Controller (Step Data Input Type) JXC51/61 Series

(RoHS)



Parallel I/O

Parallel I/O type

2 Mounting

т

5	NPN	7
6	PNP	8

	Screw mounting			
1	DIN rail			
he DIN rail is not included. rder it separately.				

3 I/O cable length [m]

Nil	None
1	1.5
3	3
5	5

4 Actuator part number

Without cable specifications and actuator options Example: Enter "LEFS25EB-100" for the LEFS25EB-100B-R1 🗆 🗆 . BC-E Blank controller*1

*1 Requires dedicated software (JXC-BCW)



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

Precautions for blank controllers (JXC 1 -BC-E)

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 communication cable for controller setting (JXC-W2A-C) separately to use this software.

SMC website https://www.smcworld.com

Specifications

Model	JXC51 JXC61
Compatible motor	Step motor (Servo/24 VDC)
Power supply	Power voltage: 24 VDC ±10%
Current consumption (Controller)	100 mA or less
Compatible encoder	Battery-less absolute (4096 pulse/rotation)
Parallel input	11 inputs (Photo-coupler isolation)
Parallel output	13 outputs (Photo-coupler isolation)
Serial communication	RS485 (Only for the LEC-T1 and JXC-W2)
Memory	EEPROM
LED indicator	PWR, ALM
Cable length [m]	Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 55°C*1
Operating humidity range [%RH]	90 or less (No condensation)
Insulation resistance [M Ω]	Between all external terminals and the case: 50 (50 VDC)
Weight [g]	150 (Screw mounting), 170 (DIN rail mounting)

*1 For the LEY40 and LEYG40 series, if the vertical work load is greater than the weight listed below, use the controller at an ambient temperature of 40°C or less.

Series	Weight [kg]	Series	Weight [kg]
LEY40 EA	9	LEYG40⊟EA	7
LEY40 EB	19	LEYG40⊟EB	17
LEY40 EC	38	LEYG40 EC	36



How to Order



Controller (Step Data Input Type) **JXC51/61** Series



DIN rail AXT100-DR-⊡

∗ For □, enter a number from the No. line in the table below. Refer to the dimension drawings on page 39 for the mounting dimensions.

L .	-1	
12.5	5.25	7.5
(Pitch)		-
	t	22
ϙϙϙϙϙϙϙϙϥ		0 0
	5.5	
	1 05	
	∥ I.∠⊃	

L Dimen	sions	s [mm]													->∥⊲'''	20				
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.

JXC51/61

JXC51/61 Series

Dimensions



Controller (Step Data Input Type) **JXC51/61** Series

Wiring Example 1 LEFS * When you connect a PLC to the parallel I/O connector, use the I/O cable (LEC-CN5-D). Parallel I/O Connector * The wiring changes depending on the type of parallel I/O (NPN or PNP). Wiring diagram LEFB JXC61 C-C (PNP) JXC51 C-C (NPN) Power supply 24 VDC for I/O signal Power supply 24 VDC for I/O signal CN5 CN5 COM+ A1 --| |-COM+ A1 ⊣⊦ COM-A2 COM-A2 IN0 A3 IN0 A3 LЕY IN1 A4 IN1 A4 IN2 A5 IN2 A5 IN3 A6 IN3 A6 IN4 A7 IN4 A7 LEYG IN5 A8 IN5 A8 SETUP SETUP A9 A9 HOLD A10 HOLD A10 DRIVE DRIVE A11 A11 A12 A12 RESET RESET LES SVON A13 SVON A13 -Load-OUTO Ουτο Load B1 B1 OUT1 B2 Load OUT1 B2 Load OUT2 В3 Load OUT2 В3 Load LESH B4 Β4 OUT3 Load OUT3 Load OUT4 B5 Load OUT4 B5 Load OUT5 B6 Load OUT5 B6 Load BUSY B7 Load BUSY B7 Load B8 AREA B8 Load AREA Load LEHF SETON В9 Load SETON В9 Load INP B10 Load INP B10 Load SVRE B11 Load SVRE B11 Load *ESTOP B12 Load *ESTOP B12 Load *ALARM B13 Load *ALARM B13 Load LER **Output Signal** Input Signal JXC 1

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.
SETUP	Instruction to return to origin
HOLD	Temporarily stops operation
DRIVE	Instruction to drive
RESET	Resets alarm and interrupts operation
SVON	Servo ON instruction

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			
IND	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 pegative-logic circuit (NC)				

Signal of negative-logic circuit (N.C.)

JXC51/61

JXC51/61 Series

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.



◎: Need to be set.
O: Need to be adjusted as required.
-: Setting is not required.

SMC

Step Data (Positioning)

Necessity	Item	Details
0	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
0	Speed	Transfer speed to the target position
O	Position	Target position
0	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
0	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
0	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.
0	Moving force	Max. torque during the positioning operation (No specific change is required.)
0	Area 1, Area 2	Condition that turns on the AREA output signal.
0	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)	\bigcirc : Need to be set. \bigcirc : Need to be adjusted as required.
Necessity	Item	Details
Ø	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
O	Speed	Transfer speed to the pushing start position
Ø	Position	Pushing start position
0	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
0	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
Ø	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.
Ø	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.
0	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.
0	Moving force	Max. torque during the positioning operation (No specific change is required.)
0	Area 1, Area 2	Condition that turns on the AREA output signal.
Ø	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.

Controller (Step Data Input Type) JXC51/61 Series



SMC

* When the actuator is within the "In position" range in the pushing operation, it does not stop even if HOLD signal is input.



JXC51/61 Series

Options

Power supply plug JXC-CPW

The power supply plug is an accessory.
<Applicable cable size> AWG20 (0.5 mm²), cover diameter 2.0 mm



Communication cable for controller setting

Controller setting software

USB driver

Download from SMC's website: https://www.smcworld.com

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.

Power supply plug terminal

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

1) Communication cable JXC-W2A-C



* It can be connected to the controller directly.

2 USB cable LEC-W2-U



Shield

Conversion cable P5062-5 (Cable length: 300 mm)



* To connect the teaching box (LEC-T1-3□G□) to the controller, a conversion cable is required.

I/O cable

I FC –	CN5-	1		Controller si	de						I	PLC side	
Cable le	ength (L) [m] <u>1.5</u> 3		(Terminal no.) B1 A1	(22.4)			(ø8.9)						A1 : A13 B1
5	5		B13 A13	(14.4)				_	-				► B13
				Connector pin no.	Insulation	Dot mark	Dot color		Connector	Insulation color	Dot mark	Dot color	
				A1	Light brown		Black		B1	Yellow		Red	
*	Conductor size	: AWG28		A2	Light brown		Red		B2	Light green		Black	
				A3	Yellow		Black		B3	Light green		Red	
				A4	Yellow		Red		B4	Gray		Black	
				A5	Light green		Black		B5	Gray		Red	
				A6	Light green		Red		B6	White		Black	
				A7	Gray		Black		B7	White		Red	
Weight				A8	Gray		Red		B8	Light brown		Black	
Product n	No Weight [al		A9	White		Black		B9	Light brown		Red	
	5-1 170	91		A10	White		Red		B10	Yellow		Black	
				A11	Light brown		Black		B11	Yellow		Red	
LEC-CN	5-3 320	_		A12	Light brown		Red		B12	Light green		Black	
LEC-CN	5-5 520			A13	Yellow		Black		B13	Light green		Red	



Step Motor Controller JXCE1/91/P1/D1/L1/M1 Series Controller (Step Data Input Type) **JXC51/61** Series

Options: Actuator Cable LEFS [Robotic cable for battery-less absolute (Step motor 24 VDC)] LE-CE-1 LEFB Connector A (14.2) Cable length (L) [m] Connector C (Terminal no.) (Terminal no.) Connector B (ø5.5) 1 1.5 3 3 3 (13.5) 12.2) 5 5 7 LЕY 8*¹ 8 -2 (ø6.7) (18) 10*¹ Α -16 15 В 15*¹ Connector D (10) 20*1 С (30.7) (11) *1 Produced upon LEYG receipt of order Connector A terminal no. Connector C terminal no. Weight Signal Cable color Product no. Weight [g] Note B-1 Brown A 2 LE-CE-1 190 A-1 Red 1 Ā LES LE-CE-3 360 B B-2 Orange 6 LE-CE-5 570 B A-2 Yellow 5 LE-CE-8 COM-A/COM B-3 Green 3 900 Robotic cable COM-B/-A-3 Blue 4 LE-CE-A 1120 Connector B Connector D **LE-CE-B** 1680 Signal Cable color LESH Shield erminal no rminal no LE-CE-C 2210 Brown Vcc B-1 12 GND Black 13 A-1 B-2 Red Ā 7 A A-2 Black 6 B B-3 Orange 9 LEHF В A-3 Black 8 B-4 SD+ (RX) Yellow 11 SD-(TX) A-4 Black 10 Black 3 [Robotic cable with lock for battery-less absolute (Step motor 24 VDC)] LER LE-CE-1-B Connector A (Terminal no.) อุ Connector B Cable length (L) [m] (14.2)(ø5.5) (ø6.7) (Terminal no.) Connector D

AB

(14.7)

12.2)

(10.2)

84 £

(30.7)

SMC

him

Connector C



With lock and sensor

Molgin		
Product no.	Weight [g]	Note
LE-CE-1-B	240	
LE-CE-3-B	460	
LE-CE-5-B	740	
LE-CE-8-B	1170	Robotic cable
LE-CE-A-B	1460	
LE-CE-B-B	2120	
LE-CE-C-B	2890	

Signal A B B COM-A/COM	Connector A terminal no. B-1 A-1 B-2 A-2 B-3		Cable color Brown Red Orange Yellow Green	Connector D terminal no. 2 1 6 5 3
COM-B/—	A-3	• • • • • • • • • • • • • • • • • • • •	Blue	4
Signal	Connector B terminal no.	Shield	Cable color	Connector E terminal no.
Vcc	B-1 ·		Brown	12
GND	A-1		Black	13
Ā	B-2		Red	7
A	A-2		Black	6
B	B-3		Orange	9
В	A-3		Black	8
SD+ (RX)	B-4		Yellow	11
SD- (TX)	A-4		Black	10
	Connector C	YY	Black	3
Signal	terminal no.			
Lock (+)	B-1 ·	· · · · · · · · · · · · · · · · · · ·	Red	4
Lock (-)	A-1		Black	5
Sensor (+)	B-3	· · · · · · · · · · · · · · · · · · ·	Brown	1
Sensor (-)	A-3		Blue	2



-2 -6 (<u>13.5)</u>

-2

16

_(10)

5

15

(18)

(11)

Connector E

44 ®



JXCE1/91/P1/D1/L1/M1/51/61 Series Precautions Relating 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 or JXC□1□-BC-E, 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.) A backup file for the electric actuator with battery-less absolute encoder can only be written between version 3.4 or higher product (the backup file of version 2 or earlier products cannot be written).

Identifying Version Symbols



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.





Electric Actuators with Battery-less Absolute Encoder Specific Product Precautions

Be sure to read this before handling the products. For safety instructions and electric actuator precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Handling

ACaution

1. Absolute encoder ID mismatch error at the first connection

When connecting the controller and actuator for the first time, an alarm "Absolute encoder ID does not match" always occurs. The actuator encoder ID number is registered to the controller by resetting the alarm and paring is completed. If a different controller is connected after paring, an alarm will be generated again. The actuator encoder ID number is registered to the controller by resetting the alarm and paring is completed, but paring is performed again by resetting the alarm.

When a controller is changed after paring is completed							
	Encoder ID no. (* Numbers below are examples.)						
Actuator	17623	17623	17623	17623			
Controller	17623	17699	17699	17623			
ID mismatch error occurred?	No	Yes	Error reset \Rightarrow No				



ID number is automatically checked when the control power supply is turned on. An error is output if the ID number does not match.

2. In strong magnetic field environments, some use is limited.

A magnetic sensor is used in the encoder. Therefore, if the actuator motor is used in a strong magnetic field environment, malfunction or failure may occur.

Do not expose the actuator motor to a magnetic field with a magnetic flux density of 1 mT or more.

When installing an electric actuator and an air cylinder with an auto switch (ex. CDQ2 series) or an electric actuators side by side, maintain of 40 mm or more around the motor. Refer to the construction drawing of the actuator motor.



• When lining up actuators

SMC actuators can be used with their motors adjacent to each other. However, for actuators with a built-in auto switch magnet (the LEY and LEF series), maintain a space of 40 mm or more between the motors and the position where the magnet passes. For the LEF series, the magnet is in the middle of the table, and for the LEY series, the magnet is in the piston portion. (Refer to the construction drawings in the catalog for details.)



3. The connector size of the motor cable is different from that of the electric actuator with an incremental encoder.

The motor cable connector of an electric actuator with a battery-less absolute encoder is different from the electric actuator with an incremental encoder, connector cover dimensions are different. Take the dimensions below into design consideration.



Battery-less absolute encoder connector cover dimensions

SMC