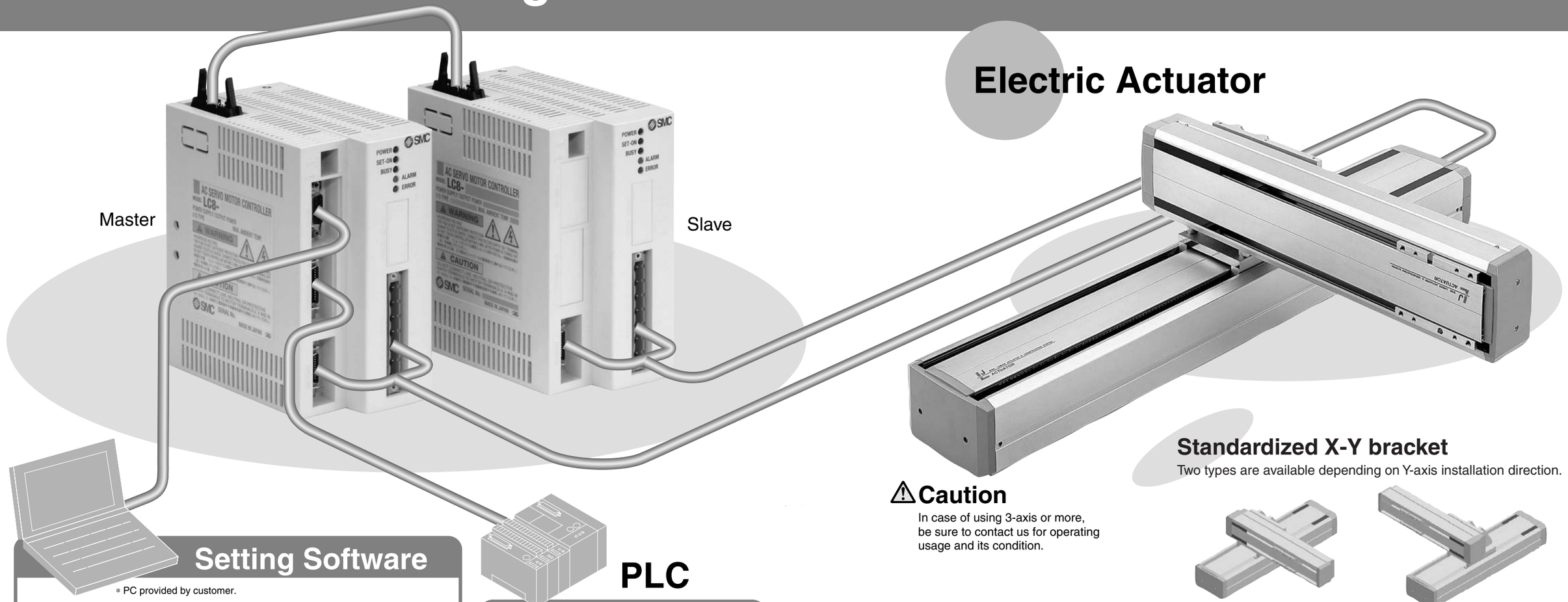
Positioning Driver

Series LC8

For AC Servomotor

Compliant with Series LJ1, LG1 and LTF.



Electric Actuator

⚠ Caution

In case of using 3-axis or more, be sure to contact us for operating usage and its condition.

Standardized X-Y bracket

Two types are available depending on Y-axis installation direction.

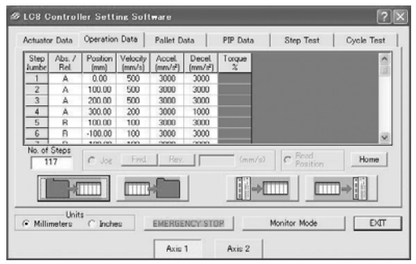
Setting Software

∗ PC provided by customer.

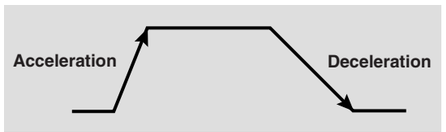
Input positioning data from controller setting software.

■ Each data is set collectively from master.

Setting data dedicated for each slave is at one time from setting software after connecting the communications cable with master.



■ The acceleration and the deceleration can be set individually.



PLC

PLC

Manipulation panel

24 VDC voltage

∗ Provided by customer

Stepping Operation

Using I/O of a PLC, able to set the 117 patterns (steps) positioning.

Compliant Actuators

Series LJ1 | Series LG1 | Series LTF

Variations

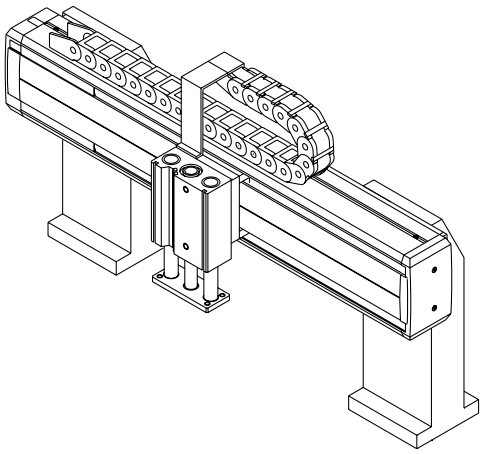
Motor capacity		Series LJ1	Series LG1	Series LTF
50 W	Payload	10 kg	—	—
	Max. speed	600 mm/s		
100 W	Payload	30 kg	30 kg	30 kg
	Max. speed	1000 mm/s	1000 mm/s	500 mm/s
200 W	Payload	60 kg	—	50 kg
	Max. speed	1000 mm/s		1000 mm/s

∗ For detailed information, please refer to each series.

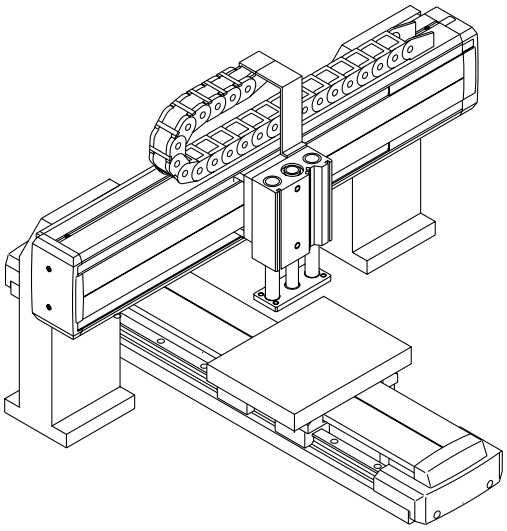
Application Example Using LC8

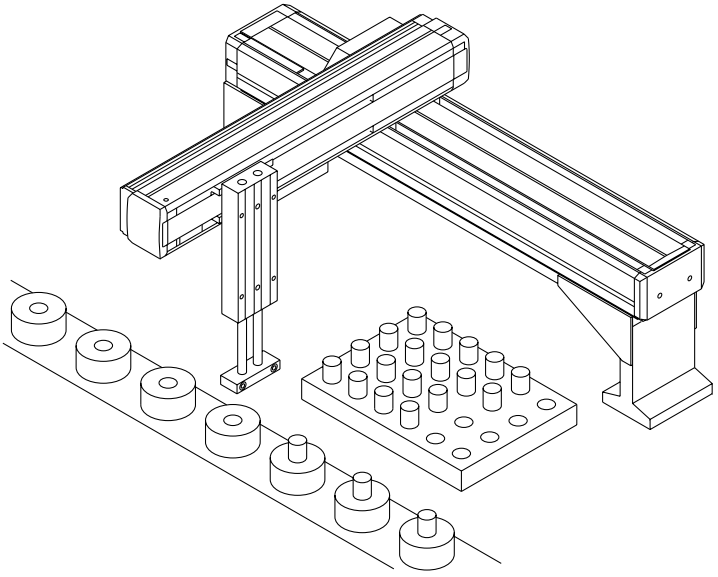
Pick & Place

For multi-point positioning, it can be operated in accordance with the commands from a PLC, etc. by simply programming the operation data into the LC8.



Palletizing motion

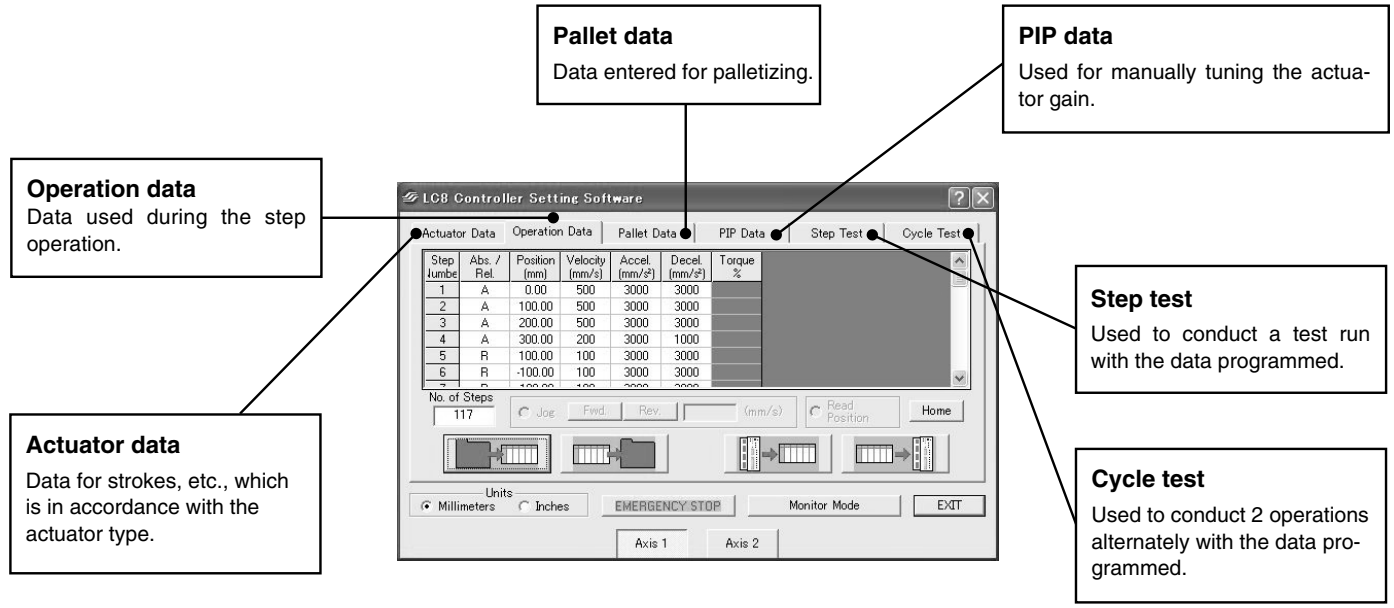




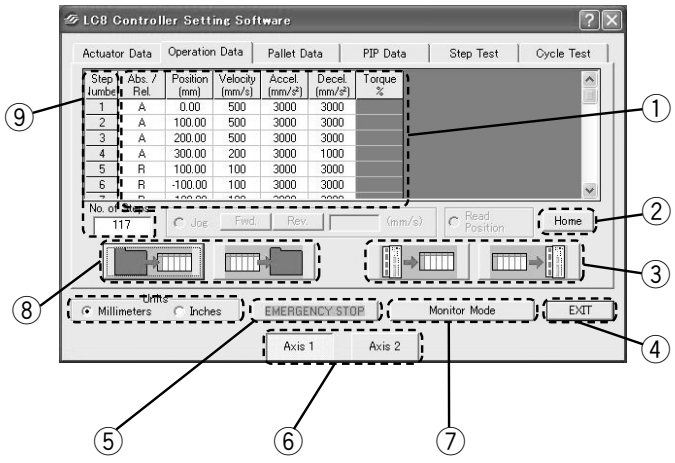
By combining to form 2-axis, a motion such as palletizing is possible.
If programming the positioning motion into LC8, it will operate in accordance with the command by PLC, etc.
(Makeup motion cannot be done)

LC8 Controller Setting Software

Principal Functions



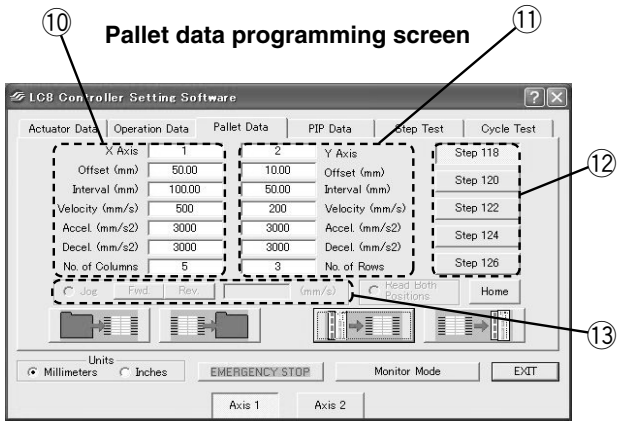
Operation data programming screen



Explanation for operation data programming screen

No.	Description	Function
①	Inputting data	Program the transfer mode, position, speed, acceleration, deceleration, torque (in torque mode).
②	Returning to home position	Conduct motion to return to home position from software.
③	Transmitting/ Receiving the data	Transmit/Receive the data to and from LC8.
④	Exit	Close the program.
⑤	Emergency stop	Emergency stop function, as well as displaying the status of emergency stop.
⑥	Axis programming	Select the axis number.
⑦	Monitor mode	Switch to the monitor mode.
⑧	Reading file/Save	Write/Read the data in/out of the file.
⑨	Selecting step number	Display the step number for operation data.

Pallet data programming screen



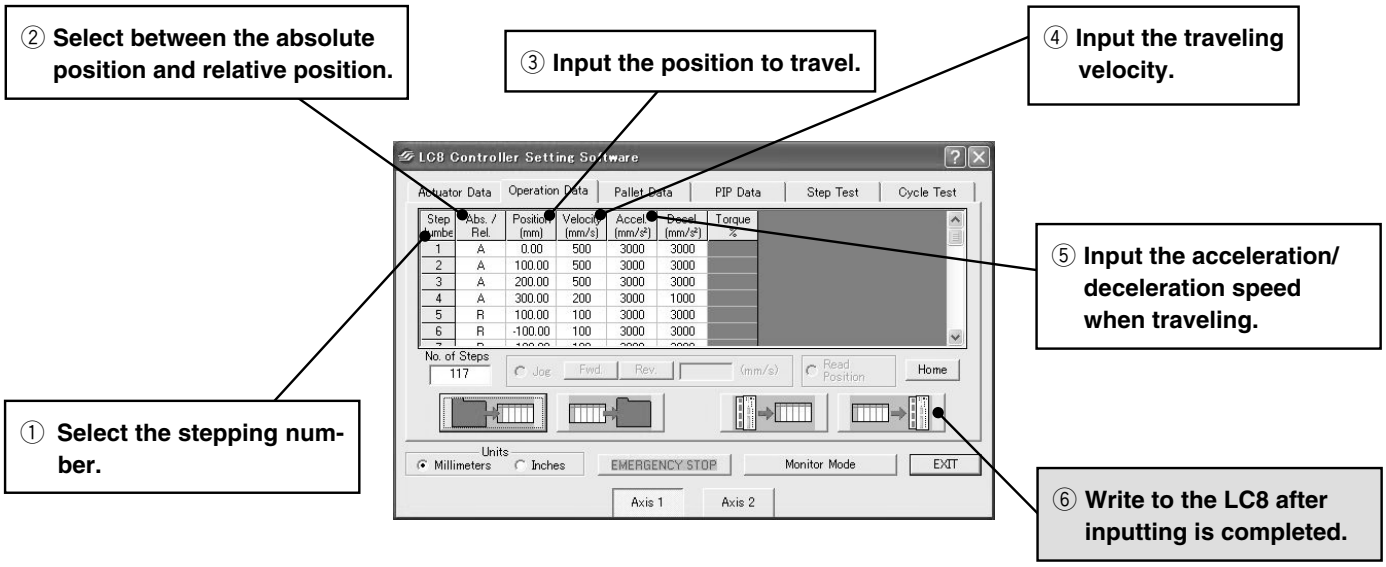
Explanation of pallet data programming screen

No.	Description	Function
⑩	Programming the X-axis	Program the data for the actuator in the X-axis.
⑪	Programming the Y-axis	Program the data for the actuator in the Y-axis.
⑫	Step number	Switches the display between 5 different pallet data.
⑬	Jog	Program the position by jog operation.

Programming the Stepping Data and Executing It (For details, please refer to the “Instruction Manual”.)

How to Input the Stepping Data

Able to input the stepping data by using controller setting software.



How to Operate the Stepping Data

Operate the stepping data input communicated with the signal of a PLC.

Example) In case of operating the motion of step 1.

Step 1, Input the IN signal.

↓

Input the START signal.

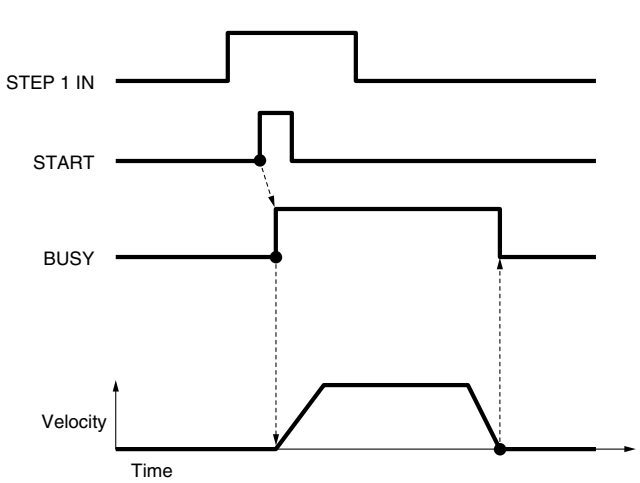
↓

Motion starts.
BUSY signal will turn ON while operating.

↓

If the motion is completed, BUSY signal will turn OFF.

Timing Chart



2-Axis Step Operation

Example: In case of operating the motion of step 2.

Step 2, Input the IN signal.

↓

Input the START signal.

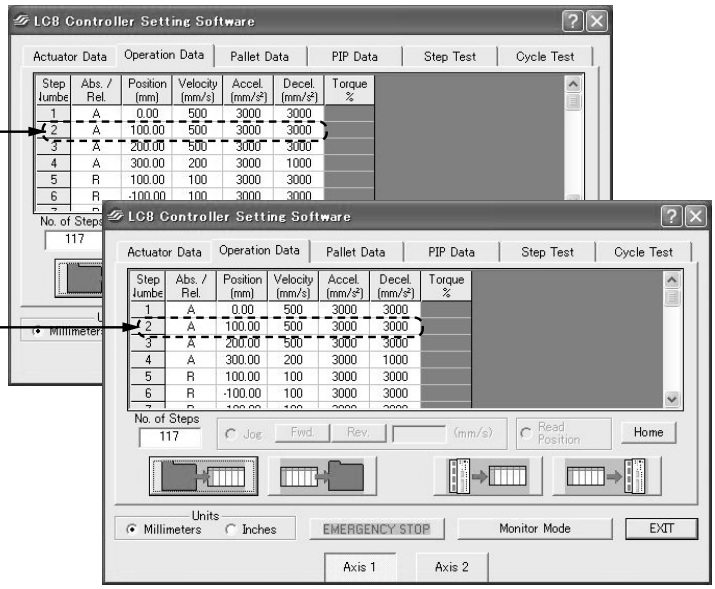
↓

X- and Y-axis will start actuating respectively. BUSY signal will turn ON while operating.

↓

The BUSY signal will turn off when the motion of the X- and Y-axis are both completed.

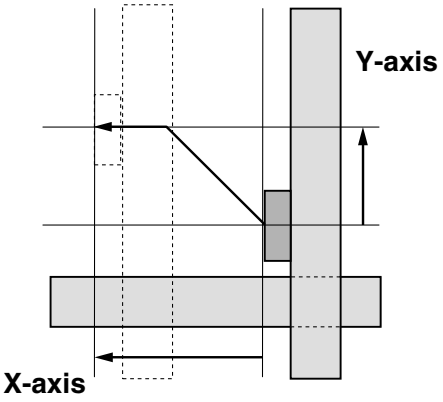
Y-axis



X-axis

In case of using by 2-axis, if the step number is indicated, and START signal is input, motion of transfer will get started in line with the step data for X- and Y-axis respectively.

Although Y-axis motion is first completed, BUSY won't turn OFF until X-axis will complete its motion. Only when X- and Y-axis will be completed, BUSY signal will turn OFF.



Precautions on Connecting 2-Axis

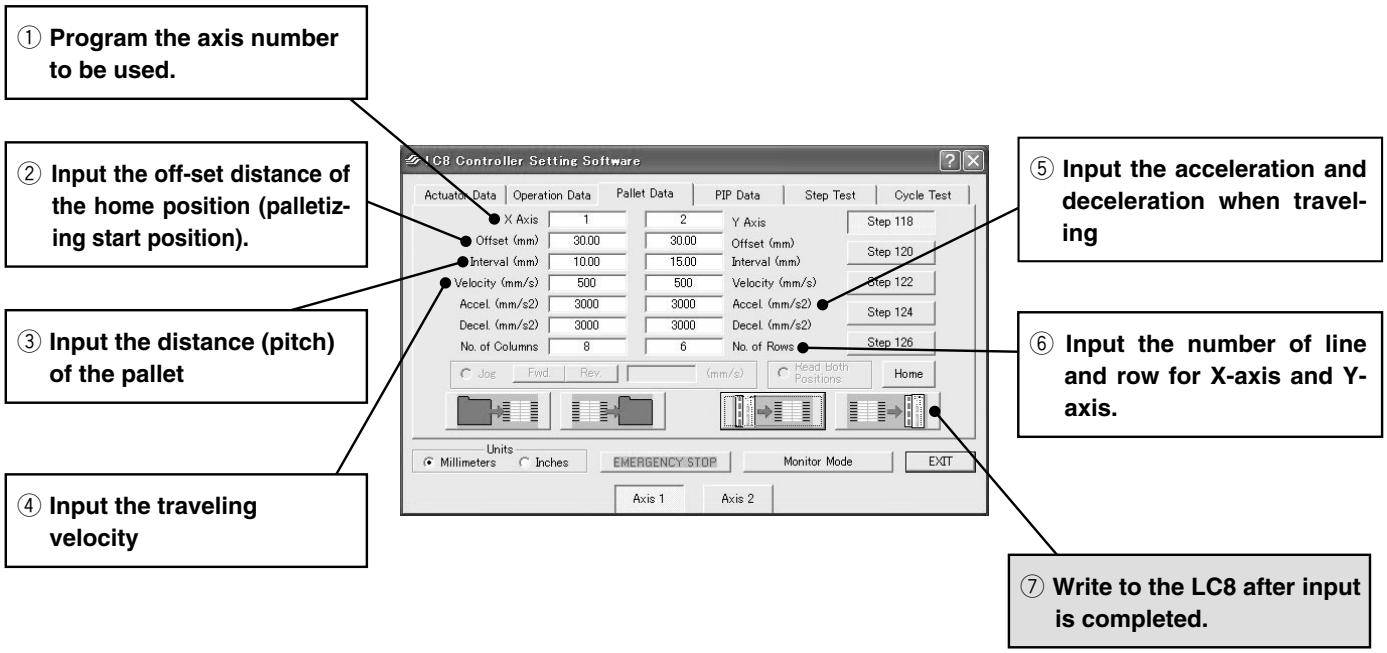
⚠Caution

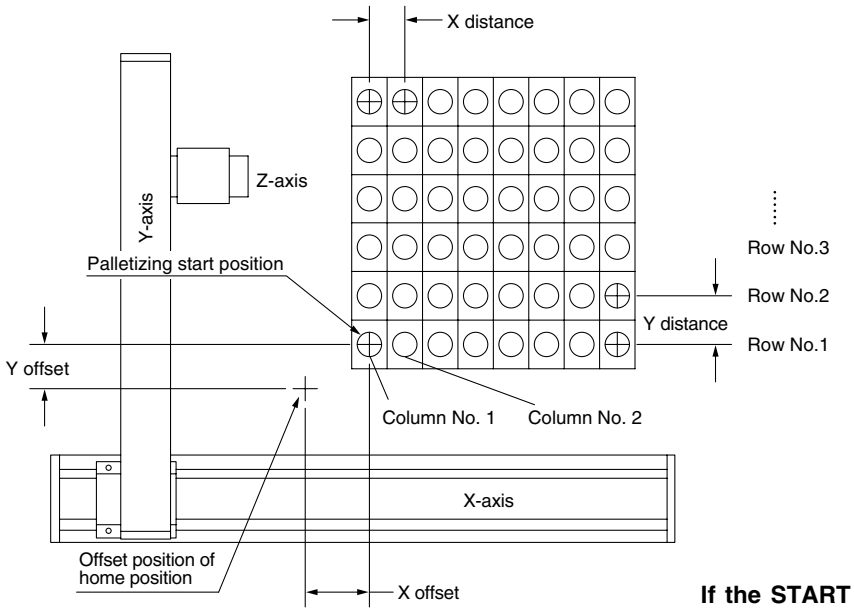
1. **Motion for returning to home position starts 2-axis simultaneously. When returning to home position, please design the equipment so that the components inside the equipment should not interfere with each other.**
2. **In the case of entering step data for "Motion for 1-axis only", enter step data by means of setting the "Relative coordinates to the 0 mm position" for the step data of the stopped axis.**

How to Input the Pallet Data (For details, refer to “Instruction Manual”.)

How to Input the Pallet Data

Able to input the pallet data by attached programming software for controller.





If the START signal is inputted after the step number of the palletizing data has been inputted, it will move to the 1st row/1st column of the pallet.

On every input of the START signal by using the same step number, it will move to the 2nd row/1st column, 3rd row/1st column…1st row/2nd column on the pallet. Each respective move is completed when BUSY signal is turned OFF.

Positioning Driver/For AC Servomotor

Series LC8

Compliant actuators/Series LJ1, Series LG1, Series LTF, Series LX

How to Order

Master **LC8 − B [1] H [1] [N] − M [ ]**

Motor capacity

1	50 W
2	100 W
3	200 W

Power voltage

1	100 VAC/115 VAC
2	200 VAC/230 VAC

Command I/O

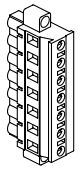
N	NPN
P	PNP

Mounting bracket

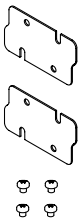
Nil	None
F	Mounting bracket

Accessory

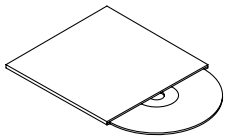
①	**LC8-1-MP**	Motor/Power connector
②	**LC8-1-B**	Kit for mounting bracket (Designated only with mounting bracket)
③	**LC8-1-W1**	LC8 controller installation software



①



②



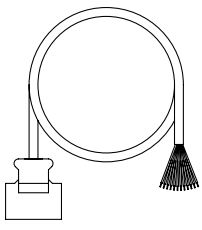
③

Option Note) Purchase separately.

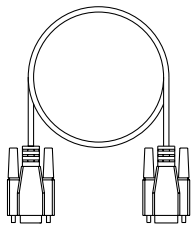
①	**LC8-1-CN**	Command I/O connector
②	**LC8-1-1050**	Connector with command I/O cable (0.5 m)
	LC8-1-1300	Connector with command I/O cable (3 m)
③	**LC8-1-1050P**	With connector stick terminals with command I/O cable (0.5 m)
④	**LC8-1-R03C**	RS-232C communications cable (3 m)

① **Made by Sumitomo 3M** **Connector: 10126-3000PE**
Shell: 10326-52-A0-008 (or equivalent)
② **Cable terminal: Individual wires**
③ **Cable terminal: Stick terminals (compliant with PC wiring system)** Note 2)

①



②, ③



④

Note 1) Either ① or ② or ③ will be required.
Note 2) As for PC wiring system, please confirm by Electric Products (CAT. 150) catalog.

Precautions on Using Master

⚠ Caution

1. **In case of using in 1-axis, use a master. (Slave alone cannot be used.)**
2. **Regarding the use of 3-axis or more, be sure to contact us for how-to-use and operating conditions.**

How to Order

Slave **LC8 − B [1] H [1] − V [ ]**

Motor capacity

1	50 W
2	100 W
3	200 W

Power voltage

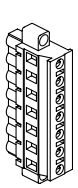
1	100 VAC/115 VAC
2	200 VAC/230 VAC

Mounting bracket

Nil	None
F	Mounting bracket

Accessory

①	**LC8-1-MP**	Motor/Power connector
②	**LC8-1-B**	Kit for mounting bracket (Designated only with mounting bracket)



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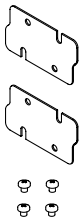
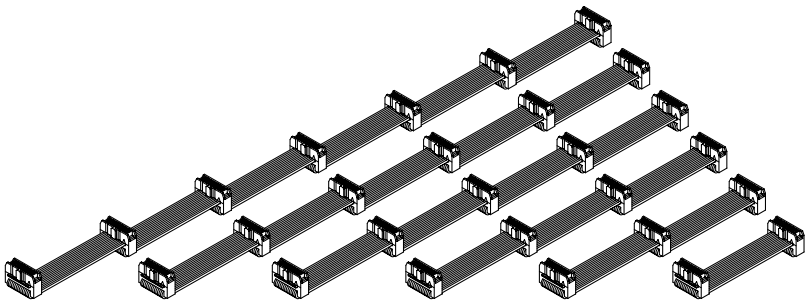


②

Option Note) Purchase separately.

①	**LC8-1-C2**	2-axis communications cable
	LC8-1-C3	3-axis communications cable
	LC8-1-C4	4-axis communications cable
	LC8-1-C5	5-axis communications cable
	LC8-1-C6	6-axis communications cable
	LC8-1-C7	7-axis communications cable



①

Precautions on Connecting Slave

⚠ Caution

1. **Motion for returning to the home position starts simultaneously for master and slave. Design the equipment so that it will not interfere with components in equipment when returning to the home position.**
2. **If the START signal is input, the designated operation data for all the axes will start to the designated step number. For the operation data of the axis which should not operate, enter "Relative coordinates to the 0 mm position".**
3. **In case of using with single axis, use a master. (Slave alone cannot be used.)**
4. **Regarding the use of 3-axis or more, be sure to contact us for how-to-use and operating conditions.**

Specifications

Model	LC8-B□□1□-□□	LC8-B□□2□-□□
Power supply	100 to 115 V ± 10% 50/60 Hz	200 to 230 V ± 10% 50/60 Hz
Dimensions	141 mm x 75 mm x 130 mm	
Mass	0.85 kg	

Electrical Specifications

Model	LC8-B1□1 □-□□	LC8-B2□1 □-□□	LC8-B3□1 □-□□	LC8-B1□2 □-□□	LC8-B2□2 □-□□	LC8-B3□2 □-□□
Motor capacity	50 W	100 W	200 W	50 W	100 W	200 W
Operating ambient temperature	0 to 50°C		0 to 40°C	0 to 50°C		0 to 40°C
Operating ambient humidity	35 to 85% (No condensation)					
Rated power consumption	80 VA	150 VA	320 VA	80 VA	160 VA	300 VA
Max. power consumption	230 VA	450 VA	960 VA	240 VA	460 VA	900 VA
Position detecting method	Incremental encoder					
Withstand voltage	1000 VAC (1 minute between terminal and case)					
Insulation resistance	2 MΩ (500 VDC) (Between terminal and case)					
Anti-noise	1000 Vp-p 1 μs, Start-up time 1 ns					

Data Input

Item	Performance/Specifications
Number of steps	117 steps at the maximum
Palletizing pattern	5 patterns (when using master, slave)

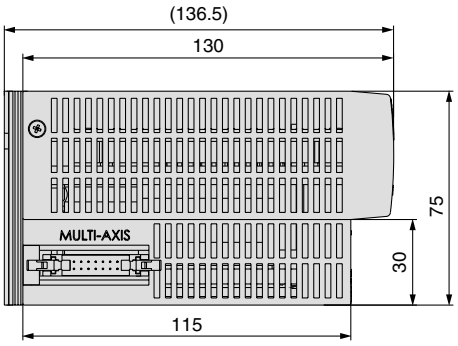
Command I/O Specifications

Model	LC8-B□□□N-□□	LC8-B□□□P-□□
Command I/O input	+24 V common, 24 VDC ± 10%, Minimum 6 mA	PLC GND common, 24 VDC ± 10%, Minimum 6 mA
Command I/O output	NPN open collector (sink type), 24 VDC ± 10%, Maximum 80 mA	PNP open collector (source type), 24 VDC ± 10%, Maximum 80 mA
Minimum input pulse width	10 ms (E. Stop is 100 ms or more.)	
Leakage current	10 μA or less	
Internal voltage drop	0.8 V or less	

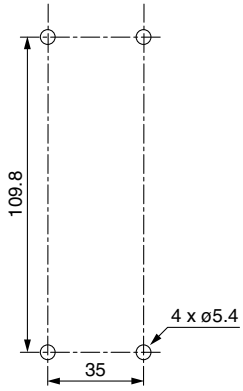
Safety Items

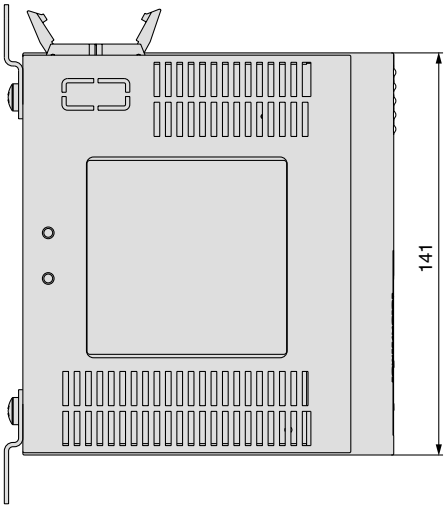
Item	Performance/Specifications
Alarming function	Over voltage/Low voltage, FWD/RVS limit switch, Overload, Motor drive circuit, Encoder connection, Forward soft stroke limit, Absolute home position stroke limit, Communications, Non-returning to home position, Over current, Current limit, Initialization of palletizing data, RS-232 communications
Error function	Emergency stop, Step number

External Dimensions

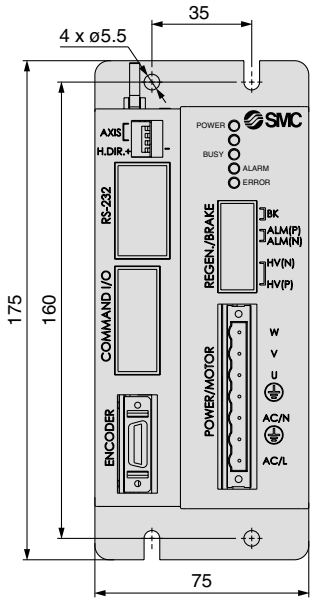


Mounting hole dimensions when mounting bracket isn't used.



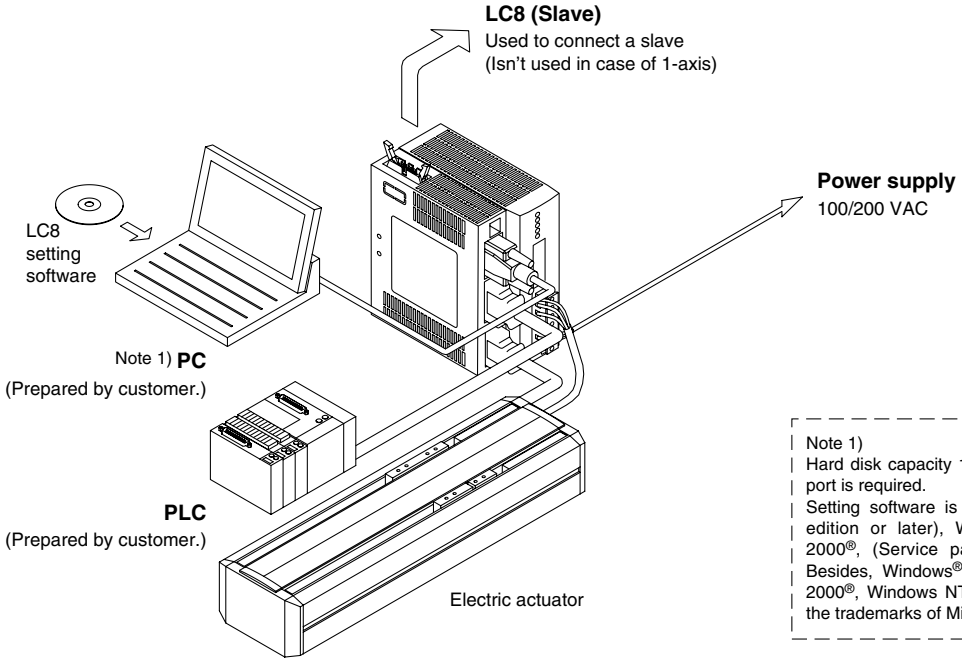


Mounting hole dimensions when mounting bracket is used.



System Composition

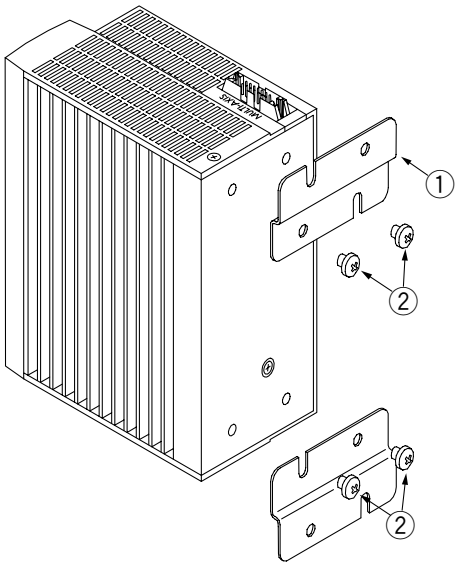
Example of using with 1-axis step operation (In case of using with X-Y, a master and a slave is required.)



Note 1)
Hard disk capacity 12 MB, RAM 4 MB or more, and RS232C port is required.
Setting software is compliant to Microsoft Windows 95® (B edition or later), Windows 98®, Windows NT®, Windows 2000®, (Service pack 6), Windows Me®, Windows XP®. Besides, Windows®, Wndows 95®, Windows 98®, Windows 2000®, Windows NT®, Windows Me® and Windows XP® are the trademarks of Microsoft Corporation.

Mounting Method

LC8-B□□□□-□F (In the case of a bracket option.)



Perform by mounting the attached bracket. For mounting dimensions please refer to the external dimension on the prior page. For wall mounting, please prepare the required M5 screws (4 pcs.).

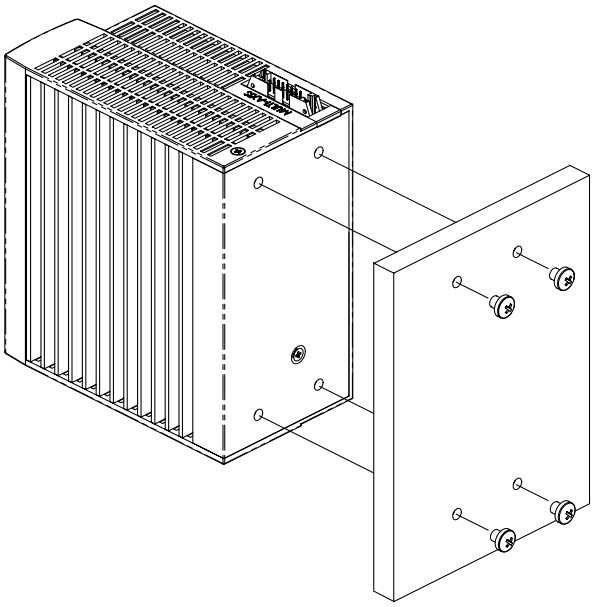
Accessory Contents

①	Mounting bracket	2 pcs.
②	Mounting screw	4 pcs.

LC8-B□□□□-□ (In case that there is not bracket option.)

Please prepare M5 screws (4 pcs.). Select a screw length that does not exceed the thickness of the plate + 5 mm. Drill holes in the plate with a distance of 35 mm between the width of the holes and 109.8 mm between the height of the hole.

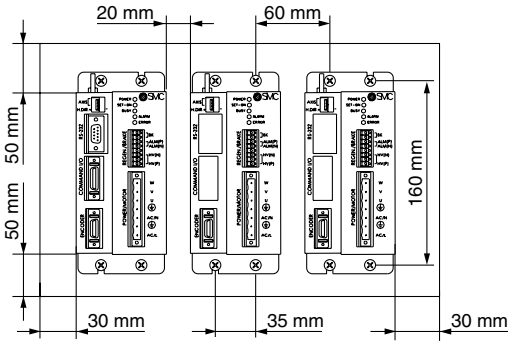
Note) Do not use screws with a longer length than designated. If longer, it is likely to cause an electrical shock or a fire.

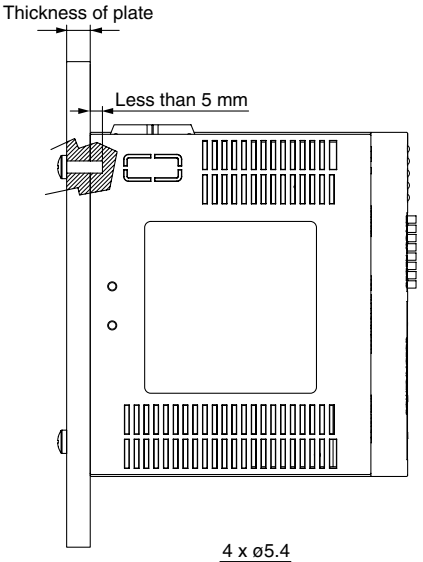


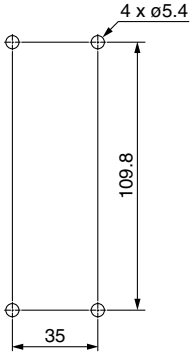
Mounting

⚠Caution

1. Consider the cooling period, so that the operating temperature of main body should be within the range of specifications. Also, allow enough distance from each side of the main body, construction and the parts.







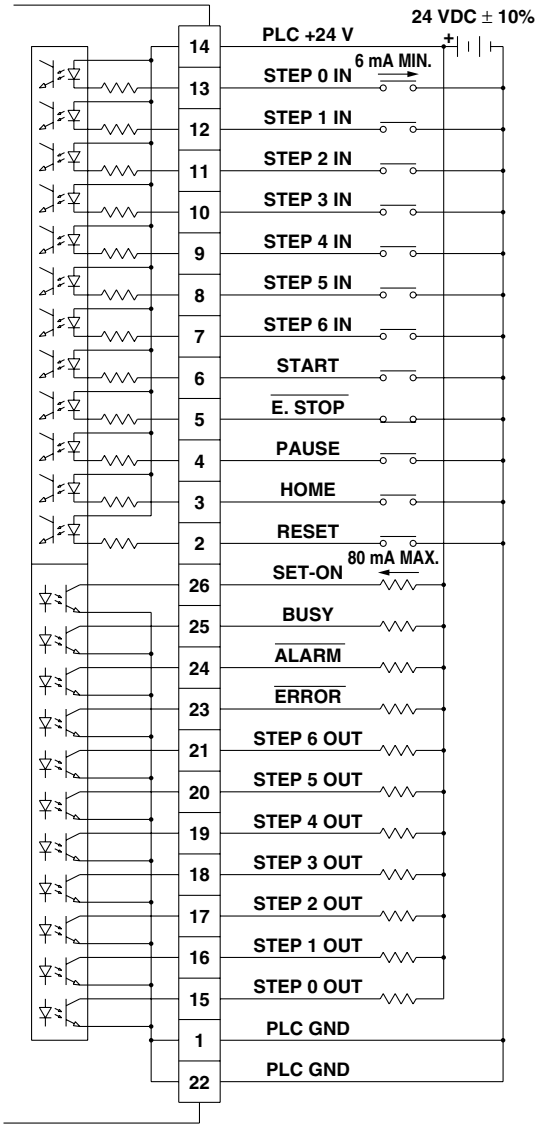
Precautions on Using Multi-axis Cable

⚠Caution

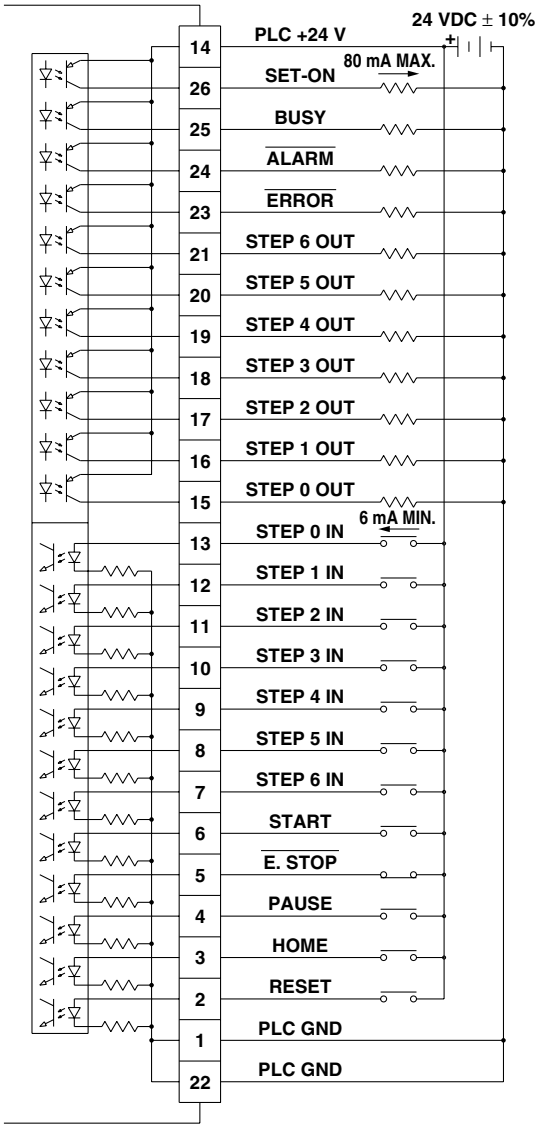
In case of connecting the LC8 with multi-axis cable, the cable should be 20 mm or longer but less than 30 mm to the driver.

Command I/O Connector's Wiring

Wiring diagram
LC8-B□□□N-M□ (NPN specification)



LC8-B□□□P-M□ (PNP specification)



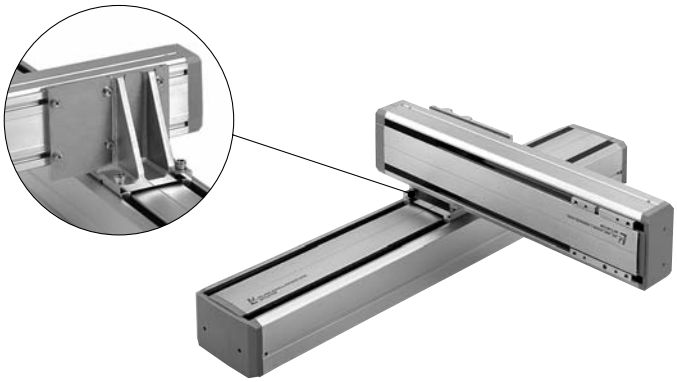
No.	Name of signals		Contents
14	**PLC +24 V**	—	Connect + 24 V for power supply for signal.
1	**PLC GND**	—	Connect 0 V for power supply for signal.
22	**PLC GND**	—	
13	**STEP 0 IN**	Input	Input the step number. (This will be configured in binary digit.)
12	**STEP 1 IN**	Input	
11	**STEP 2 IN**	Input	
10	**STEP 3 IN**	Input	
9	**STEP 4 IN**	Input	
8	**STEP 5 IN**	Input	
7	**STEP 6 IN**	Input	
6	**START**	Input	Operate the step number.
5	**E. STOP**	Input	Turn the emergency stop condition to OFF.
4	**PAUSE**	Input	Motion stops temporarily.
3	**HOME**	Input	Return to home position.
2	**RESET**	Input	Reset alarm and error.

No.	Name of signals		Contents
26	**SET-ON**	Output	Turn ON when returning to home position is completed.
25	**BUSY**	Output	Turn ON while an actuator is traveling.
24	**ALARM**	Output	Turn OFF when alarming
23	**ERROR**	Output	Turn OFF when an error occurs.
21	**STEP 6 OUT**	Output	Output the step number in motion (The output will be in binary digit.)
20	**STEP 5 OUT**	Output	
19	**STEP 4 OUT**	Output	
18	**STEP 3 OUT**	Output	
17	**STEP 2 OUT**	Output	
16	**STEP 1 OUT**	Output	
15	**STEP 0 OUT**	Output	

Input	24 VDC ± 10% Minimum 6 mA
Output	24 VDC ± 10% Maximum 80 mA

X-Y Bracket

Bracket for combining X-axis actuator and Y-axis actuator



LJ1 − BXY − J2J1 LS

Direction for Y-axis installation (Refer to "Table 1".)

LS	Extended direction: Left
RS	Extended direction: Right

Note) Extended direction viewed from X-axis motor side.

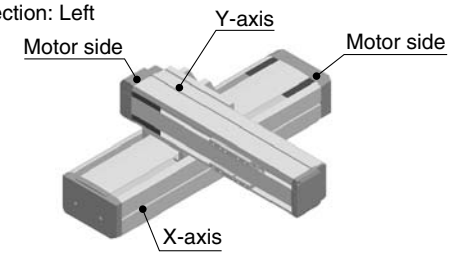
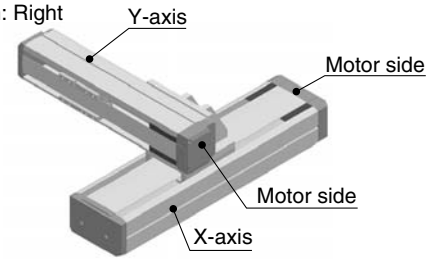
Applicable actuators

Symbol	X-axis	Y-axis
J2J1	Series L1H20	Series L1H10
J3J2	Series L1H30	Series L1H20

Y-axis, Maximum transferable mass for each stroke (kg)

Y-axis Stroke (mm)	Applicable actuator symbol	
	J2J1	**J3J2**
100	10	30
200	10	22
300	10	14
400	—	8

Table 1 Y-axis installation direction (Y-axis extended direction viewed from the X-axis motor side)

LS	Extended direction: Left 
RS	Extended direction: Right 

When selecting X-Y bracket, please contact SMC.