an I/O cable (CN1) is required, order the part number "LEC-CSN□-1" separately.
(Since the electric actuator will not operate without emergency stop (EMG) wiring for the LECSB, an I/O connector or an I/O cable is required.)

Compatible motor type

Symbol	Type	Capacity	Encoder
S1	AC servo motor (S2∗1)	100 W	Incremental
S3	AC servo motor (S3∗1)	200 W	
S4	AC servo motor (S4∗1)∗2	400 W	
S5	AC servo motor (S6∗1)	100 W	Absolute
S7	AC servo motor (S7∗1)	200 W	
S8	AC servo motor (S8∗1)∗2	400 W	

∗1 The symbol shows the motor type (actuator).
∗2 Only available for power supply voltage "200 to 230 VAC"

LECSS-T

LECS S 2 − T5

Driver type

S	SSCNET Ⅲ/H type (For absolute encoder)

Power supply voltage

2	200 to 240 VAC, 50/60 Hz

∗ If an I/O connector (CN1) is required, order the part number "LE-CSNS" separately.
∗ If an I/O cable (CN1) is required, order the part number "LEC-CSNS-1" separately.

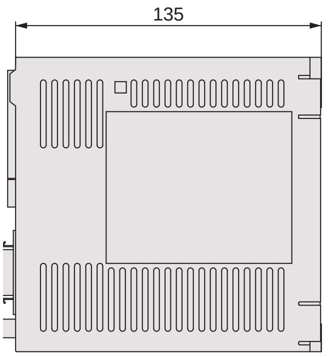
Compatible motor type

Symbol	Type	Capacity	Encoder
T5	AC servo motor (T6∗1)	100 W	Absolute
T7	AC servo motor (T7∗1)	200 W	
T8	AC servo motor (T8∗1)	400 W	

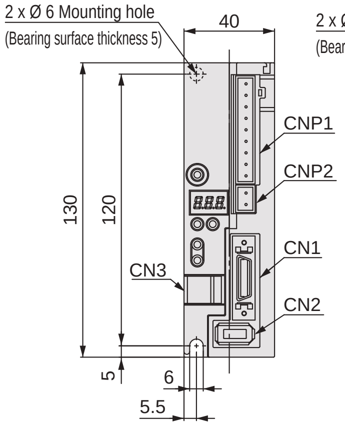
∗1 The symbol shows the motor type (actuator).

Dimensions

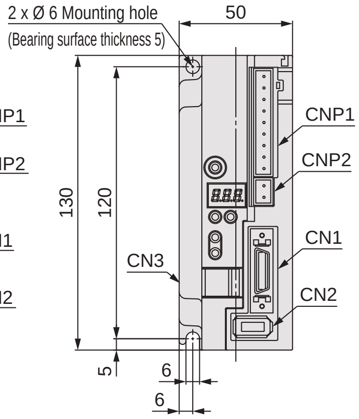
LECSA□



For LECSA□-S1, S3

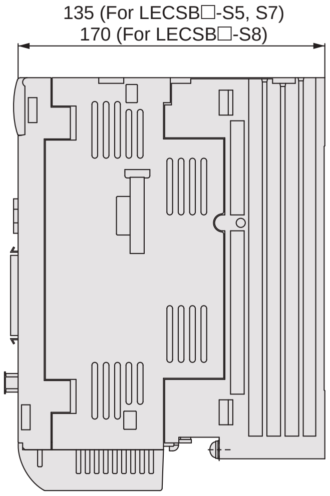

2 x Ø 6 Mounting hole
(Bearing surface thickness 5)
40
CNP1
CNP2
CN1
CN3
CN2
130
120
5
6
5.5

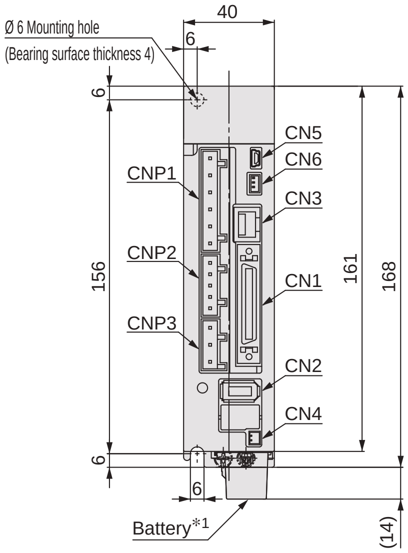
For LECSA□-S4


2 x Ø 6 Mounting hole
(Bearing surface thickness 5)
50
CNP1
CNP2
CN1
CN3
CN2
130
120
5
6
6

Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector

LECSB□


135 (For LECSB□-S5, S7)
170 (For LECSB□-S8)

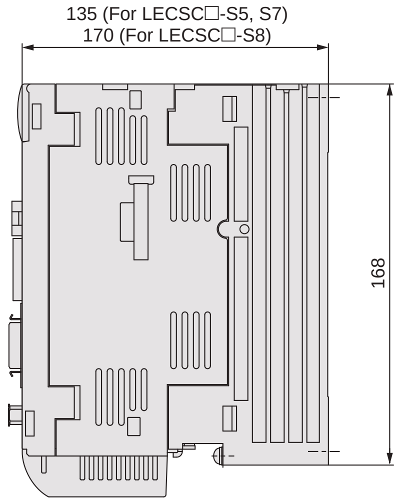

Ø 6 Mounting hole
(Bearing surface thickness 4)
40
6
6
CN5
CN6
CNP1
CN3
CNP2
CN1
CNP3
CN2
CN4
156
161
168
6
6
Battery*1
(14)

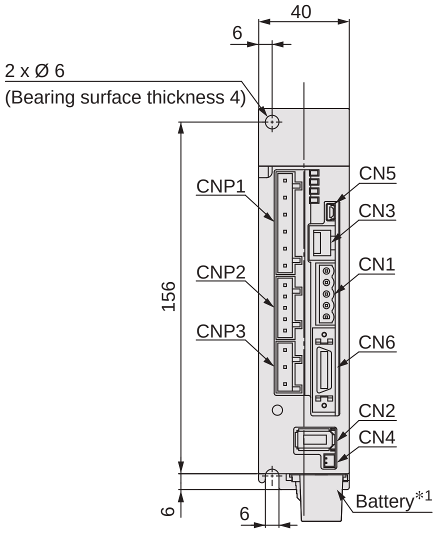
Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	Analogueue monitor connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

∗1 Battery included

Dimensions

LECSC□

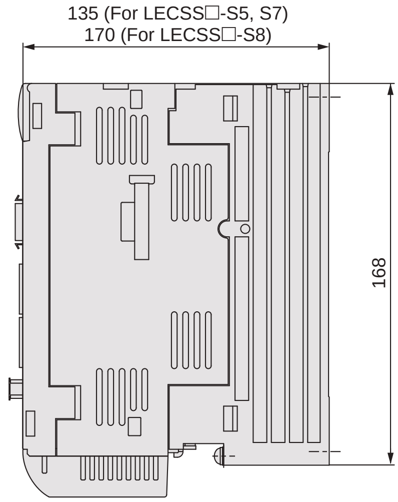

135 (For LECSC□-S5, S7)
170 (For LECSC□-S8)
168

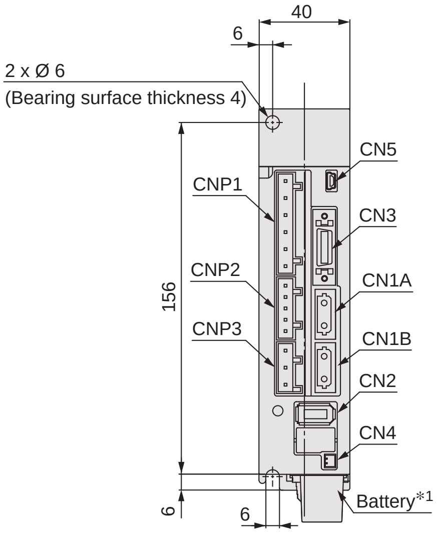

40
6
2 x Ø 6
(Bearing surface thickness 4)
CNP1
CNP2
CNP3
CN5
CN3
CN1
CN6
CN2
CN4
156
6
6
Battery*1

*1 Battery included

Connector name	Description
CN1	CC-Link connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	I/O signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

LECSS□

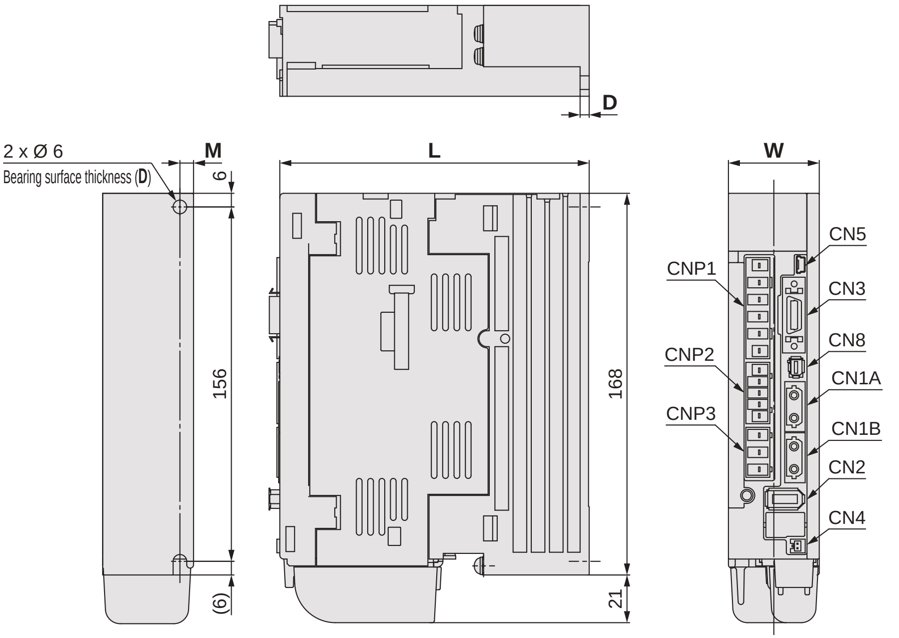

135 (For LECSS□-S5, S7)
170 (For LECSS□-S8)
168


40
6
2 x Ø 6
(Bearing surface thickness 4)
CNP1
CNP2
CNP3
CN5
CN3
CN1A
CN1B
CN2
CN4
156
6
6
Battery*1

*1 Battery included

Connector name	Description
CN1A	Front axis connector for SSCNET Ⅲ optical cable
CN1B	Rear axis connector for SSCNET Ⅲ optical cable
CN2	Encoder connector
CN3	I/O signal connector
CN4	Battery connector
CN5	USB communication connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

LECSS2-T□


D
2 x Ø 6
Bearing surface thickness (D)
M
6
L
W
156
(6)
168
21
CNP1
CNP2
CNP3
CN5
CN3
CN8
CN1A
CN1B
CN2
CN4

* Battery included

Connector name	Description
CN1A	Front axis connector for SSCNET Ⅲ/H
CN1B	Rear axis connector for SSCNET Ⅲ/H
CN2	Encoder connector
CN3	I/O signal connector
CN4	Battery connector
CN5	USB communication connector
CN8	STO input signal connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

Dimensions [mm]

Model	W	L	D	M
LECSS2-T5	40	135	4	6
LECSS2-T7				
LECSS2-T8		170	5	

Specifications

LECSA Series

Model		**LECSA1-S1**	**LECSA1-S3**	**LECSA2-S1**	**LECSA2-S3**	**LECSA2-S4**
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Incremental 17-bit encoder (Resolution: 131072 p/rev)				
Main power supply	**Power voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	1.5	2.4	4.5
Control power supply	**Control power supply voltage [V]**	24 VDC				
	Allowable voltage fluctuation [V]	21.6 to 26.4 VDC				
	Rated current [A]	0.5				
Parallel input		6 inputs				
Parallel output		4 outputs				
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)[2]				
Function	**In-position range setting [pulse]**	0 to ±65535 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting				
	Communication	USB communication				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		–20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		600				700

LECSB Series

Model		**LECSB1-S5**	**LECSB1-S7**	**LECSB2-S5**	**LECSB2-S7**	**LECSB2-S8**
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	**Power voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Three phase 170 to 253 VAC Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	0.4		0.2		
Parallel input		10 inputs				
Parallel output		6 outputs				
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)[2]				
Function	**In-position range setting [pulse]**	0 to ±10000 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting or external analogue input setting (0 to 10 VDC)				
	Communication	USB communication, RS422 communication[1]				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		–20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		800				1000

[1] USB communication and RS422 communication cannot be performed at the same time.

[2] If the command pulse input is open collector method, it supports only the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

Specifications

LECSC Series

Model			LECSC1-S5	LECSC1-S7	LECSC2-S5	LECSC2-S7	LECSC2-S8
Compatible motor capacity [W]			100	200	100	200	400
Compatible encoder			Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	**Power voltage [V]**		Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 85 to 132 VAC		Three phase 170 to 253 VAC Single phase 170 to 253 VAC		
	Rated current [A]		3.0	5.0	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**		Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]		0.4		0.2		
Communication specifications	**Applicable Fieldbus protocol (Version)**		CC-Link communication (Ver. 1.10)				
	Connection cable		CC-Link Ver. 1.10 compliant cable (Shielded 3-core twisted pair cable)*1				
	Remote station number		1 to 64				
	Cable length	**Communication speed [bps]**	16 k	625 k	2.5 M	5 M	10 M
		Maximum overall cable length [m]	1200	900	400	160	100
		Cable length between stations [m]	0.2 or more				
	I/O occupation area (Inputs/Outputs)		1 station occupied (Remote I/O 32 points/32 points)/(Remote register 4 words/4 words) 2 stations occupied (Remote I/O 64 points/64 points)/(Remote register 8 words/8 words)				
	Number of connectable drivers		Up to 42 (when 1 station is occupied by 1 driver), Up to 32 (when 2 stations are occupied by 1 driver), when there are only remote device stations.				
Command method	**Remote register input**		Available with CC-Link communication (2 stations occupied)				
	Point table No. input		Available with CC-Link communication, RS422 communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points RS422 communication: 255 points				
	Indexer positioning input		Available with CC-Link communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points				
Communication function			USB communication, RS-422 communication*2				
Operating temperature range [°C]			0 to 55 (No freezing)				
Operating humidity range [%RH]			90 or less (No condensation)				
Storage temperature range [°C]			–20 to 65 (No freezing)				
Storage humidity range [%RH]			90 or less (No condensation)				
Insulation resistance [MΩ]			Between the housing and SG: 10 (500 VDC)				
Weight [g]			800				1000

*1 If the system comprises of both CC-Link Ver. 1.00 and Ver. 1.10 compliant cables, Ver. 1.00 specifications are applied to the overall cable length and the cable length between stations.
*2 USB communication and RS422 communication cannot be performed at the same time.

LECSS Series

Model		LECSS1-S5	LECSS1-S7	LECSS2-S5	LECSS2-S7	LECSS2-S8
Compatible motor capacity [W]		100	200	100	200	400
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)				
Main power supply	**Power voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Three phase 200 to 230 VAC (50/60 Hz) Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Three phase 170 to 253 VAC Single phase 170 to 253 VAC		
	Rated current [A]	3.0	5.0	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC		
	Rated current [A]	0.4		0.2		
Applicable Fieldbus protocol		SSCNET Ⅲ (High-speed optical communication)				
Communication function		USB communication				
Operating temperature range [°C]		0 to 55 (No freezing)				
Operating humidity range [%RH]		90 or less (No condensation)				
Storage temperature range [°C]		–20 to 65 (No freezing)				
Storage humidity range [%RH]		90 or less (No condensation)				
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		800				1000

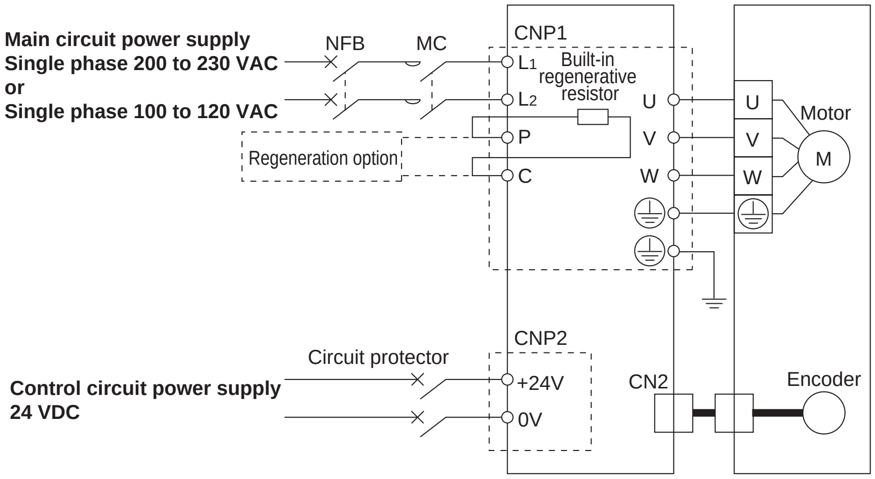
Specifications

LECSS-T Series

Model		LECSS2-T5	LECSS2-T7	LECSS2-T8
Compatible motor capacity [W]		100	200	400
Compatible encoder		Absolute 22-bit encoder (Resolution: 4194304 p/rev)		
Main power supply	**Power voltage [V]**	Three phase 200 to 240 VAC (50/60 Hz), Single phase 200 to 240 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Three phase 170 to 264 VAC (50/60 Hz), Single phase 170 to 264 VAC (50/60 Hz)		
	Rated current [A]	0.9	1.5	2.6
Control power supply	**Control power supply voltage [V]**	Single phase 200 to 240 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 170 to 264 VAC		
	Rated current [A]	0.2		
Applicable Fieldbus protocol		SSCNET Ⅲ/H (High-speed optical communication)		
Communication function		USB communication		
Operating temperature range [°C]		0 to 55 (No freezing)		
Operating humidity range [%RH]		90 or less (No condensation)		
Storage temperature range [°C]		−20 to 65 (No freezing)		
Storage humidity range [%RH]		90 or less (No condensation)		
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)		
Weight [g]		800		1000

Power Supply Wiring Example: LECSA

LECSA□-□


Main circuit power supply
Single phase 200 to 230 VAC
or
Single phase 100 to 120 VAC
NFB
MC
CNP1
L1
L2
Built-in regenerative resistor
U
V
W
P
C
Regeneration option
U
V
W
Motor
M
CNP2
Circuit protector
Control circuit power supply
24 VDC
+24V
0V
CN2
Encoder

Main Circuit Power Supply Connector: CNP1

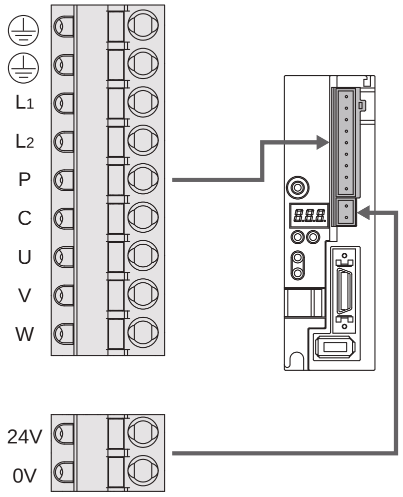
∗ Accessory

Terminal name	Function	Details
⏚	Protective earth (PE)	Should be grounded by connecting the servo motor’s earth terminal and the control panel’s protective earth (PE)
L_1	Main circuit power supply	Connect the main circuit power supply. LECSA1: Single phase 100 to 120 VAC, 50/60 Hz LECSA2: Single phase 200 to 230 VAC, 50/60 Hz
L_2		
P	Regeneration option	Terminal to connect regeneration option LECSA□-S1: Not connected at time of shipping LECSA□-S3, S4: Connected at time of shipping ∗ If regeneration option is required for “Model Selection,” connect to this terminal.
C		
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

Control Circuit Power Supply Connector: CNP2

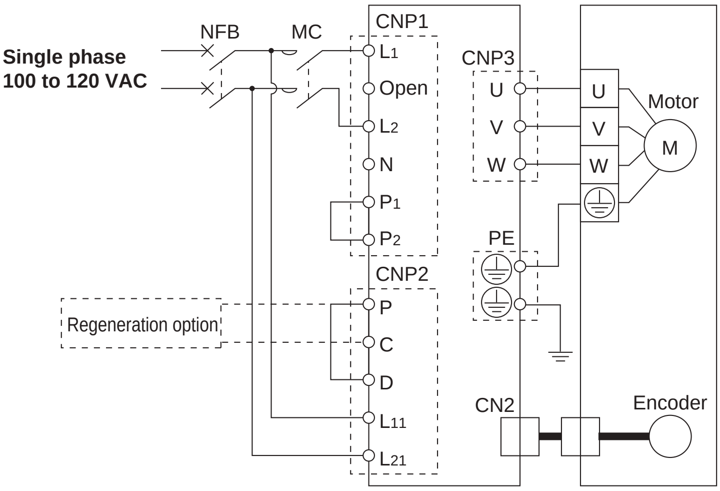
∗ Accessory

Terminal name	Function	Details
24V	Control circuit power supply (24 V)	24 V side of the control circuit power supply (24 VDC) supplied to the driver
0V	Control circuit power supply (0 V)	0 V side of the control circuit power supply (24 VDC) supplied to the driver


L1
L2
P
C
U
V
W
24V
0V

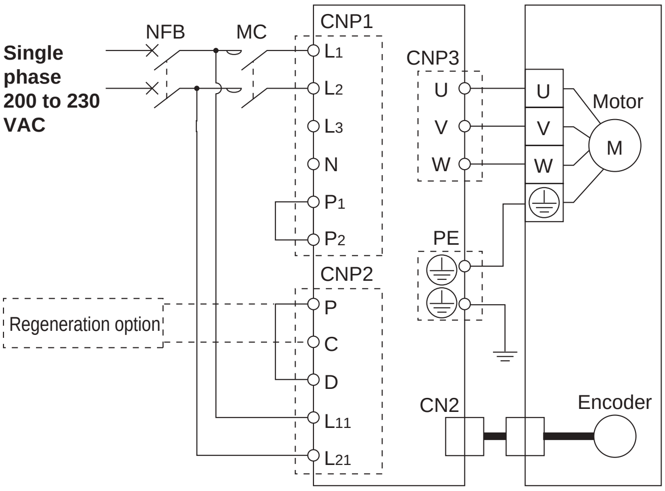
Power Supply Wiring Example: LECSB, LECSC, LECSS

LECSB1-□
LECSC1-□
LECSS1-□

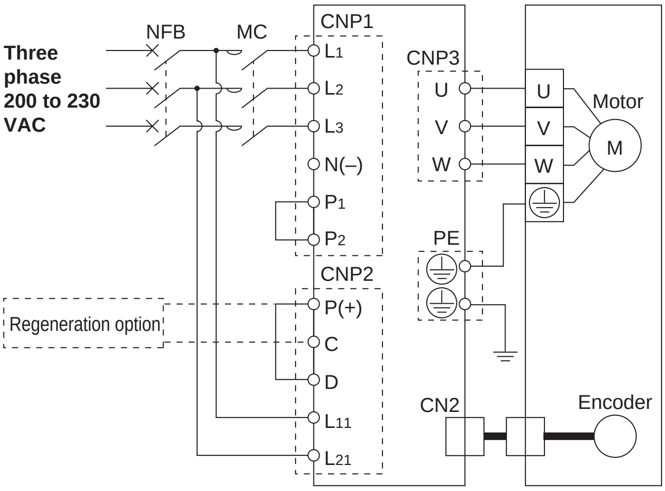

Single phase
100 to 120 VAC
NFB
MC
CNP1
L1
Open
L2
N
P1
P2
CNP2
P
C
D
L11
L21
Regeneration option
CNP3
U
V
W
PE
CN2
U
V
W
Motor
M
Encoder

LECSB2-□
LECSC2-□
LECSS2-□

For single phase 200 VAC


Single
phase
200 to 230
VAC
NFB
MC
CNP1
L1
L2
L3
N
P1
P2
CNP2
P
C
D
L11
L21
Regeneration option
CNP3
U
V
W
PE
CN2
U
V
W
Motor
M
Encoder

For three phase 200 VAC


Three
phase
200 to 230
VAC
NFB
MC
CNP1
L1
L2
L3
N(–)
P1
P2
CNP2
P(+)
C
D
L11
L21
Regeneration option
CNP3
U
V
W
PE
CN2
U
V
W
Motor
M
Encoder

∗ For single phase 200 to 230 VAC, power supply should be connected to L_1 and L_2 terminals, with nothing connected to L_3.

Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
L_1	Main circuit power supply	Connect the main circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L_1, L_2 LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_1, L_2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_1, L_2, L_3
L_2		
L_3		
N	Do not connect.	
P_1	Connect between P_1 and P_2. (Connected at time of shipping)	
P_2		

Control Circuit Power Supply Connector: CNP2

∗ Accessory

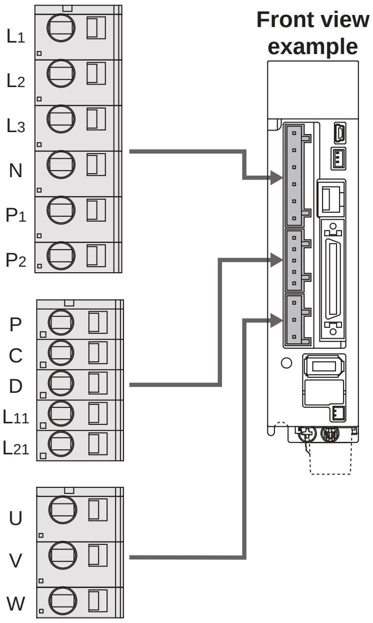
Terminal name	Function	Details
P	Regeneration option	Connect between P and D. (Connected at time of shipping) ∗ If regeneration option is required for “Model Selection,” connect to this terminal.
C		
D		
L_{11}	Control circuit power supply	Connect the control circuit power supply. LECSB1/LECSC1/LECSS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L_{11}, L_{21} LECSB2/LECSC2/LECSS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_{11}, L_{21} Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L_{11}, L_{21}
L_{21}		

Motor Connector: CNP3

∗ Accessory

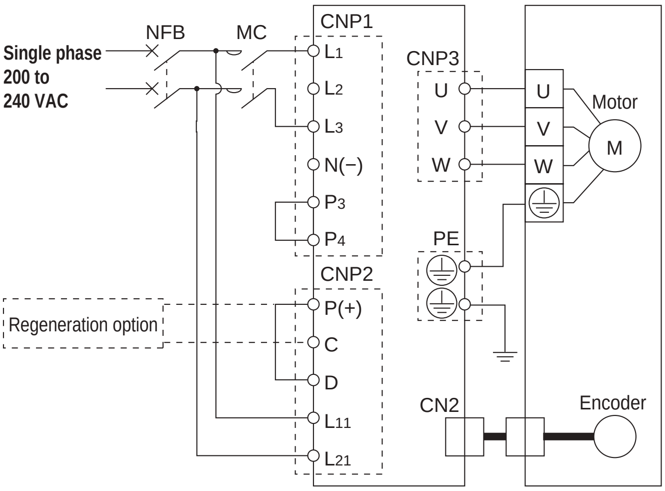
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

LECSB
Front view
example

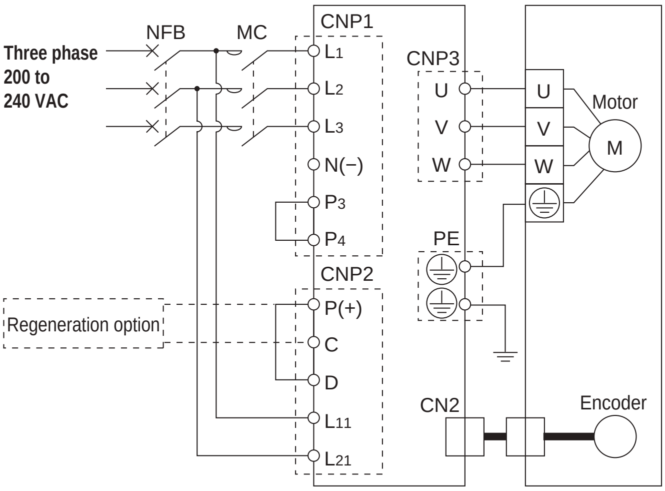

L1
L2
L3
N
P1
P2
P
C
D
L11
L21
U
V
W

Power Supply Wiring Example: LECSS2-T□

For single phase 200 VAC


Single phase
200 to
240 VAC
NFB
MC
CNP1
L1
L2
L3
N(−)
P3
P4
CNP2
P(+)
C
D
L11
L21
CNP3
U
V
W
U
V
W
Motor
M
PE
Regeneration option
CN2
Encoder

For three phase 200 VAC


Three phase
200 to
240 VAC
NFB
MC
CNP1
L1
L2
L3
N(−)
P3
P4
CNP2
P(+)
C
D
L11
L21
CNP3
U
V
W
U
V
W
Motor
M
PE
Regeneration option
CN2
Encoder

∗ For single phase 200 to 240 VAC, power supply should be connected to L_1 and L_3 terminals, with nothing connected to L_2. Please note that the wiring locations differ from the LECS□.

Main Circuit Power Supply Connector: CNP1

∗ Accessory

Terminal name	Function	Details
L_1	Main circuit power supply	Connect the main circuit power supply. LECSS2: Single phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_1, L_3 Three phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_1, L_2, L_3
L_2		
L_3		
N(−)	Do not connect.	
P_3	Connect between P_3 and P_4. (Connected at time of shipping)	
P_4		

Control Circuit Power Supply Connector: CNP2

∗ Accessory

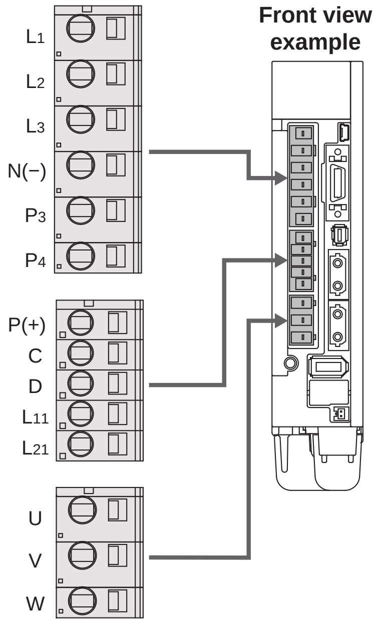
Terminal name	Function	Details
P(+)	Regeneration option	Connect between P(+) and D. (Connected at time of shipping) ∗ If regeneration option is required for “Model Selection,” connect to this terminal.
C		
D		
L_{11}	Control circuit power supply	Connect the control circuit power supply. LECSS2: Single phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_{11}, L_{21} Three phase 200 to 240 VAC, 50/60 Hz Connection terminal: L_{11}, L_{21}
L_{21}		

Motor Connector: CNP3

∗ Accessory

Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

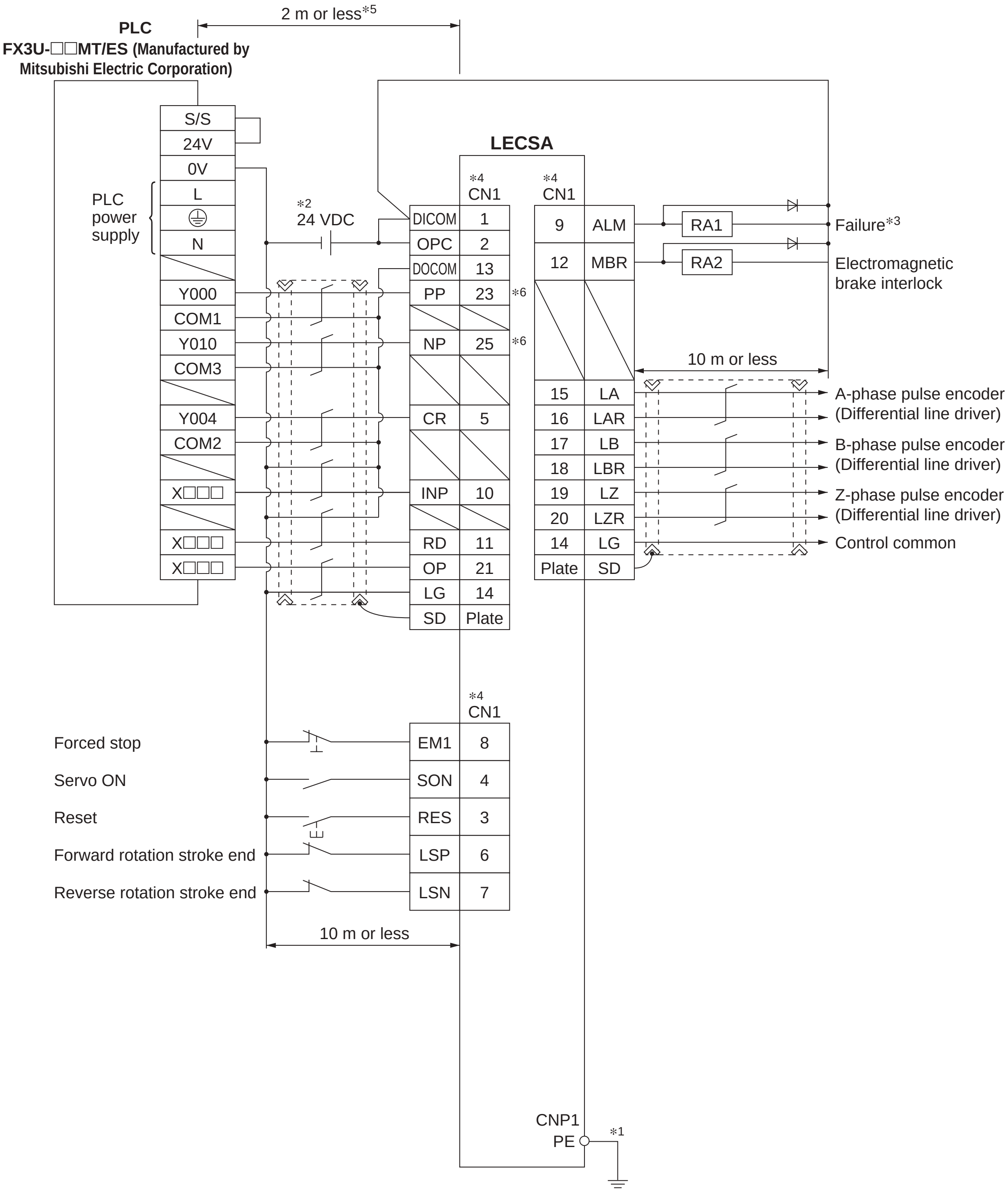
LECSS2-T□
Front view
example


L1
L2
L3
N(−)
P3
P4
P(+)
C
D
L11
L21
U
V
W

Control Signal Wiring Example: LECSA

LECSA□-□

This wiring example shows connection with a PLC (FX3U-□□MT/ES) manufactured by Mitsubishi Electric Corporation as when used in position control mode. Refer to the LECSA series Operation Manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.


2 m or less*5
PLC
FX3U-□□MT/ES (Manufactured by Mitsubishi Electric Corporation)
S/S
24V
0V
PLC power supply
L
⏚
N
Y000
COM1
Y010
COM3
Y004
COM2
X□□□
X□□□
X□□□
*2
24 VDC
LECSA
*4
CN1
DICOM 1
OPC 2
DOCOM 13
PP 23 *6
NP 25 *6
CR 5
INP 10
RD 11
OP 21
LG 14
SD Plate
*4
CN1
9 ALM
12 MBR
15 LA
16 LAR
17 LB
18 LBR
19 LZ
20 LZR
14 LG
Plate SD
RA1
RA2
Failure*3
Electromagnetic brake interlock
10 m or less
A-phase pulse encoder (Differential line driver)
B-phase pulse encoder (Differential line driver)
Z-phase pulse encoder (Differential line driver)
Control common
*4
CN1
Forced stop
EM1 8
Servo ON
SON 4
Reset
RES 3
Forward rotation stroke end
LSP 6
Reverse rotation stroke end
LSN 7
10 m or less
CNP1
PE
*1

---

*1 For preventing electric shock, be sure to connect the driver main circuit power supply connector (CNP1)'s protective earth (PE) terminal (marked ⏚) to the control panel's protective earth (PE).

*2 For interface use, supply 24 VDC ±10 % 200 mA using an external source. 200 mA is the value when all I/O command signals are being used. In addition, reducing the number of inputs/outputs can decrease the current capacity. Refer to the Operation Manual for required current for interface.

*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the PLC signal using the sequence program.

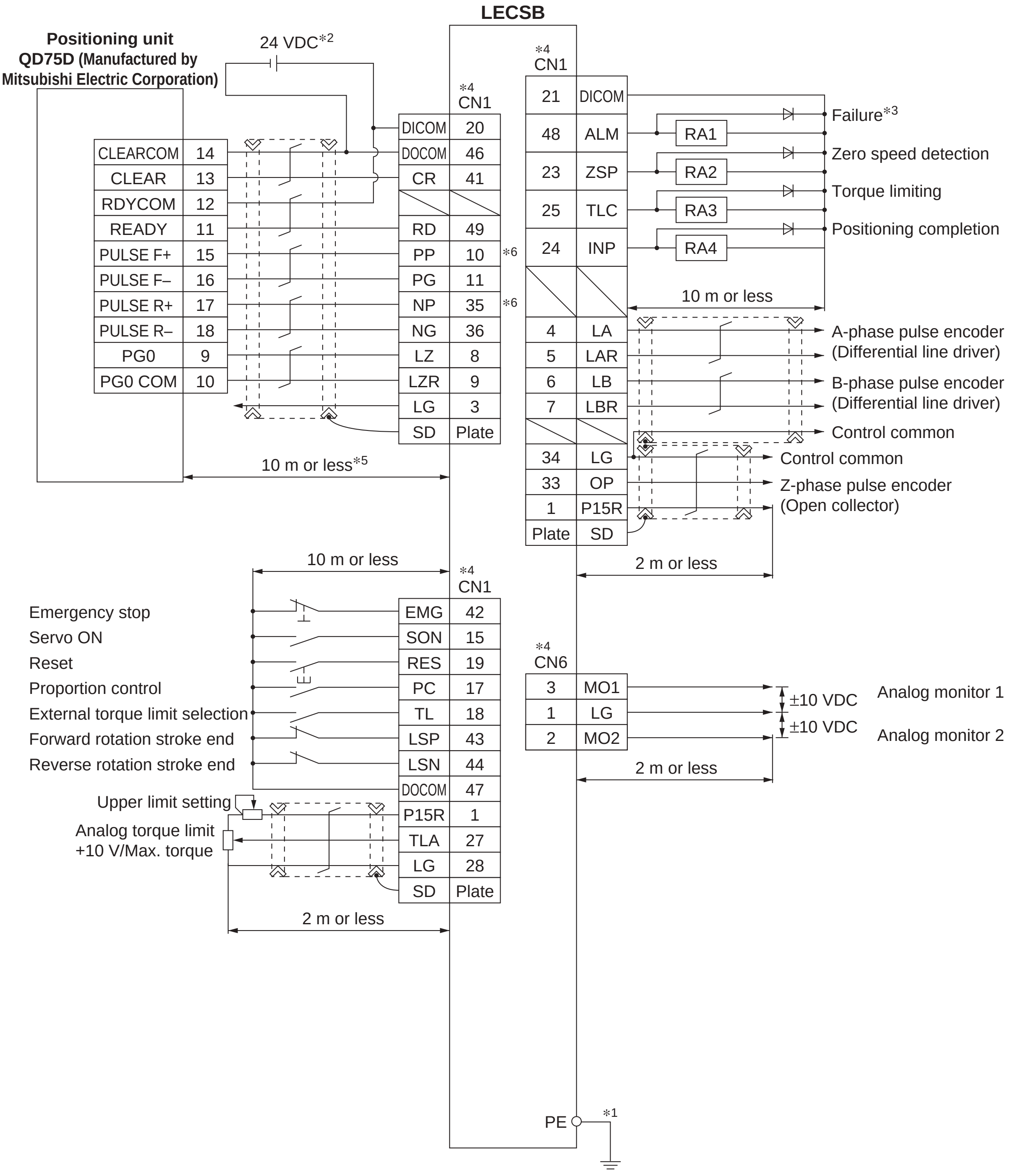
*4 Signals of the same name are connected inside the driver.

*5 For command pulse input with an open collector method. When a positioning unit loaded with a differential line driver method is used, it is 10 m or less.

*6 If the command pulse input is open collector method, it supports only the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

Control Signal Wiring Example: LECSB

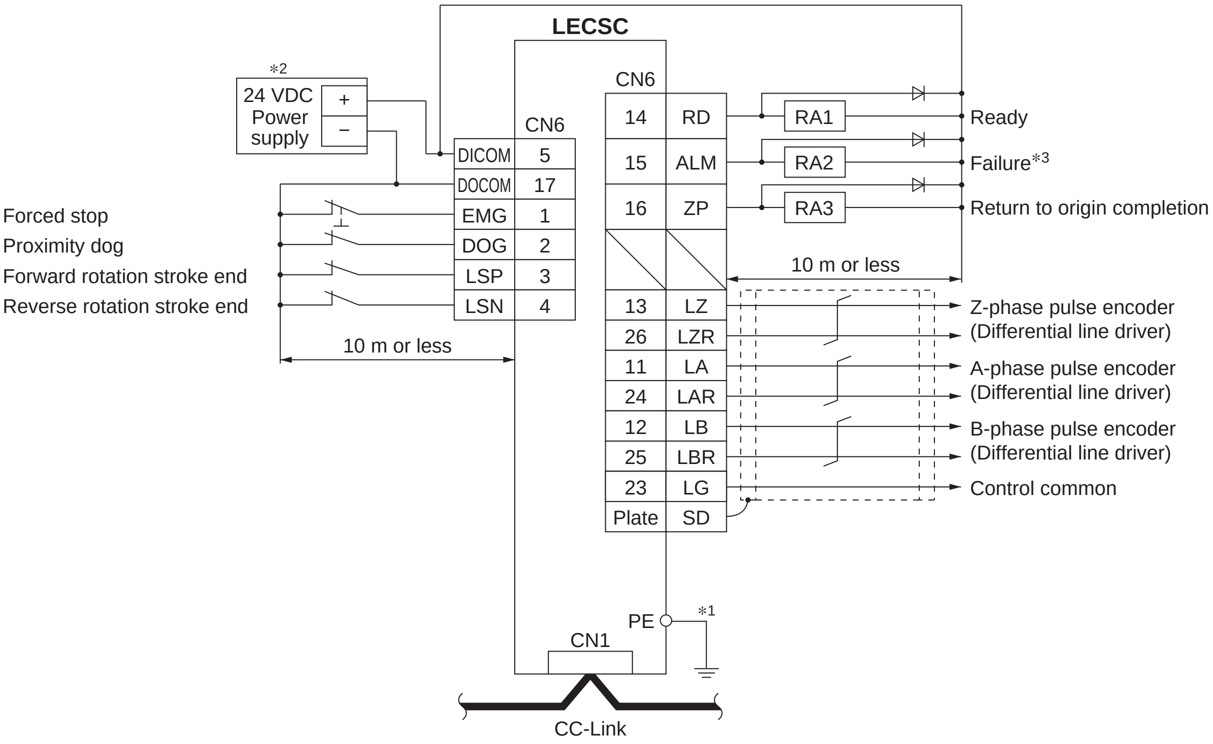
This wiring example shows connection with a positioning unit (QD75D) manufactured by Mitsubishi Electric Corporation as when used in position control mode. Refer to the LECSB series Operation Manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.


LECSB
Positioning unit
QD75D (Manufactured by Mitsubishi Electric Corporation)
24 VDC*2
*4 CN1
CLEARCOM 14
CLEAR 13
RDYCOM 12
READY 11
PULSE F+ 15
PULSE F– 16
PULSE R+ 17
PULSE R– 18
PG0 9
PG0 COM 10
DICOM 20
DOCOM 46
CR 41
RD 49
PP 10 *6
PG 11
NP 35 *6
NG 36
LZ 8
LZR 9
LG 3
SD Plate
10 m or less*5
*4 CN1
21 DICOM
48 ALM
23 ZSP
25 TLC
24 INP
RA1
RA2
RA3
RA4
Failure*3
Zero speed detection
Torque limiting
Positioning completion
10 m or less
4 LA
5 LAR
6 LB
7 LBR
A-phase pulse encoder (Differential line driver)
B-phase pulse encoder (Differential line driver)
Control common
34 LG
33 OP
1 P15R
Plate SD
Control common
Z-phase pulse encoder (Open collector)
2 m or less
10 m or less
*4 CN1
Emergency stop
Servo ON
Reset
Proportion control
External torque limit selection
Forward rotation stroke end
Reverse rotation stroke end
EMG 42
SON 15
RES 19
PC 17
TL 18
LSP 43
LSN 44
DOCOM 47
P15R 1
TLA 27
LG 28
SD Plate
Upper limit setting
Analog torque limit +10 V/Max. torque
2 m or less
*4 CN6
3 MO1
1 LG
2 MO2
±10 VDC
±10 VDC
Analog monitor 1
Analog monitor 2
2 m or less
PE
*1

---

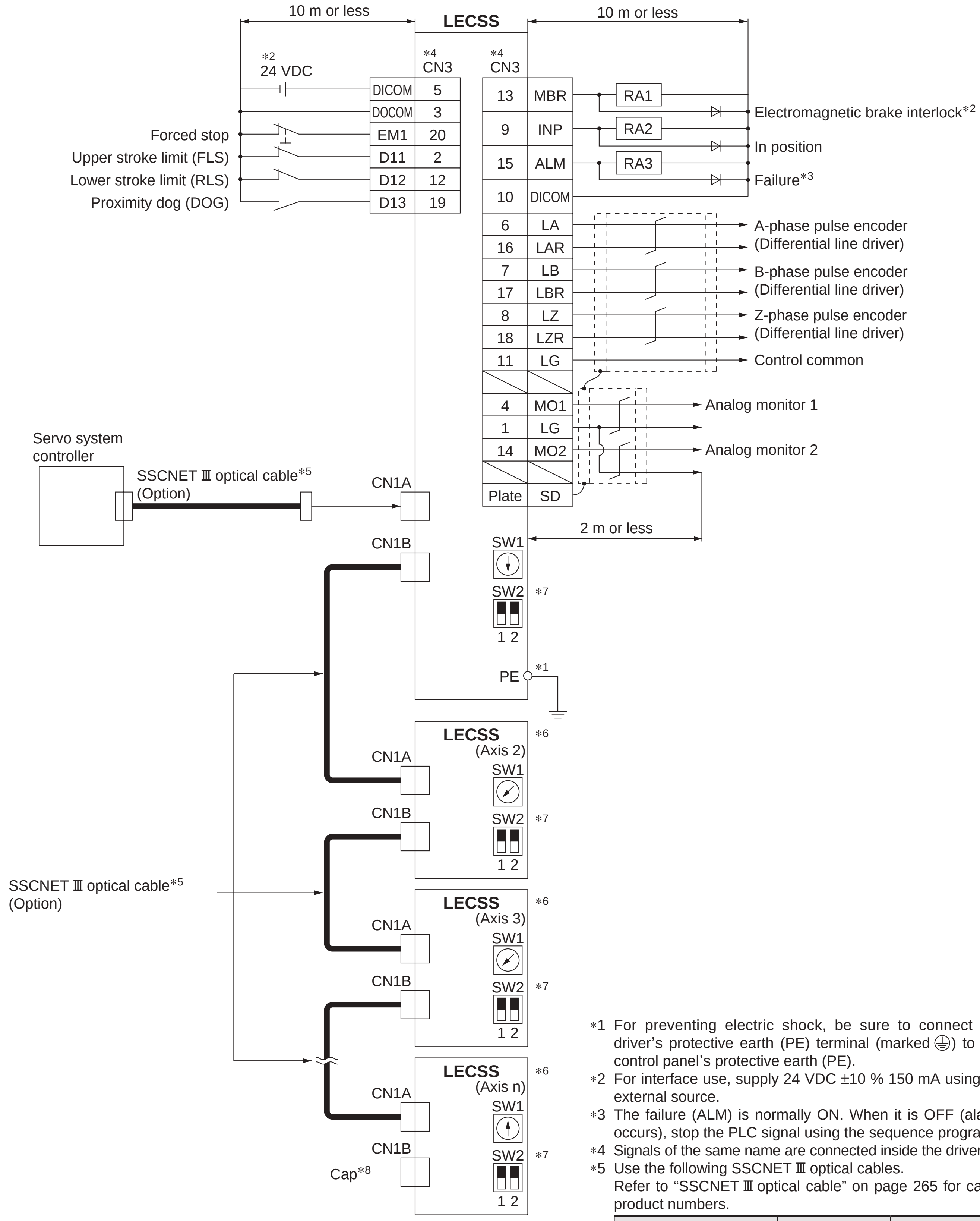
*1 For preventing electric shock, be sure to connect the driver’s protective earth (PE) terminal (marked ⏚) to the control panel’s protective earth (PE).
*2 For interface use, supply 24 VDC ±10 % 300 mA using an external source.
*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the PLC signal using the sequence program.
*4 Signals of the same name are connected inside the driver.
*5 For command pulse input with a differential line driver method. For open collector method, it is 2 m or less.
*6 If the command pulse input is open collector method, it supports only the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

Control Signal Wiring Example: LECSC


LECSC
*2
24 VDC Power supply
+
−
CN6
DICOM 5
DOCOM 17
EMG 1
DOG 2
LSP 3
LSN 4
Forced stop
Proximity dog
Forward rotation stroke end
Reverse rotation stroke end
10 m or less
CN6
14 RD
15 ALM
16 ZP
RA1
RA2
RA3
Ready
Failure*3
Return to origin completion
10 m or less
13 LZ
26 LZR
11 LA
24 LAR
12 LB
25 LBR
23 LG
Plate SD
Z-phase pulse encoder (Differential line driver)
A-phase pulse encoder (Differential line driver)
B-phase pulse encoder (Differential line driver)
Control common
PE
*1
CN1
CC-Link

*1 For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ⏚) to the control panel's protective earth (PE).
*2 For interface use, supply 24 VDC ±10 % 150 mA using an external source.
*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the PLC signal using the sequence program.

Control Signal Wiring Example: LECSS


10 m or less
LECSS
10 m or less
*2
24 VDC
*4
CN3
*4
CN3
DICOM 5
DOCOM 3
Forced stop
EM1 20
Upper stroke limit (FLS)
D11 2
Lower stroke limit (RLS)
D12 12
Proximity dog (DOG)
D13 19
13 MBR
RA1
Electromagnetic brake interlock*2
9 INP
RA2
In position
15 ALM
RA3
Failure*3
10 DICOM
6 LA
16 LAR
A-phase pulse encoder
(Differential line driver)
7 LB
17 LBR
B-phase pulse encoder
(Differential line driver)
8 LZ
18 LZR
Z-phase pulse encoder
(Differential line driver)
11 LG
Control common
4 MO1
Analog monitor 1
1 LG
14 MO2
Analog monitor 2
Plate SD
2 m or less
Servo system controller
SSCNET Ⅲ optical cable*5
(Option)
CN1A
CN1B
SW1
SW2 *7
1 2
PE *1
LECSS *6
(Axis 2)
CN1A
CN1B
SW1
SW2 *7
1 2
SSCNET Ⅲ optical cable*5
(Option)
LECSS *6
(Axis 3)
CN1A
CN1B
SW1
SW2 *7
1 2
LECSS *6
(Axis n)
CN1A
CN1B
Cap*8
SW1
SW2 *7
1 2

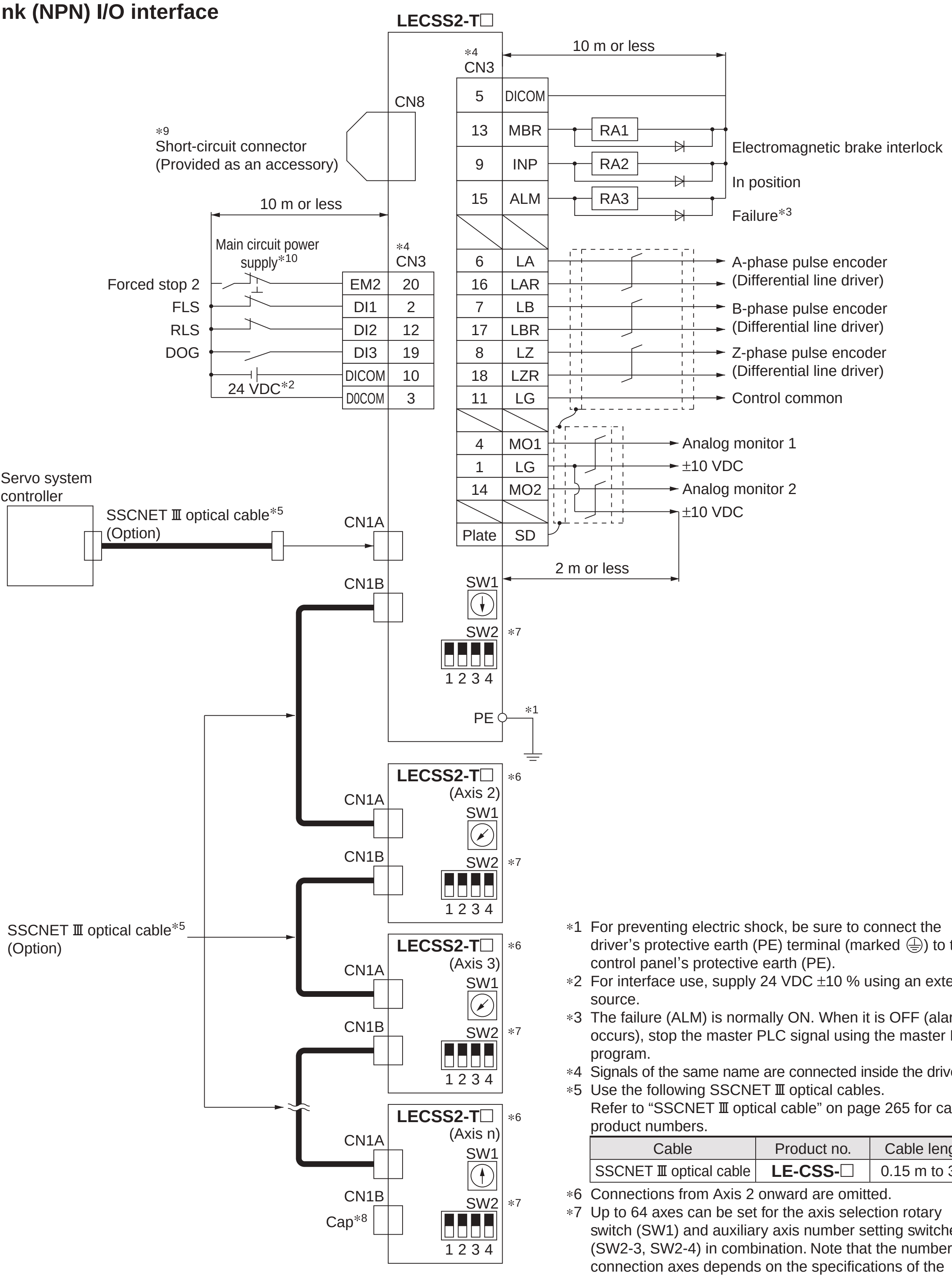
*1 For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ⏚) to the control panel's protective earth (PE).
*2 For interface use, supply 24 VDC ±10 % 150 mA using an external source.
*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the PLC signal using the sequence program.
*4 Signals of the same name are connected inside the driver.
*5 Use the following SSCNET Ⅲ optical cables.
Refer to "SSCNET Ⅲ optical cable" on page 265 for cable product numbers.

Cable	Product no.	Cable length
SSCNET Ⅲ optical cable	**LE-CSS-□**	0.15 m to 3 m

*6 Connections from Axis 2 onward are omitted.
*7 Up to 16 axes can be set.
*8 Be sure to place a cap on unused CN1A/CN1B.

Control Signal Wiring Example: LECSS2-T□

For sink (NPN) I/O interface


LECSS2-T□
*4
CN3
10 m or less
CN8
5 DICOM
13 MBR
9 INP
15 ALM
RA1
RA2
RA3
Electromagnetic brake interlock
In position
Failure*3
*9
Short-circuit connector
(Provided as an accessory)
10 m or less
Main circuit power supply*10
*4
CN3
Forced stop 2
FLS
RLS
DOG
EM2 20
DI1 2
DI2 12
DI3 19
DICOM 10
DOCOM 3
24 VDC*2
6 LA
16 LAR
7 LB
17 LBR
8 LZ
18 LZR
11 LG
A-phase pulse encoder
(Differential line driver)
B-phase pulse encoder
(Differential line driver)
Z-phase pulse encoder
(Differential line driver)
Control common
4 MO1
1 LG
14 MO2
Plate SD
Analog monitor 1
±10 VDC
Analog monitor 2
±10 VDC
2 m or less
Servo system controller
SSCNET Ⅲ optical cable*5
(Option)
CN1A
CN1B
SW1
SW2
*7
1 2 3 4
PE
*1
LECSS2-T□
(Axis 2)
*6
CN1A
CN1B
SW1
SW2
*7
1 2 3 4
SSCNET Ⅲ optical cable*5
(Option)
LECSS2-T□
(Axis 3)
*6
CN1A
CN1B
SW1
SW2
*7
1 2 3 4
LECSS2-T□
(Axis n)
*6
CN1A
CN1B
Cap*8
SW1
SW2
*7
1 2 3 4

*1 For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ⏚) to the control panel's protective earth (PE).

*2 For interface use, supply 24 VDC ±10 % using an external source.

*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the master PLC signal using the master PLC program.

*4 Signals of the same name are connected inside the driver.

*5 Use the following SSCNET Ⅲ optical cables.
Refer to "SSCNET Ⅲ optical cable" on page 265 for cable product numbers.

Cable	Product no.	Cable length
SSCNET Ⅲ optical cable	**LE-CSS-□**	0.15 m to 3 m

*6 Connections from Axis 2 onward are omitted.

*7 Up to 64 axes can be set for the axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-3, SW2-4) in combination. Note that the number of connection axes depends on the specifications of the master PLC.

*8 Be sure to place a cap on unused CN1A/CN1B.

*9 When not using the STO function, use the driver with the short-circuit connector (provided as an accessory) inserted.

*10 Configure a circuit to turn off EM2 when the main circuit power is turned off to prevent any unexpected restarts of the driver.

Options

Motor cable, Lock cable, Encoder cable (LECS□, LECSS-T common)

LE−CS M − S 5 A

Motor type

S	AC servo motor

Cable description

M	Motor cable
B	Lock cable
E	Encoder cable

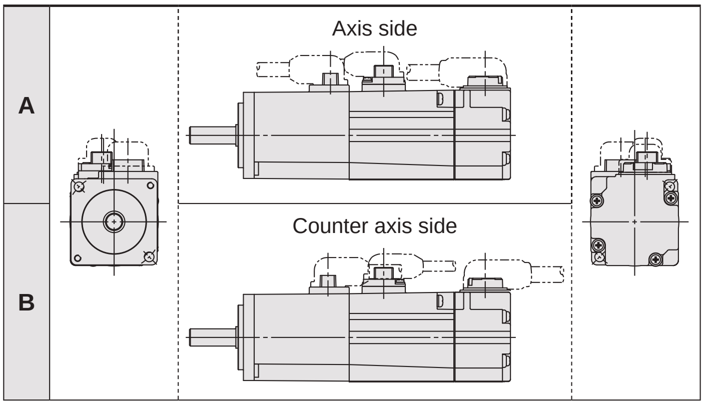
Cable type

S	Standard cable
R	Robotic cable

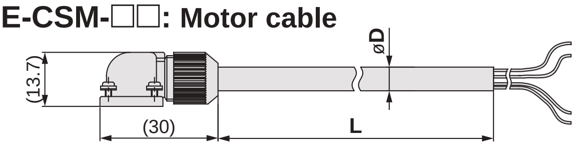
Cable length (L) [m]

2	2
5	5
A	10

Direction of connector



LE-CSM-□□: Motor cable

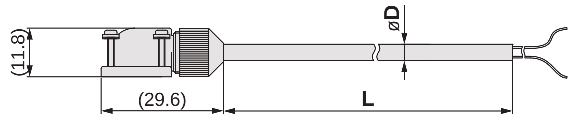


Product no.	Ø D
LE-CSM-S□A	6.2
LE-CSM-S□B	
LE-CSM-R□A	5.7
LE-CSM-R□B	

Weight

Product no.	Length [m]	Weight [g]
LE-CSM-S2□	2	180
LE-CSM-S5□	5	400
LE-CSM-SA□	10	800
LE-CSM-R2□	2	180
LE-CSM-R5□	5	400
LE-CSM-RA□	10	800

LE-CSB-□□: Lock cable*1

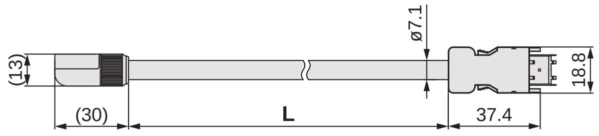


Product no.	Ø D
LE-CSB-S□A	4.7
LE-CSB-S□B	
LE-CSB-R□A	4.5
LE-CSB-R□B	

Weight

Product no.	Length [m]	Weight [g]
LE-CSB-S2□	2	80
LE-CSB-S5□	5	200
LE-CSB-SA□	10	400
LE-CSB-R2□	2	80
LE-CSB-R5□	5	200
LE-CSB-RA□	10	400

LE-CSE-□□: Encoder cable



Weight

Product no.	Length [m]	Weight [g]
LE-CSE-S2□	2	220
LE-CSE-S5□	5	600
LE-CSE-SA□	10	1200
LE-CSE-R2□	2	220
LE-CSE-R5□	5	600
LE-CSE-RA□	10	1200

*1 If using an actuator with a lock, a lock cable is required.

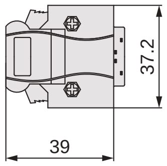
I/O connector (Without cable, Connector only)

LE−CSN A

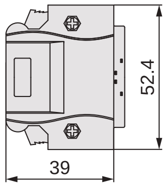
Driver type

A	LECSA□, LECSC□
B	LECSB□
S	LECSS□-S□/LECSS2-T□

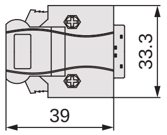
LE-CSNA



LE-CSNB



LE-CSNS



Weight

Product no.	Weight [g]
LE-CSNA	25
LE-CSNB	30
LE-CSNS	16

- * LE-CSNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
  LE-CSNB: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
  LE-CSNS: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent

- * Applicable conductor size: AWG24 to 30
- * If using the LECSB, emergency stop (EMG) wiring is required in all cases. (The electric actuator will not operate without the wiring.) Prepare an I/O connector or an I/O cable in advance.

Options

SSCNET Ⅲ optical cable (LECSS□-S□, LECSS2-T□)

LE – CSS – 1

Motor type

S	AC servo motor

Cable description

S	SSCNET Ⅲ optical cable

Cable length

L	0.15 m
K	0.3 m
J	0.5 m
1	1 m
3	3 m

＊ LE-CSS-□ is MR-J3BUS□M manufactured by Mitsubishi Electric Corporation.

Weight

Product no.	Length [m]	Weight [g]
LE-CSS-L	0.15	100
LE-CSS-K	0.3	100
LE-CSS-J	0.5	200
LE-CSS-1	1	200
LE-CSS-3	3	200

I/O cable

LEC – CSN A – 1

Driver type

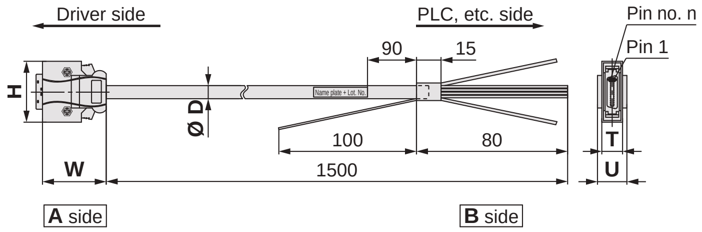
A	**For LECSA□, LECSC□**
B	**For LECSB□**
S	**For LECSS□-S□/LECSS2-T□**

Cable length (L) [m]

1	1.5

Weight

Product no.	Weight [g]
LEC-CSNA	303
LEC-CSNB	472
LEC-CSNS	221



＊ LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
LEC-CSNB-1: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
LEC-CSNS-1: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent

＊ Conductor size: AWG24

＊ If using the LECSB, emergency stop (EMG) wiring is required in all cases. (The electric actuator will not operate without the wiring.) Prepare an I/O connector or an I/O cable in advance.

Cable O.D.

Product no.	Ø D
LEC-CSNA-1	11.1
LEC-CSNB-1	13.8
LEC-CSNS-1	9.1

Dimensions/Pin Nos.

Product no.	W	H	T	U	Pin no. n
LEC-CSNA-1	39	37.2	12.7	14	14
LEC-CSNB-1		52.4		18	26
LEC-CSNS-1		33.3		14	21

Wiring

LEC-CSNA-1: Pin nos. 1 to 26
LEC-CSNB-1: Pin nos. 1 to 50
LEC-CSNS-1: Pin nos. 1 to 20

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	1	1	Orange	▬	Red
	2			▬	Black
	3	2	Light gray	▬	Red
	4			▬	Black
	5	3	White	▬	Red
	6			▬	Black
	7	4	Yellow	▬	Red
	8			▬	Black
	9	5	Pink	▬	Red
	10			▬	Black
	11	6	Orange	▬ ▬	Red
	12			▬ ▬	Black
	13	7	Light gray	▬ ▬	Red
	14			▬ ▬	Black
	15	8	White	▬ ▬	Red
	16			▬ ▬	Black
	17	9	Yellow	▬ ▬	Red
	18			▬ ▬	Black

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	19	10	Pink	▬ ▬	Red
	20			▬ ▬	Black
	21	11	Orange	▬ ▬ ▬	Red
	22			▬ ▬ ▬	Black
	23	12	Light gray	▬ ▬ ▬	Red
	24			▬ ▬ ▬	Black
	25	13	White	▬ ▬ ▬	Red
	26			▬ ▬ ▬	Black
	27	14	Yellow	▬ ▬ ▬	Red
	28			▬ ▬ ▬	Black
	29	15	Pink	▬ ▬ ▬	Red
	30			▬ ▬ ▬	Black
	31	16	Orange	▬ ▬ ▬ ▬	Red
	32			▬ ▬ ▬ ▬	Black
	33	17	Light gray	▬ ▬ ▬ ▬	Red
	34			▬ ▬ ▬ ▬	Black

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	35	18	White	▬ ▬ ▬ ▬	Red
	36			▬ ▬ ▬ ▬	Black
	37	19	Yellow	▬ ▬ ▬ ▬	Red
	38			▬ ▬ ▬ ▬	Black
	39	20	Pink	▬ ▬ ▬ ▬	Red
	40			▬ ▬ ▬ ▬	Black
	41	21	Orange	▬ ▬ ▬ ▬ ▬	Red
	42			▬ ▬ ▬ ▬ ▬	Black
	43	22	Light gray	▬ ▬ ▬ ▬ ▬	Red
	44			▬ ▬ ▬ ▬ ▬	Black
	45	23	White	▬ ▬ ▬ ▬ ▬	Red
	46			▬ ▬ ▬ ▬ ▬	Black
	47	24	Yellow	▬ ▬ ▬ ▬ ▬	Red
	48			▬ ▬ ▬ ▬ ▬	Black
	49	25	Pink	▬ ▬ ▬ ▬ ▬	Red
	50			▬ ▬ ▬ ▬ ▬	Black

Options

Regeneration option (LECS□, LECSS-T common)

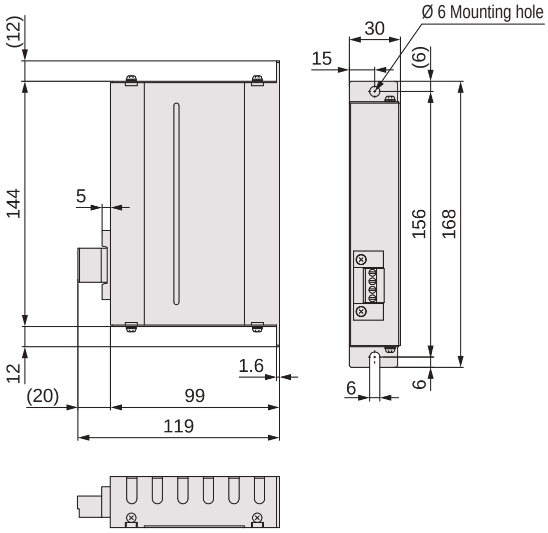
LEC − MR − RB − 12

Regeneration option type

032	Allowable regenerative power 30 W
12	Allowable regenerative power 100 W

∗ Confirm regeneration option to be used in “Model Selection.”

LEC-MR-RB-032

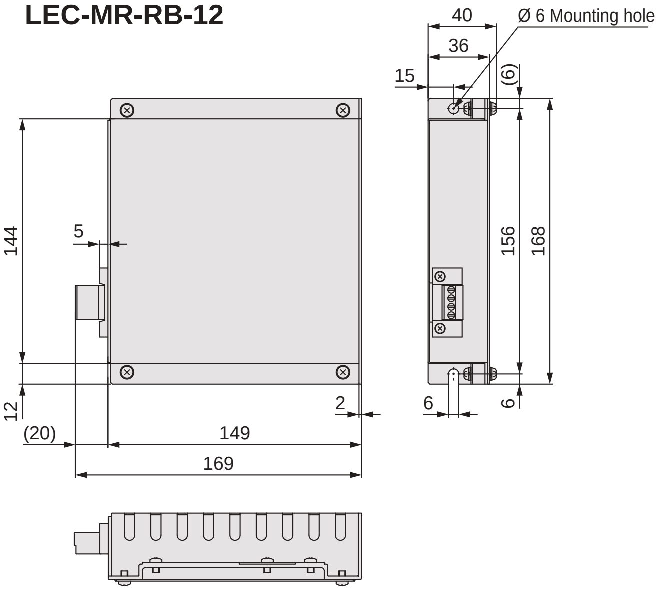

(12)
144
12
5
1.6
(20)
99
119
30
15
Ø 6 Mounting hole
(6)
156
168
6
6

Weight

Product no.	Weight [kg]
LEC-MR-RB-032	0.5

∗ MR-RB032 manufactured by Mitsubishi Electric Corporation

LEC-MR-RB-12

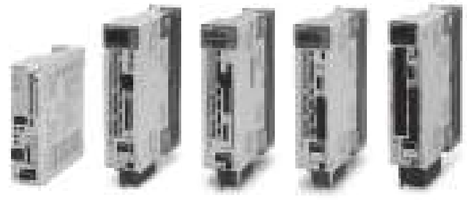

144
12
5
2
(20)
149
169
40
36
Ø 6 Mounting hole
15
(6)
156
168
6
6

Weight

Product no.	Weight [kg]
LEC-MR-RB-12	1.1

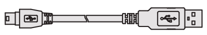
∗ MR-RB12 manufactured by Mitsubishi Electric Corporation

Options

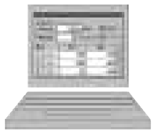


LECSA **LECSB** **LECSC** **LECSS** **LECSS2-T□**

Drivers



USB cable



PC

Setup software
(MR Configurator2™)

Setup software (MR Configurator2™) (LECSA, LECSB, LECSC, LECSS, LECSS-T common)

LEC−MRC2□

Display language

—	Japanese version
E	English version
C	Chinese version

* SW1DNC-MRC2-□ manufactured by Mitsubishi Electric Corporation
Refer to Mitsubishi Electric Corporation's website for operating environment and version upgrade information.
MR Configurator2™ is a registered trademark or trademark of Mitsubishi Electric Corporation.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (MR Configurator2™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (MR Configurator2™) **LEC-MRC2□**
*1, 2, 3, 4, 5, 6, 7, 8, 9, 10 PC	OS	Microsoft® Windows® 10 Edition Microsoft® Windows® 10 Enterprise Microsoft® Windows® 10 Pro Microsoft® Windows® 10 Home Microsoft® Windows® 8.1 Enterprise Microsoft® Windows® 8.1 Pro Microsoft® Windows® 8.1 Microsoft® Windows® 8 Enterprise Microsoft® Windows® 8 Pro Microsoft® Windows® 8 Microsoft® Windows® 7 Ultimate Microsoft® Windows® 7 Enterprise Microsoft® Windows® 7 Professional Microsoft® Windows® 7 Home Premium Microsoft® Windows® 7 Starter Microsoft® Windows Vista® Ultimate Microsoft® Windows Vista® Enterprise Microsoft® Windows Vista® Business Microsoft® Windows Vista® Home Premium Microsoft® Windows Vista® Home Basic Microsoft® Windows® XP Professional, Service Pack 3 or later Microsoft® Windows® XP Home Edition, Service Pack 3 or later
	Hard disk	1 GB or more of free space
	Communication interface	Use USB port.
Display		Resolution 1024 x 768 or more Must be capable of high colour (16-bit) display. Connectable with the PC above
Keyboard		Connectable with the PC above
Mouse		Connectable with the PC above
Printer		Connectable with the PC above
USB cable*11		LEC-MR-J3USB

Setup Software Compatible Drivers

Compatible driver	Setup software	
	MR Configurator™	MR Configurator2™
	LEC-MR-SETUP221□	LEC-MRC2□
LECSA	○	○
LECSB	○	○
LECSC	○	○
LECSS□-S□	○	○
LECSS2-T□	—	○

*1 Before using a PC for setting LECSA point table method/program operation method, upgrade to version 1.18U (Japanese version)/version 1.19V (English version) or later. Refer to Mitsubishi Electric Corporation's website for version upgrade information.

*2 Windows® and Windows Vista® are registered trademarks of Microsoft Corporation in the United States and other countries.

*3 On some PCs, setup software (MR Configurator2™) may not run properly.

*4 The following functions cannot be used. If any of the following functions is used, this product may not operate normally.
- Start of application in Windows® compatible mode
- Fast User Switching
- Remote Desktop
- Windows XP Mode
- Windows Touch or Touch
- Modern UI
- Client Hyper-V
- Tablet Mode
- Virtual desktop
- 64-bit OSs are not supported, except for Microsoft® Windows®7 or later.

*5 Multi-display is set, the screen of this product may not operate normally.

*6 The size of the text or other items on the screen is not changed to the specified value (96 DPI, 100 %, 9 pt, etc.), the screen of this product may not operate normally.

*7 Changed the resolution of the screen during operating, the screen of this product may not operate normally.

*8 Please use by "Standard User," "Administrator" in Windows Vista® or later.

*9 Using a PC for setting Windows® 10, upgrade to version 1.52E or later.
Using a PC for setting Windows® 8.1, upgrade to version 1.25B or later.
Using a PC for setting Windows®8, upgrade to version 1.20W or later.
Refer to Mitsubishi Electric Corporation's website for version upgrade information.

*10 If .NET Framework 3.5 (including .NET 2.0 and 3.0) have been disabled in Windows® 7 or later, it is necessary to enable it.

*11 Order USB cable separately.
- This cable is compatible with the setup software (MR Configurator™: LEC-MR-SETUP221□).

Options

USB cable (3 m)
(LECSA, LECSB, LECSC, LECSS, LECSS-T common)

LEC－MR－J3USB

∗ MR-J3USBCBL3M manufactured by Mitsubishi Electric Corporation

Weight: 140 g

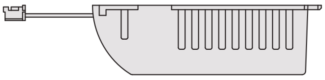
Cable for connecting PC and driver when using the setup software (MR Configurator2™)
Do not use any cable other than this cable.

Battery (Only for LECSB, LECSC, and LECSS)

LEC－MR－J3BAT

∗ MR-J3BAT manufactured by Mitsubishi Electric Corporation

Battery for replacement
Absolute position data is maintained by installing the battery to the driver.



Weight: 30 g

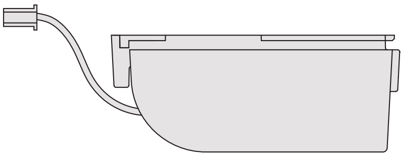
∗ The LEC-MR-J 3 BAT is a single battery that uses lithium metal battery ER6V.
When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organisation (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organisation (IMO). If a customer is transporting products such as shown above, it is necessary to confirm the latest regulations, or the laws and regulations of the country of transport on your own, in order to apply the proper measures. Please contact SMC sales representative for details.

Battery (Only for LECSS2-T□)

LEC－MR－BAT6V1SET

∗ MR-BAT6V1SET manufactured by Mitsubishi Electric Corporation

Battery for replacement
Absolute position data is maintained by installing the battery to the driver.



Weight: 60 g

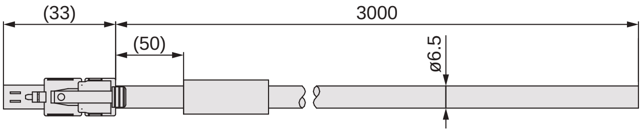
∗ The LEC-MR-BAT6V1SET is an assembled battery that uses lithium metal battery 2CR17335A.
When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organisation (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organisation (IMO). If a customer is transporting products such as shown above, it is necessary to confirm the latest regulations, or the laws and regulations of the country of transport on your own, in order to apply the proper measures. Please contact SMC sales representative for details.

STO cable (3 m) (Only for LECSS2-T□)

LEC－MR－D05UDL3M

∗ MR-D05UDL3M manufactured by Mitsubishi Electric Corporation

Cable for connecting the driver and device, when using the safety function
Do not use any cable other than this cable.



Weight: 500 g

LECS□ Series
Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: https://www.smc.eu

Design / Selection

⚠Warning

1. **Be sure to apply the specified voltage.**
   Otherwise, malfunction or breakage may occur. If the applied voltage is lower than the specified voltage, it is possible that the load will not be able to be moved due to an internal voltage drop of the driver. Please check the operating voltage before use.
2. **Do not operate the product beyond the specifications.**
   Otherwise, a fire, malfunction, or actuator damage may result. Please check the specifications before use.
3. **Install an emergency stop circuit.**
   Please install an emergency stop outside of the enclosure so that the system operation can be stopped immediately and the power supply can be intercepted.
4. **In order to prevent any damage caused by the breakdown or malfunction of the driver and its peripheral devices, a backup system should be established in advance by giving a multiple-layered structure or a fail-safe design to the equipment, etc.**
5. **If a danger of human injury is expected due to abnormal heat generation, smoking, ignition, etc., of the driver and its peripheral devices, cut off the power supply of the product and the system immediately.**
6. **The parameters of the driver are set to initial values. Please change the parameters according to the specifications of the customer’s equipment before use. Refer to the operation manual for parameter details.**

Handling

⚠Warning

1. **Do not touch the inside of the driver and its peripheral devices.**
   Doing so may cause an electric shock or damage to the driver.
2. **Do not perform the operation or setting of the product with wet hands.**
   Doing so may cause an electric shock.
3. **Products with damage or those missing any components should not be used.**
   An electric shock, fire, or injury may result.
4. **Use only the specified combination between the electric actuator and driver.**
   Failure to do so may cause damage to the actuator or the driver.
5. **Be careful not to be hit by workpieces while the actuator is moving.**
   It may cause an injury.
6. **Do not connect the power supply or power on the product before confirming the area to which the workpiece moves is safe.**
   The movement of the workpiece may cause an accident.
7. **Do not touch the product when it is energised and for some time after power has been disconnected, as it is very hot.**
   Doing so may lead to a burn due to the high temperature.
8. **Before installation, wiring, and maintenance, the voltage should be checked with a tester 5 minutes after the power supply has been turned off.**
   Otherwise, an electric shock, fire, or injury may result.

Handling

⚠Warning

9. **Static electricity may cause malfunction or break the driver. Do not touch the driver while power is supplied.**
   When touching the driver for maintenance, take sufficient measures to eliminate static electricity.
10. **Do not use the product in an area where dust, powder dust, water, chemicals, or oil is in the air.**
    It will cause failure or malfunction.
11. **Do not use the product in an area where a magnetic field is generated.**
    It will cause failure or malfunction.
12. **Do not install the product in an environment containing flammable gas, explosive gas, or corrosive gas.**
    It could lead to fire, explosion, or corrosion.
13. **Radiant heat from strong heat sources, such as a furnace, direct sunlight, etc., should not be applied to the product.**
    It will cause failure of the driver or its peripheral devices.
14. **Do not use the product in an environment subject to a temperature cycle.**
    It will cause failure of the driver or its peripheral devices.
15. **Do not use the product in a place where surges are generated.**
    When there are units that generate a large amount of surge around the product (e.g. solenoid type lifters, high-frequency induction furnaces, motors, etc.), this may cause deterioration or damage to the product’s internal circuit. Avoid sources of surge generation and crossed lines.
16. **Do not install the product in an environment under the effect of vibrations and impacts.**
    It will cause failure or malfunction.
17. **When a surge-generating load, such as a relay or solenoid valve, is driven directly, use a product that incorporates a surge absorption element.**

Installation

⚠Warning

1. **Install the driver and its peripheral devices on a fireproof material.**
   Direct installation on or near a flammable material may cause a fire.
2. **Do not install the product in a place subject to vibrations and impacts.**
   It will cause failure or malfunction.
3. **The driver should be mounted on a vertical wall in a vertical direction. Also, be sure not to cover the driver’s suction/exhaust ports.**
4. **Install the driver and its peripheral devices on a flat surface.**
   If the mounting surface is distorted or uneven, an unacceptable force may be added to the housing, etc., causing problems.

LECS□ Series
Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

Power Supply

⚠Caution

1. **Use a power supply that has low noise between lines and between the power and ground.**
   In cases where noise is high, an isolation transformer should be used.
2. **To prevent lightning surges, appropriate measures should be taken. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.**

Wiring

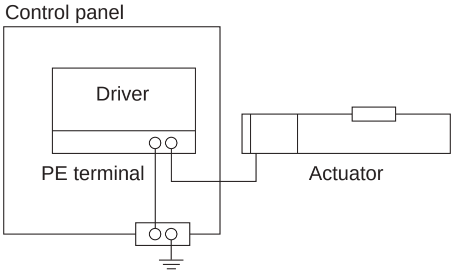
⚠Warning

1. **The driver will be damaged if a commercial power supply (100/200 V) is added to the driver's servo motor power (U, V, and W). Be sure to check wiring for mistakes when the power supply is turned on.**
2. **Connect the ends of the U, V, and W wires of the motor cable correctly to the phases (U, V, and W) of the servo motor power. If these wires do not match up, the servo motor cannot be controlled.**

Grounding

⚠Warning

1. **For grounding the actuator, connect the copper wire of the actuator to the driver's protective earth (PE) terminal and connect the copper wire of the driver to the earth via the control panel's protective earth (PE) terminal.**
   Do not connect them directly to the control panel's protective earth (PE) terminal.



2. **In the unlikely event that a malfunction is caused by the ground, please disconnect it.**

Maintenance

⚠Warning

1. **Perform a maintenance and inspection periodically.**
   Confirm wiring and screws are not loose.
   Loose screws or wires may cause unintentional malfunction.
2. **Conduct an appropriate functional inspection after completing the maintenance and inspection.**
   At times where the equipment or machinery does not operate properly, conduct an emergency stop of the system. Otherwise, an unexpected malfunction may occur and it will become impossible to ensure safety. Conduct a test of the emergency stop in order to confirm the safety of the equipment.
3. **Do not disassemble, modify, or repair the driver and its peripheral devices.**
4. **Do not put anything conductive or flammable inside the driver.**
   It may cause a fire.
5. **Do not conduct an insulation resistance test or withstand voltage test on this product.**
6. **Ensure sufficient space for maintenance activities.**
   Design the system allowing the required space for maintenance and inspection.

MECHATROLINK Compatible

AC Servo Motor Driver
Absolute Type
LECYM/LECYU Series

(MECHATROLINK-Ⅱ Type) (MECHATROLINK-Ⅲ Type)

LECYM
LECYU

CE RoHS

How to Order

Driver

LECY M 2 – ☐

∗ If an I/O connector (CN1) is required, order the part number "LE-CYNA" separately.
∗ If an I/O cable (CN1) is required, order the part number "LEC-CSNA-1" separately.

Driver type

M	MECHATROLINK-Ⅱ type (For absolute encoder)
U	MECHATROLINK-Ⅲ type (For absolute encoder)

Power supply voltage

2	200 to 230 VAC, 50/60 Hz

Compatible motor type

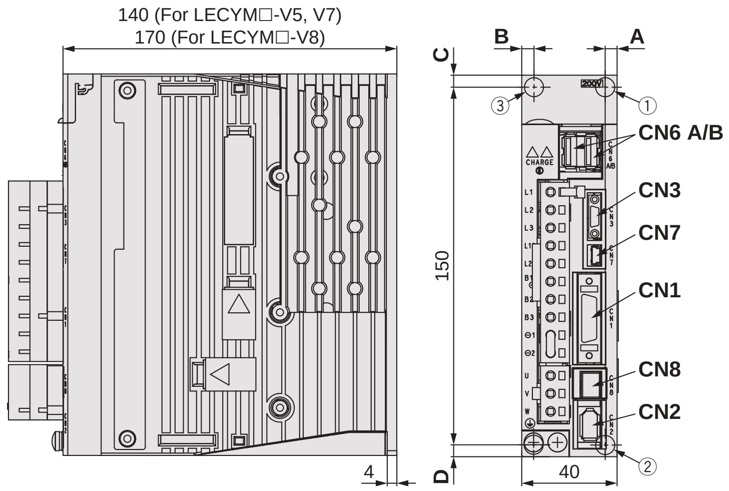
Symbol	Type	Capacity	Encoder
V5	AC servo motor (V6∗1)	100 W	Absolute
V7	AC servo motor (V7∗1)	200 W	
V8	AC servo motor (V8∗1)	400 W	

∗1 The symbol shows the motor type (actuator).

Dimensions

MECHATROLINK-Ⅱ type

LECYM2-V☐


140 (For LECYM☐-V5, V7)
170 (For LECYM☐-V8)
4
B
A
C
D
150
40
①
②
③
200V
CHARGE
CN6 A/B
CN3
CN7
CN1
CN8
CN2
L1
L2
L3
L1
L2
B1
B2
B3
⊖1
⊖2
U
V
W

Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3∗1	Digital operator connector
CN6A	MECHATROLINK-Ⅱ communication connector
CN6B	MECHATROLINK-Ⅱ communication connector
CN7	PC connector
CN8	Safety connector

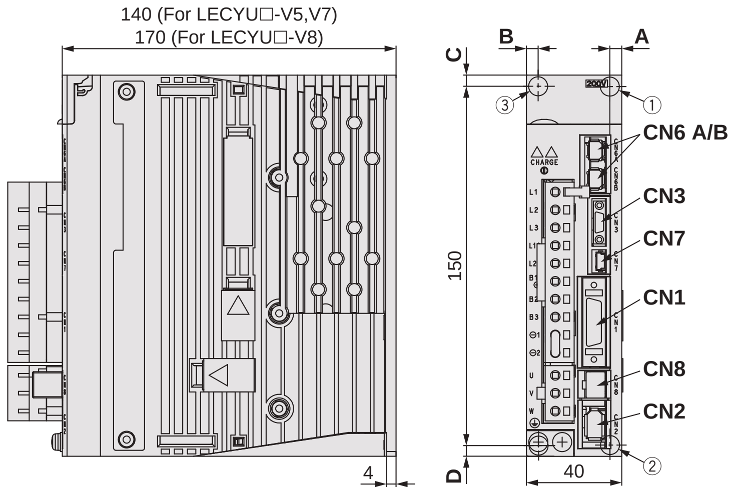
∗1 Digital operator is JUSP-OP05A-1-E manufactured by YASKAWA Electric Corporation. When using the digital operator, it should be provided by the customer.

Motor capacity	Hole position	Mounting dimensions A	B	C	D	Mounting hole
V5 (100 W)	①②	5	—	5	5	Ø 5
V7 (200 W)	①②	5	—	5	5	
V8 (400 W)	②③	5	5	5	5	

∗ The mounting hole position varies depending on the motor capacity.

MECHATROLINK-Ⅲ type

LECYU2-V☐


140 (For LECYU☐-V5,V7)
170 (For LECYU☐-V8)
4
B
A
C
D
150
40
①
②
③
200V
CHARGE
CN6 A/B
CN3
CN7
CN1
CN8
CN2
L1
L2
L3
L1
L2
B1
B2
B3
⊖1
⊖2
U
V
W

Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3∗1	Digital operator connector
CN6A	MECHATROLINK-Ⅲ communication connector
CN6B	MECHATROLINK-Ⅲ communication connector
CN7	PC connector
CN8	Safety connector

∗1 Digital operator is JUSP-OP05A-1-E manufactured by YASKAWA Electric Corporation. When using the digital operator, it should be provided by the customer.

Motor capacity	Hole position	Mounting dimensions A	B	C	D	Mounting hole
V5 (100 W)	①②	5	—	5	5	Ø 5
V7 (200 W)	①②	5	—	5	5	
V8 (400 W)	②③	5	5	5	5	

∗ The mounting hole position varies depending on the motor capacity.

Specifications

MECHATROLINK-Ⅱ Type

Model			LECYM2-V5	LECYM2-V7	LECYM2-V8
Compatible motor capacity [W]			100	200	400
Compatible encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)		
Main circuit power supply	**Power voltage [V]**		Three phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Three phase 170 to 253 VAC		
Control power supply	**Power voltage [V]**		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 170 to 253 VAC		
Power supply capacity (at rated output) [A]			0.91	1.6	2.8
Input circuit			NPN (Sink circuit)/PNP (Source circuit)		
Parallel input (7 inputs)	**Number of optional allocations**	**7 inputs**	[Initial allocation] · Homing deceleration switch (/DEC) · External latch (/EXT 1 to 3) · Forward run prohibited (P-OT), reverse run prohibited (N-OT) [Can be allocated by setting the parameters] · Forward external torque limit (/P-CL), reverse external torque limit (/N-CL) Signal allocations can be performed, and positive and negative logic can be changed.		
Parallel output (4 outputs)	**Number of fixed allocations**	**1 output**	· Servo alarm (ALM)		
	Number of optional allocations	**3 outputs**	[Initial allocation] · Lock (/BK) [Can be allocated by setting the parameters] · Positioning completion (/COIN) · Speed limit detection (/VLT) · Speed coincidence detection (/V-CMP) · Rotation detection (/TGON) · Warning (/WARN) · Servo ready (/S-RDY) · Near (/NEAR) · Torque limit detection (/CLT) Signal allocations can be performed, and positive and negative logic can be changed.		
MECHATROLINK communication	**Communication protocol**		MECHATROLINK-Ⅱ		
	Station address		41H to 5FH		
	Transmission speed		10 Mbps		
	Transmission cycle		250 µs, 0.5 ms to 4 ms (Multiples of 0.5 ms)		
	Number of transmission bytes		17 bytes, 32 bytes		
	Max. number of stations		30		
	Cable length		Overall cable length: 50 m or less, Cable length between the stations: 0.5 m or more		
Command method	**Control method**		Position, speed, or torque control with MECHATROLINK-Ⅱ communication		
	Command input		MECHATROLINK-Ⅱ command (Motion, data setting, monitoring, or adjustment)		
Function	**Gain adjustment**		Tuning-less/Advanced auto tuning/One-parameter tuning		
	Communication setting		USB communication, RS-422 communication		
	Torque limit		Internal torque limit, external torque limit, and torque limit by analogue command		
	Encoder output		Phase A, B, Z: Line driver output		
	Emergency stop		CN8 Safety function		
	Overtravel		Dynamic brake stop, deceleration to a stop, or free run to a stop at P-OT or N-OT		
	Alarm		Alarm signal, MECHATROLINK-Ⅱ command		
Operating temperature range [°C]			0 to 55 (No freezing)		
Operating humidity range [%RH]			90 or less (No condensation)		
Storage temperature range [°C]			–20 to 85 (No freezing)		
Storage humidity range [%RH]			90 or less (No condensation)		
Insulation resistance [MΩ]			10 MΩ (500 VDC)		
Weight [g]			900		1000

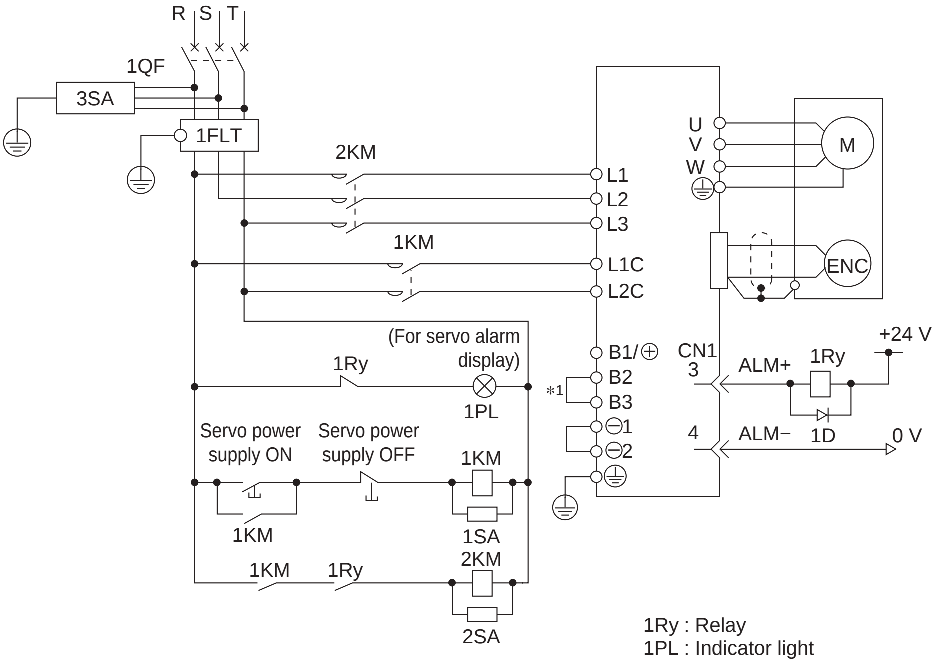
Specifications

MECHATROLINK-Ⅲ Type

Model			LECYU2-V5	LECYU2-V7	LECYU2-V8
Compatible motor capacity [W]			100	200	400
Compatible encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)		
Main circuit power supply	**Power voltage [V]**		Three phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Three phase 170 to 253 VAC		
Control power supply	**Power voltage [V]**		Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]		Single phase 170 to 253 VAC		
Power supply capacity (at rated output) [A]			0.91	1.6	2.8
Input circuit			NPN (Sink circuit)/PNP (Source circuit)		
Parallel input (7 inputs)	**Number of optional allocations**	**7 inputs**	[Initial allocation] · Homing deceleration switch (/DEC) · External latch (/EXT 1 to 3) · Forward run prohibited (P-OT), reverse run prohibited (N-OT) [Can be allocated by setting the parameters] · Forward external torque limit (/P-CL), reverse external torque limit (/N-CL) Signal allocations can be performed, and positive and negative logic can be changed.		
Parallel output (4 outputs)	**Number of fixed allocations**	**1 output**	· Servo alarm (ALM)		
	Number of optional allocations	**3 outputs**	[Initial allocation] · Lock (/BK) [Can be allocated by setting the parameters] · Positioning completion (/COIN) · Speed limit detection (/VLT) · Speed coincidence detection (/V-CMP) · Rotation detection (/TGON) · Warning (/WARN) · Servo ready (/S-RDY) · Near (/NEAR) · Torque limit detection (/CLT) Signal allocations can be performed, and positive and negative logic can be changed.		
MECHATROLINK communication	**Communication protocol**		MECHATROLINK-Ⅲ		
	Station address		03H to EFH		
	Transmission speed		100 Mbps		
	Transmission cycle		125 µs, 250 µs, 500 µs, 750 µs, 1 ms to 4 ms (Multiples of 0.5 ms)		
	Number of transmission bytes		16 bytes, 32 bytes, 48 bytes		
	Max. number of stations		62		
	Cable length		Cable length between the stations: 0.5 m or more, 75 m or less		
Command method	**Control method**		Position, speed, or torque control with MECHATROLINK-Ⅲ communication		
	Command input		MECHATROLINK-Ⅲ command (Motion, data setting, monitoring, or adjustment)		
Function	**Gain adjustment**		Tuning-less/Advanced auto tuning/One-parameter tuning		
	Communication setting		USB communication, RS-422 communication		
	Torque limit		Internal torque limit, external torque limit, and torque limit by analogue command		
	Encoder output		Phase A, B, Z: Line driver output		
	Emergency stop		CN8 Safety function		
	Overtravel		Dynamic brake stop, deceleration to a stop, or free run to a stop at P-OT or N-OT		
	Alarm		Alarm signal, MECHATROLINK-Ⅲ command		
Operating temperature range [°C]			0 to 55 (No freezing)		
Operating humidity range [%RH]			90 or less (No condensation)		
Storage temperature range [°C]			–20 to 85 (No freezing)		
Storage humidity range [%RH]			90 or less (No condensation)		
Insulation resistance [MΩ]			10 MΩ (500 VDC)		
Weight [g]			900		1000

Power Supply Wiring Example: LECY□

■ Three phase 200 V LECYM2-□ LECYU2-□


R
S
T
1QF
3SA
1FLT
2KM
1KM
U
V
W
M
ENC
L1
L2
L3
L1C
L2C
(For servo alarm display)
1Ry
1PL
B1/⊕
B2
B3
⊖1
⊖2
*1
CN1
3
4
ALM+
ALM−
1Ry
1D
+24 V
0 V
Servo power supply ON
Servo power supply OFF
1KM
1SA
2KM
1KM
1Ry
2SA

1QF : Molded-case circuit breaker
1FLT: Noise filter
1KM : Magnetic contactor (for control power supply)
2KM : Magnetic contactor (for main circuit power supply)

1Ry : Relay
1PL : Indicator light
1SA : Surge absorber
2SA : Surge absorber
3SA : Surge absorber
1D : Flywheel diode

*1 For the LECY□2-V5, LECY□2-V7 and LECY□2-V8, terminals B2 and B3 are not short-circuited. Do not short-circuit these terminals.

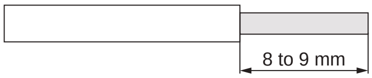
Main Circuit Power Supply Connector * Accessory

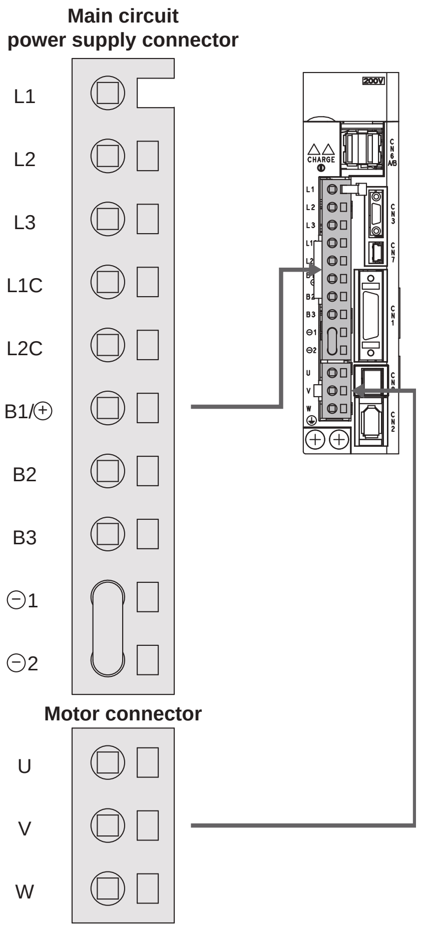
Terminal name	Function	Details
L1	Main circuit power supply	Connect the main circuit power supply. Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1, L2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1, L2, L3
L2		
L3		
L1C	Control power supply	Connect the control power supply. Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1C, L2C
L2C		
B1/⊕	External regenerative resistor connection terminal	When the regenerative resistor is required, connect it between terminals B1⊕ and B2.
B2		
B3		
⊖1	Main circuit negative terminal	⊖1 and ⊖2 are connected at shipment.
⊖2		

Motor Connector * Accessory

Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

Power Supply Wire Specifications

Item	Specifications
Applicable wire size	L1, L2, L3, L1C, L2C Single wire, Twisted wire, AWG14 (2.0 mm²)
Stripped wire length	 8 to 9 mm


Main circuit power supply connector
L1
L2
L3
L1C
L2C
B1/⊕
B2
B3
⊖1
⊖2
Motor connector
U
V
W
200V
CHARGE

Control Signal Wiring Example: LECYM

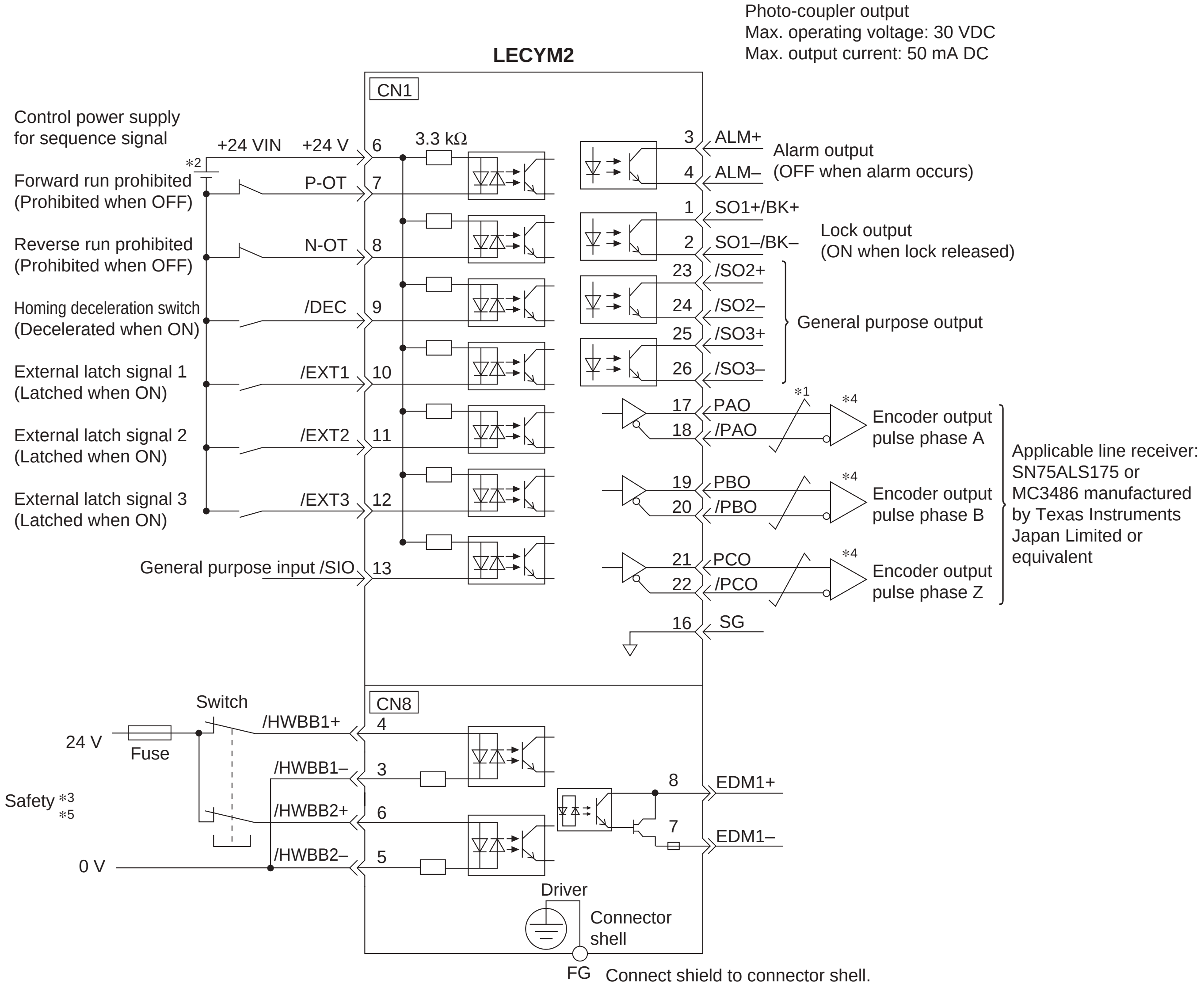


Photo-coupler output
Max. operating voltage: 30 VDC
Max. output current: 50 mA DC
LECYM2
CN1
Control power supply for sequence signal
+24 VIN
+24 V
6
3.3 kΩ
*2
Forward run prohibited (Prohibited when OFF)
P-OT
7
Reverse run prohibited (Prohibited when OFF)
N-OT
8
Homing deceleration switch (Decelerated when ON)
/DEC
9
External latch signal 1 (Latched when ON)
/EXT1
10
External latch signal 2 (Latched when ON)
/EXT2
11
External latch signal 3 (Latched when ON)
/EXT3
12
General purpose input /SIO
13
3
ALM+
4
ALM–
Alarm output (OFF when alarm occurs)
1
SO1+/BK+
2
SO1–/BK–
Lock output (ON when lock released)
23
/SO2+
24
/SO2–
25
/SO3+
26
/SO3–
General purpose output
*1
*4
17
PAO
18
/PAO
Encoder output pulse phase A
19
PBO
20
/PBO
Encoder output pulse phase B
21
PCO
22
/PCO
Encoder output pulse phase Z
Applicable line receiver: SN75ALS175 or MC3486 manufactured by Texas Instruments Japan Limited or equivalent
16
SG
CN8
Switch
24 V
Fuse
/HWBB1+
4
/HWBB1–
3
Safety *3 *5
/HWBB2+
6
0 V
/HWBB2–
5
8
EDM1+
7
EDM1–
Driver
Connector shell
FG

Connect shield to connector shell.

---

*1 ≠ shows twisted-pair wires.

*2 The 24 VDC power supply is not included. Use a 24 VDC power supply with double insulation or reinforced insulation.

*3 When using the safety function, a safety function device must be connected to the wiring that is necessary to activate the safety function. Otherwise, the servo motor is not turned ON. When not using the safety function, use the driver with the Safety Jumper Connector (provided as an accessory) inserted into the CN8.

*4 Always use line receivers to receive the output signals.

** The functions allocated to the input signals /DEC, P-OT, N-OT, /EXT 1 , /EXT 2 and /EXT 3 , and the output signals /SO 1 , /SO 2 and /SO 3 can be changed by setting the parameters.

*5 It is a safety function equivalent to the STO function (IEC 61800-5-2) using the hard wire base block function (HWBB).

Control Signal Wiring Example: LECYU

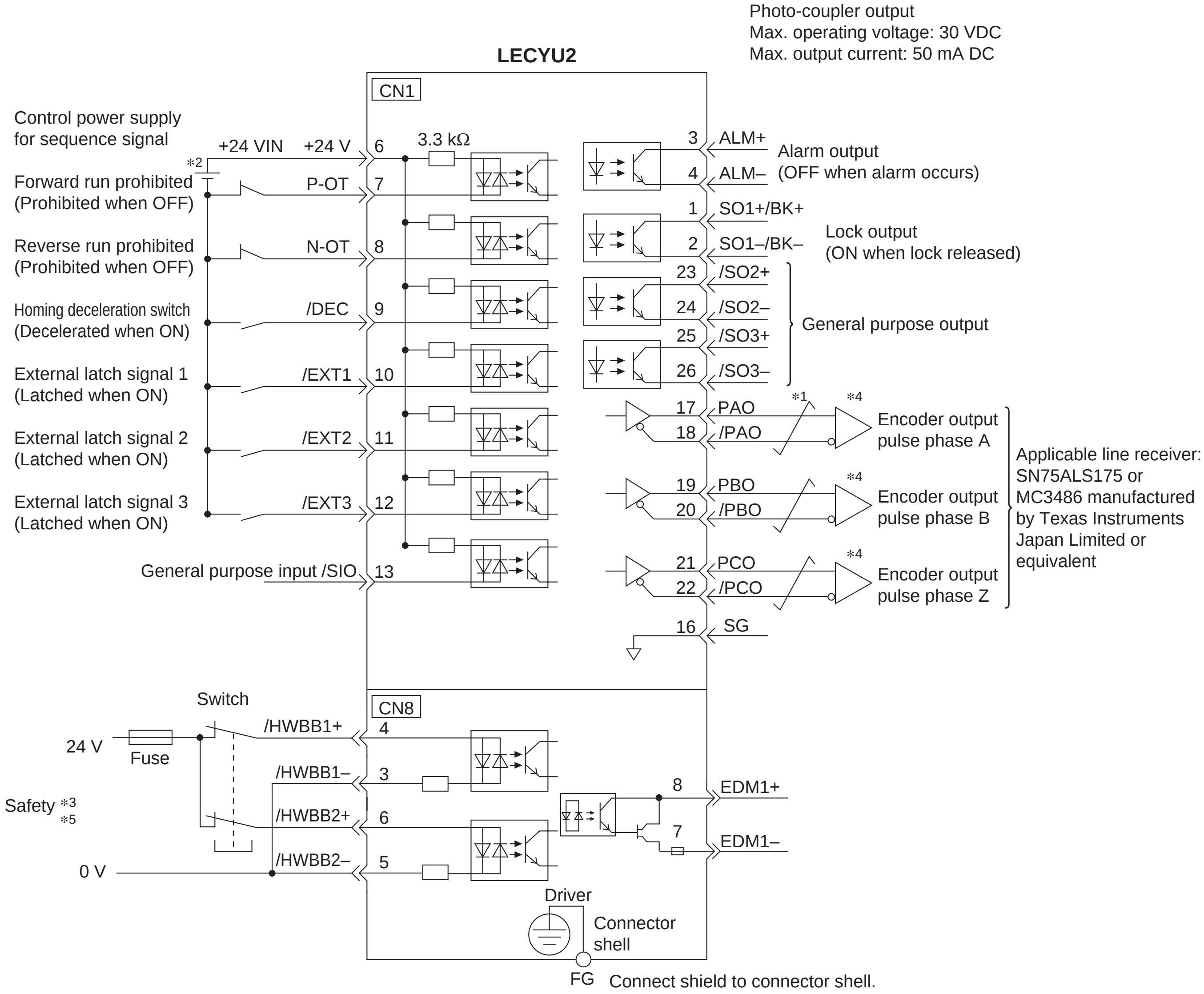


Photo-coupler output
Max. operating voltage: 30 VDC
Max. output current: 50 mA DC
LECYU2
CN1
Control power supply for sequence signal
+24 VIN
+24 V
6
3.3 kΩ
∗2
Forward run prohibited (Prohibited when OFF)
P-OT
7
Reverse run prohibited (Prohibited when OFF)
N-OT
8
Homing deceleration switch (Decelerated when ON)
/DEC
9
External latch signal 1 (Latched when ON)
/EXT1
10
External latch signal 2 (Latched when ON)
/EXT2
11
External latch signal 3 (Latched when ON)
/EXT3
12
General purpose input /SIO
13
3
ALM+
4
ALM–
Alarm output (OFF when alarm occurs)
1
SO1+/BK+
2
SO1–/BK–
Lock output (ON when lock released)
23
/SO2+
24
/SO2–
25
/SO3+
26
/SO3–
General purpose output
∗1
∗4
17
PAO
18
/PAO
Encoder output pulse phase A
19
PBO
20
/PBO
Encoder output pulse phase B
21
PCO
22
/PCO
Encoder output pulse phase Z
Applicable line receiver: SN75ALS175 or MC3486 manufactured by Texas Instruments Japan Limited or equivalent
16
SG
Switch
CN8
24 V
Fuse
/HWBB1+
4
/HWBB1–
3
Safety ∗3 ∗5
/HWBB2+
6
/HWBB2–
5
0 V
8
EDM1+
7
EDM1–
Driver
Connector shell
FG
Connect shield to connector shell.

∗1 ≠ shows twisted-pair wires.

∗2 The 24 VDC power supply is not included. Use a 24 VDC power supply with double insulation or reinforced insulation.

∗3 When using the safety function, a safety function device must be connected to the wiring that is necessary to activate the safety function. Otherwise, the servo motor is not turned ON. When not using the safety function, use the driver with the Safety Jumper Connector (provided as an accessory) inserted into the CN8.

∗4 Always use line receivers to receive the output signals.

∗∗ The functions allocated to the input signals /DEC, P-OT, N-OT, /EXT 1 , /EXT 2 and /EXT 3 , and the output signals /SO 1 , /SO 2 and /SO 3 can be changed by setting the parameters.

∗5 It is a safety function equivalent to the STO function (IEC 61800-5-2) using the hard wire base block function (HWBB).

Options

Motor cable, Motor cable for lock option, Encoder cable (LECYM/LECYU common)

LE − CY M − S 5 A − 5

Motor type

Y	AC servo motor

Cable description

M	Motor cable
B	Motor cable for lock option
E	Encoder cable (With battery case)

Cable type

S	Standard cable
R	Robotic cable

Cable length (L) [m]

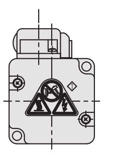
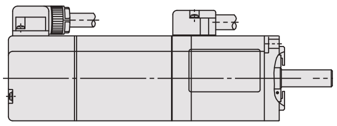
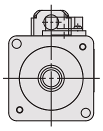
3	3
5	5
A	10
C	20

Motor capacity

5	100 W
7	200/400 W

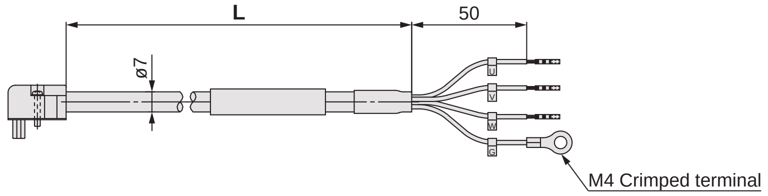
* For encoder cable, the suffix “–□” (Motor capacity) is not necessary.

Direction of connector

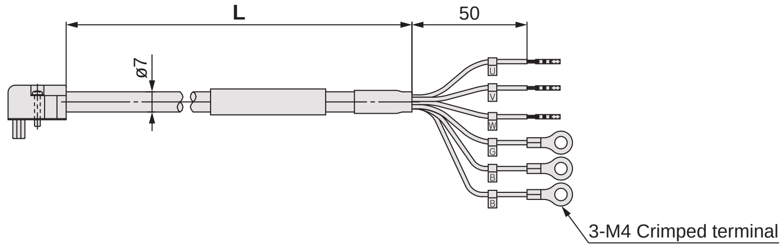
A		Axis side 	

* The cable entry direction is axis side only.

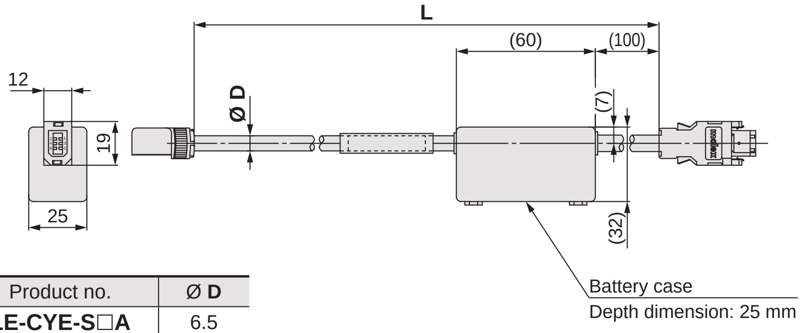
LE-CYM-□□A-□: Motor cable



LE-CYB-□□A-□: Motor cable for lock option



LE-CYE-□□A: Encoder cable



Product no.	Ø D
LE-CYE-S□A	6.5
LE-CYE-R□A	6.8

Weight

Product no.	Length [m]	Weight [g]	Note
LE-CYM-S3A-5	3	250	100 W
LE-CYM-S5A-5	5	390	
LE-CYM-SAA-5	10	750	
LE-CYM-SCA-5	20	1500	
LE-CYM-S3A-7	3	250	200/ 400 W
LE-CYM-S5A-7	5	390	
LE-CYM-SAA-7	10	750	
LE-CYM-SCA-7	20	1500	
LE-CYM-R3A-5	3	220	100 W
LE-CYM-R5A-5	5	350	
LE-CYM-RAA-5	10	670	
LE-CYM-RCA-5	20	1300	
LE-CYM-R3A-7	3	220	200/ 400 W
LE-CYM-R5A-7	5	350	
LE-CYM-RAA-7	10	670	
LE-CYM-RCA-7	20	1300	

Weight

Product no.	Length [m]	Weight [g]	Note
LE-CYB-S3A-5	3	240	100 W
LE-CYB-S5A-5	5	390	
LE-CYB-SAA-5	10	750	
LE-CYB-SCA-5	20	1490	
LE-CYB-S3A-7	3	240	200/ 400 W
LE-CYB-S5A-7	5	390	
LE-CYB-SAA-7	10	750	
LE-CYB-SCA-7	20	1490	
LE-CYB-R3A-5	3	220	100 W
LE-CYB-R5A-5	5	350	
LE-CYB-RAA-5	10	670	
LE-CYB-RCA-5	20	1300	
LE-CYB-R3A-7	3	220	200/ 400 W
LE-CYB-R5A-7	5	350	
LE-CYB-RAA-7	10	670	
LE-CYB-RCA-7	20	1300	

Weight

Product no.	Length [m]	Weight [g]
LE-CYE-S3A	3	230
LE-CYE-S5A	5	360
LE-CYE-SAA	10	680
LE-CYE-SCA	20	1250
LE-CYE-R3A	3	220
LE-CYE-R5A	5	330
LE-CYE-RAA	10	660
LE-CYE-RCA	20	1240

* LE-CYM-S□A-□ is JZSP-CSM0□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYB-S□A-□ is JZSP-CSM1□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYE-S□A is JZSP-CSP05-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYM-R□A-□ is JZSP-CSM2□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYB-R□A-□ is JZSP-CSM3□-□□-E manufactured by YASKAWA CONTROLS CO., LTD.
LE-CYE-R□A is JZSP-CSP25-□□-E manufactured by YASKAWA CONTROLS CO., LTD.

Options

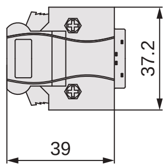
I/O connector (Without cable, Connector only)

LE − CYN A

Driver type

A	For LECYM2, LECYU2

LE-CYNA



- ＊ LE-CYNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- ＊ Conductor size: AWG24 to 30

I/O cable

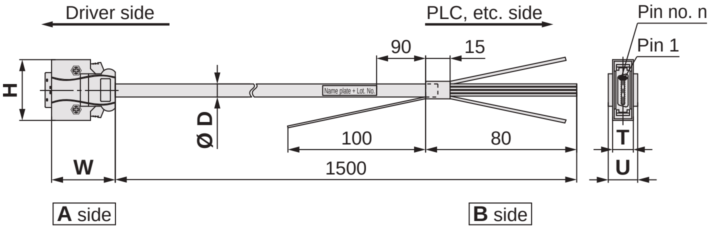
LEC − CSN A − 1

Driver type

A	For LECYM2, LECYU2

Cable length (L) [m]

1	1.5



- ＊ LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- ＊ Conductor size: AWG24

Wiring

LEC-CSNA-1: Pin nos. 1 to 26

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	1	1	Orange	▬	Red
	2			▬	Black
	3	2	Light gray	▬	Red
	4			▬	Black
	5	3	White	▬	Red
	6			▬	Black
	7	4	Yellow	▬	Red
	8			▬	Black
	9	5	Pink	▬	Red
	10			▬	Black

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	11	6	Orange	▬ ▬	Red
	12			▬ ▬	Black
	13	7	Light gray	▬ ▬	Red
	14			▬ ▬	Black
	15	8	White	▬ ▬	Red
	16			▬ ▬	Black
	17	9	Yellow	▬ ▬	Red
	18			▬ ▬	Black
	19	10	Pink	▬ ▬	Red
	20			▬ ▬	Black

	Connector pin no.	Pair no. of wire	Insulation colour	Dot mark	Dot colour
A side	21	11	Orange	▬ ▬ ▬	Red
	22			▬ ▬ ▬	Black
	23	12	Light gray	▬ ▬ ▬	Red
	24			▬ ▬ ▬	Black
	25	13	White	▬ ▬ ▬	Red
	26			▬ ▬ ▬	Black

Cable O.D.

Product no.	Ø D
LEC-CSNA-1	11.1

Dimensions/Pin No.

Product no.	W	H	T	U	Pin no. n
LEC-CSNA-1	39	37.2	12.7	14	14

Options

MECHATROLINK cable type

LEC−CY M − 1

Motor type

Y	AC servo motor

Cable description

M	MECHATROLINK-Ⅱ cable
U	MECHATROLINK-Ⅲ cable

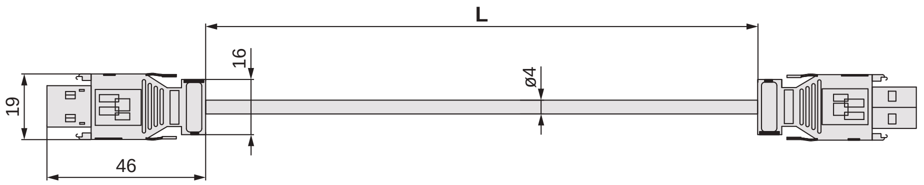
Cable length (L)

L[*1]	0.2 m
J	0.5 m
1	1 m
3	3 m

[*1] Not available for the MECHATROLINK-Ⅱ cable

* LEC-CYM-☐ is JEPMC-W6002-☐☐-E manufactured by YASKAWA CONTROLS CO., LTD.
* LEC-CYU-☐ is JEPMC-W6012-☐☐-E manufactured by YASKAWA CONTROLS CO., LTD.

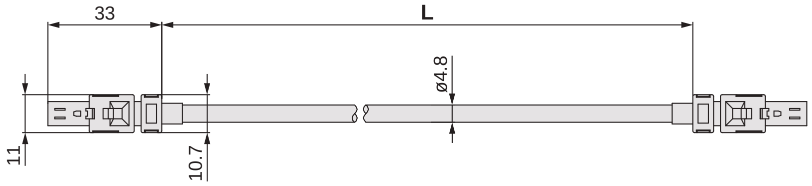
MECHATROLINK-Ⅱ cable



Weight

Product no.	Length [m]	Weight [g]
LE-CYM-J	0.5	50
LE-CYM-1	1	80
LE-CYM-3	3	200

MECHATROLINK-Ⅲ cable



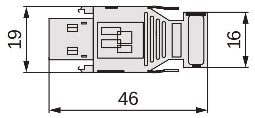
Weight

Product no.	Length [m]	Weight [g]
LE-CYU-L	0.2	21
LE-CYU-J	0.5	41
LE-CYU-1	1	75
LE-CYU-3	3	205

Terminating connector for MECHATROLINK-Ⅱ

LEC−CYRM

* LEC-CYRM is JEPMC-W6022-E manufactured by YASKAWA CONTROLS CO., LTD.

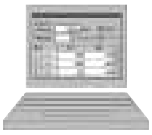


Weight: 10 g

Options

LECYM2 LECYU2
Drivers

USB cable


PC

Setup software (SigmaWin+™) (LECYM/LECYU common)

* Please download the SigmaWin+™ via our website.
SigmaWin+™ is a registered trademark or trademark of YASKAWA Electric Corporation.

Adjustment, waveform display, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (SigmaWin+™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (SigmaWin+™)
PC*1, 2, 3, 4	OS	Windows® XP*5, Windows Vista®, Windows® 7 (32-bit/64-bit)
	Available HD space	350 MB or more (When the software is installed, 400 MB or more is recommended.)
	Communication interface	Use USB port.
Display		XVGA monitor (1024 x 768 or more, “The small font is used.”) 256 colour or more (65536 colour or more is recommended.) Connectable with the PC above
Keyboard		Connectable with the PC above
Mouse		Connectable with the PC above
Printer		Connectable with the PC above
USB cable		LEC-JZ-CVUSB*6
Other		Adobe Reader Ver. 5.0 or higher (* Except Ver. 6.0)

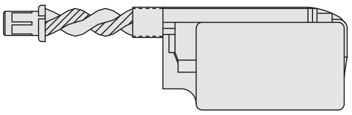
*1 Windows, Windows Vista®, Windows® 7 are registered trademarks of Microsoft Corporation in the United States and/or other countries.
*2 On some PCs, this software may not run properly.
*3 Not compatible with 64-bit Windows® XP and 64-bit Windows Vista®
*4 For Windows® XP, please use it by the administrator authority (When installing and using it.).
*5 In PC that uses the program to correct the problem of HotfixQ328310, it is likely to fail in the installation. In that case, please use the program to correct the problem of HotfixQ329623.
*6 Order USB cable separately.

Battery (LECYM/LECYU common)

LEC－JZ－CVBAT

* JZSP-BA01 manufactured by YASKAWA CONTROLS CO., LTD.

Battery for replacement
Absolute position data is maintained by installing the battery to the battery case of the encoder cable.


Weight: 10 g

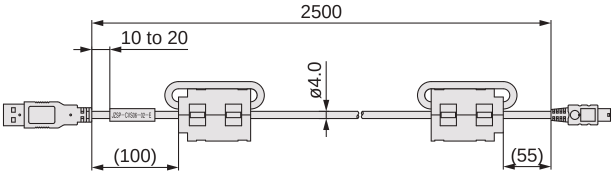
* The LEC-JZ-CVBAT is a single battery that uses lithium metal battery ER3V.
When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organisation (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organisation (IMO). If a customer is transporting products such as shown above, it is necessary to confirm the latest regulations, or the laws and regulations of the country of transport on your own, in order to apply the proper measures. Please contact SMC sales representative for details.

USB cable (2.5 m)

LEC－JZ－CVUSB

* JZSP-CVS06-02-E manufactured by YASKAWA CONTROLS CO., LTD.

Cable for connecting PC and driver when using the setup software (SigmaWin+™)
Do not use any cable other than this cable.



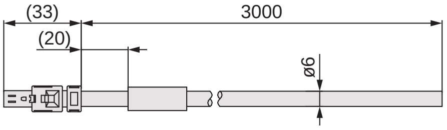
Weight: 150 g

Cable for safety function device (3 m)

LEC－JZ－CVSAF

* JZSP-CVH03-03-E manufactured by YASKAWA CONTROLS CO., LTD.

Cable for connecting the driver and device when using the safety function
Do not use any cable other than this cable.



Weight: 160 g

LECYM/LECYU Series
AC Servo Motor Driver
Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: https://www.smc.eu

Design / Selection

⚠Warning

1. **Be sure to apply the specified voltage.**
   Otherwise, malfunction or breakage may occur. If the applied voltage is lower than the specified voltage, it is possible that the load will not be able to be moved due to an internal voltage drop of the driver. Please check the operating voltage before use.
2. **Do not operate the product beyond the specifications.**
   Otherwise, a fire, malfunction, or actuator damage may result. Please check the specifications before use.
3. **Install an emergency stop circuit.**
   Please install an emergency stop outside of the enclosure so that the system operation can be stopped immediately and the power supply can be intercepted.
4. **In order to prevent any damage caused by the breakdown or malfunction of the driver and its peripheral devices, a backup system should be established in advance by giving a multiple-layered structure or a fail-safe design to the equipment, etc.**
5. **If a danger of human injury is expected due to abnormal heat generation, smoking, ignition, etc., of the driver and its peripheral devices, cut off the power supply of the product and the system immediately.**

Handling

⚠Warning

1. **Do not touch the inside of the driver and its peripheral devices.**
   Doing so may cause an electric shock or damage to the driver.
2. **Do not perform the operation or setting of the product with wet hands.**
   Doing so may cause an electric shock.
3. **Products with damage or those missing any components should not be used.**
   An electric shock, fire, or injury may result.
4. **Use only the specified combination between the electric actuator and driver.**
   Failure to do so may cause damage to the actuator or the driver.
5. **Be careful not to be hit by workpieces while the actuator is moving.**
   It may cause an injury.
6. **Do not connect the power supply or power on the product before confirming the area to which the workpiece moves is safe.**
   The movement of the workpiece may cause an accident.
7. **Do not touch the product when it is energised and for some time after power has been disconnected, as it is very hot.**
   Doing so may lead to a burn due to the high temperature.
8. **Before installation, wiring, and maintenance, the voltage should be checked with a tester 5 minutes after the power supply has been turned off.**
   Otherwise, an electric shock, fire, or injury may result.

Handling

⚠Warning

9. **Static electricity may cause malfunction or break the driver. Do not touch the driver while power is supplied.**
   When touching the driver for maintenance, take sufficient measures to eliminate static electricity.
10. **Do not use the product in an area where dust, powder dust, water, chemicals, or oil is in the air.**
    It will cause failure or malfunction.
11. **Do not use the product in an area where a magnetic field is generated.**
    It will cause failure or malfunction.
12. **Do not install the product in an environment containing flammable gas, explosive gas, or corrosive gas.**
    It could lead to fire, explosion, or corrosion.
13. **Radiant heat from strong heat sources, such as a furnace, direct sunlight, etc., should not be applied to the product.**
    It will cause failure of the driver or its peripheral devices.
14. **Do not use the product in an environment subject to a temperature cycle.**
    It will cause failure of the driver or its peripheral devices.
15. **Do not use the product in a place where surges are generated.**
    When there are units that generate a large amount of surge around the product (e.g. solenoid type lifters, high-frequency induction furnaces, motors, etc.), this may cause deterioration or damage to the product’s internal circuit. Avoid sources of surge generation and crossed lines.
16. **Do not install the product in an environment under the effect of vibrations and impacts.**
    It will cause failure or malfunction.
17. **When a surge-generating load, such as a relay or solenoid valve, is driven directly, use a product that incorporates a surge absorption element.**

Installation

⚠Warning

1. **Install the driver and its peripheral devices on a fireproof material.**
   Direct installation on or near a flammable material may cause a fire.
2. **Do not install the product in a place subject to vibrations and impacts.**
   It will cause failure or malfunction.
3. **The driver should be mounted on a vertical wall in a vertical direction. Also, be sure not to cover the driver’s suction/exhaust ports.**
4. **Install the driver and its peripheral devices on a flat surface.**
   If the mounting surface is distorted or uneven, an unacceptable force may be added to the housing, etc., causing problems.

LECYM/LECYU Series
AC Servo Motor Driver
Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: https://www.smc.eu

Power Supply

⚠Caution

1. **Use a power supply that has low noise between lines and between the power and ground.**
   In cases where noise is high, an isolation transformer should be used.
2. **To prevent lightning surges, appropriate measures should be taken. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.**

Wiring

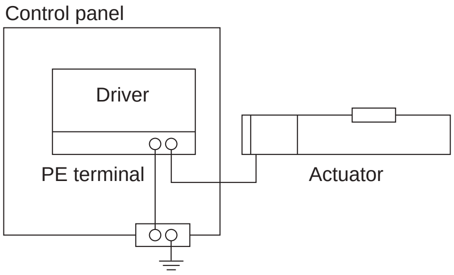
⚠Warning

1. **The driver will be damaged if a commercial power supply (100/200 V) is added to the driver’s servo motor power (U, V, and W). Be sure to check wiring for mistakes when the power supply is turned on.**
2. **Connect the ends of the U, V, and W wires of the motor cable correctly to the phases (U, V, and W) of the servo motor power. If these wires do not match up, the servo motor cannot be controlled.**

Grounding

⚠Warning

1. **For grounding the actuator, connect the copper wire of the actuator to the driver’s protective earth (PE) terminal and connect the copper wire of the driver to the earth via the control panel’s protective earth (PE) terminal.**
   Do not connect them directly to the control panel’s protective earth (PE) terminal.



2. **In the unlikely event that a malfunction is caused by the ground, please disconnect it.**

Maintenance

⚠Warning

1. **Perform a maintenance and inspection periodically.**
   Confirm wiring and screws are not loose.
   Loose screws or wires may cause unintentional malfunction.
2. **Conduct an appropriate functional inspection after completing the maintenance and inspection.**
   At times where the equipment or machinery does not operate properly, conduct an emergency stop of the system. Otherwise, an unexpected malfunction may occur and it will become impossible to ensure safety. Conduct a test of the emergency stop in order to confirm the safety of the equipment.
3. **Do not disassemble, modify, or repair the driver and its peripheral devices.**
4. **Do not put anything conductive or flammable inside the driver.**
   It may cause a fire.
5. **Do not conduct an insulation resistance test or withstand voltage test on this product.**
6. **Ensure sufficient space for maintenance activities.**
   Design the system allowing the required space for maintenance and inspection.

Model Selection
Step Motor (Servo/24 VDC)/Servo Motor (24 VDC) LEY LEYG
AC Servo Motor LEY LEYG
Environment LEY-X5 25A-LEY
Step Motor (Servo/24 VDC)/Servo Motor (24 VDC) LECA6 LEC-G LECP1 LECPA JXC□
AC Servo Motor LECS□ LECY□
Specific Product Precautions

⚠ Safety Instructions

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

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

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

⚠ Warning

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

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

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

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

⚠ Caution

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

Limited warranty and Disclaimer/Compliance Requirements

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

Limited warranty and Disclaimer

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

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

Compliance Requirements

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

⚠ Caution

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

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

Revision History

Edition C	- The in-line motor type LEYD series has been added. - The guide rod type LEYG series has been added. - The guide rod type/in-line motor type LEYGD series has been added. - The LECP1 series programless controller has been added. - A standard cable has been added to the actuator cable types. - The AC servo motor (100/200 W) type LEYS series has been added. - The LECSA/LECSB series AC servo motor driver has been added. - Number of pages has been increased from 38 to 94.	PY
Edition D	- Size 40 has been added to the LEY/LEYG series step motor (servo/24 VDC). - Size 63 has been added to the AC servo motor rod type LEY series. - The dust-tight/water-jet-proof specification has been added to the rod type. - Sizes 25 and 32 have been added to the AC servo motor guide rod type LEYG series. - The LECPA series step motor driver has been added. - The LEC-G series gateway unit has been added. - The LECSC/LECSS series AC servo motor driver has been added. - UL-compliant products have been added. - The controller setting kit (LEC-W2) has been changed. - Number of pages has been increased from 94 to 160.	RP
Edition E	- Intermediate strokes have been added to the LEY63. - Normally-closed solid state auto switches have been added. - The JXC series step motor controller has been added. - The controller setting kit has been changed to the communication cable for controller setting (LEC-W2A). - Errors in text have been corrected. - Number of pages has been increased from 160 to 286.	YR

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