

AC Servo Motor Driver

Series **LECS**□

Pulse Input Type/
Positioning Type



Incremental Type
Series LECSA

Pulse Input Type



Absolute Type
Series LECSB

CC-Link Direct Input Type



Absolute Type
Series LECSC

SSCNET III Type



Absolute Type
Series LECSS

LEF

LEJ

LEL

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LECA6
LECP6

LEC-G

LECP1

LECPA

LECS□

LAT3

AC Servo Motor Driver



Series LECS□ list

Series		Compatible motor (100/200 VAC)			Control method			Application/ Function	Compatible option
		100 W	200 W	400 W	Note 1) Positioning	Pulse	Network direct input	Note 2) Synchronous	Setup software LEC-MR-SETUP221
Incremental Type	 LECSCA (Pulse input type/ Positioning type)				Up to 7 points				
Absolute Type	 LECSCB (Pulse input type)								
Absolute Type	 LECSC (CC-Link direct input type)				Up to 255 points		CC-Link Ver. 1.10		
Absolute Type	 LECSS (SSCNET III type) Compatible with Mitsubishi Electric's servo system controller network						SSCNET III		

Note 1) For positioning type, setting needs to be changed to use with maximum set values.

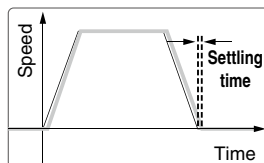
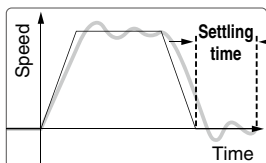
Setup software (MR Configurator) LEC-MR-SETUP221 is required.

Note 2) Available when the Mitsubishi motion controller is used for the master equipment.

Servo adjustment using auto gain tuning

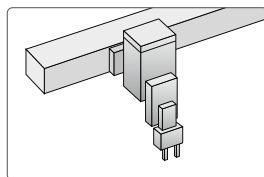
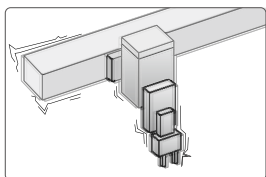
Auto resonant filter function

- Control the difference between command value and actual action



Auto damping control function

- Automatically suppress low frequency machine vibrations (up to 100 Hz)



With display setting function

One-touch adjustment button

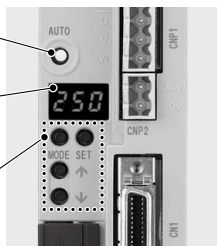
One-touch servo adjustment

Display

Display the monitor, parameter and alarm.

Settings

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



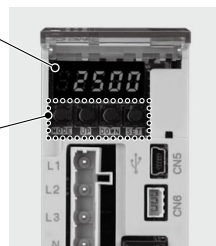
LECSA

Display

Display the monitor, parameter and alarm.

Settings

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



(With the front cover opened)

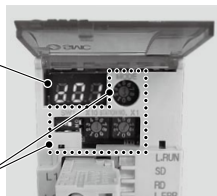
LECSB

Display

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

Settings

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



(With the front cover opened)

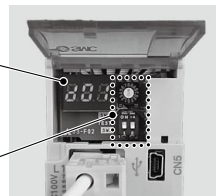
LECSB

Display

Display the communication status with the driver and the alarm.

Settings

Switches for selecting axis and switching to the test operation



(With the front cover opened)

LECSB

System Construction

Incremental encoder compatible **Series LECSA** (Pulse input type/Positioning type)

Provided by customer

Power supply

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

Option **Page 425**
Regeneration option
Part no.: **LEC-MR-RB-**

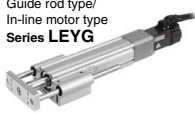
Motor cable **Page 425**
Standard cable Robotic cable
LE-CSM-S **LE-CSM-R**

Lock cable **Page 425**
Standard cable Robotic cable
LE-CSB-S **LE-CSB-R**

Electric actuator **Page 173**

Rod type
Series **LEY**

Guide rod type/
In-line motor type
Series **LEYG**



Encoder cable **Page 425**
Standard cable Robotic cable
LE-CSE-S **LE-CSE-R**

Main circuit power supply connector (Accessory)

Driver



Provided by customer

Control circuit power supply
24 VDC

Control circuit power supply connector (Accessory)

Option **Page 425**
I/O connector
Part no.: **LE-CSNA**

Option

Setup software **Page 426**
(MR Configurator™)
Part no.: **LEC-MR-SETUP221**



PC

* Order USB cable (Part no.: **LEC-MR-J3USB**) separately to use this software.

USB cable **Page 426**
Part no.: **LEC-MR-J3USB**

Provided by customer

PLC (Positioning unit)

Power supply for I/O signal
24 VDC



Absolute encoder compatible **Series LECSB** (Pulse input type)

Provided by 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 **Page 425**
Regeneration option
Part no.: **LEC-MR-RB-**

Motor cable **Page 425**
Standard cable Robotic cable
LE-CSM-S **LE-CSM-R**

Lock cable **Page 425**
Standard cable Robotic cable
LE-CSB-S **LE-CSB-R**

Electric actuator **Page 173**

Rod type
Series **LEY**

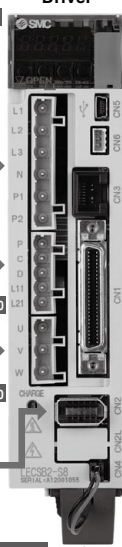
Guide rod type/
In-line motor type
Series **LEYG**



Encoder cable **Page 425**
Standard cable Robotic cable
LE-CSE-S **LE-CSE-R**

Main circuit power supply connector (Accessory)

Driver



Control circuit power supply connector (Accessory)

Motor connector (Accessory)

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

USB cable **Page 426**
Part no.: **LEC-MR-J3USB**

Option

Setup software **Page 426**
(MR Configurator™)
Part no.: **LEC-MR-SETUP221**



PC

* Order USB cable (Part no.: **LEC-MR-J3USB**) separately to use this software.

Analog monitor output
RS-422 communication

Option **Page 425**
I/O connector
Part no.: **LE-CSNB**

Provided by customer

PLC (Positioning unit)

Power supply for I/O signal
24 VDC



System Construction

Absolute encoder compatible Series LECSC

(CC-Link direct input type)

Provided by 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 Page 425
Regeneration option
Part no.: LEC-MR-RB-□

Motor cable Page 425

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

Lock cable Page 425

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

Electric actuator Page 173

Rod type
Series LEY



Encoder cable Page 425

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

Main circuit Page 420
power supply
connector
(Accessory)

Control circuit Page 420
power supply
connector
(Accessory)

Motor Page 420
connector
(Accessory)

Battery Page 426
(Accessory)
Part no.: (LEC-MR-J3BAT)

Driver

USB cable Page 426
Part no.: LEC-MR-J3USB

Option

Setup software Page 426
(MR Configurator™)
Part no.: LEC-MR-SETUP221□



PC

RS-422 communication

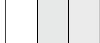
CC-Link connector
(Accessory)

Option Page 425
I/O connector
Part no.: LE-CSNA

Provided by
customer

PLC (CC-Link master unit)

Power supply
for I/O signal
24 VDC



Absolute encoder compatible Series LECSS

(SSCNET III type)

Provided by 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 Page 425
Regeneration option
Part no.: LEC-MR-RB-□

Motor cable Page 425

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

Lock cable Page 425

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

Electric actuator Page 173

Rod type
Series LEY



Encoder cable Page 425

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

Main circuit Page 420
power supply
connector
(Accessory)

Control circuit Page 420
power supply
connector
(Accessory)

Motor Page 420
connector
(Accessory)

Battery Page 426
(Accessory)
Part no.: (LEC-MR-J3BAT)

Driver

USB cable Page 426
Part no.: LEC-MR-J3USB

Option

Setup software Page 426
(MR Configurator™)
Part no.: LEC-MR-SETUP221□



PC

Option Page 425
I/O connector
Part no.: LE-CSNS

SSCNET III
optical cable
Part no.: LE-CSS-□

Option Page 425
SSCNET III
optical cable
Part no.: LE-CSS-□

Provided by
customer

PLC (Positioning unit/Motion controller)

Power supply
for I/O signal
24 VDC



AC Servo Motor Driver

Series LECS□

Power supply voltage	100 to 120 VAC 200 to 230 VAC
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Motor capacity	100/200/400 W
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Incremental Type

Series LECSA (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 pulse/rev)
- Parallel input: 6 inputs
output: 4 outputs

Absolute Type

Series LECSB (Pulse input type)



- Input type: Pulse input
- Control encoder: Absolute 18-bit encoder (Resolution: 262144 pulse/rev)
- Parallel input: 10 inputs
output: 6 outputs

Series LECS (CC-Link direct input type)



CC-Link

- Position data/speed data setting and operation start/stop
- Positioning by up to 255 point tables (when 2 stations occupied)
- Up to 32 drivers connectable (when 2 stations 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 pulse/rev)

Series LECS (SSCNET III type)



- Compatible with Mitsubishi Electric's servo system controller network
- Reduced wiring and SSCNET III optical cable for one-touch connection
- SSCNET III optical cable provides enhanced noise resistance
- Up to 16 drivers connectable with SSCNET III communication
- Applicable Fieldbus protocol: SSCNET III
(High-speed optical communication, max. bidirectional communication speed: 100 Mbps)
- Control encoder: Absolute 18-bit encoder (Resolution: 262144 pulse/rev)

AC Servo Motor Driver

Incremental Type

Series LECSA

(Pulse Input Type/Positioning Type)



RoHS

Absolute Type

Series LECSB/LECSC/LECSS

(Pulse Input Type) (CC-Link Direct Input Type) (SSCNET III Type)

Compatible actuators

LEF LEJ LEY

How to Order

Driver

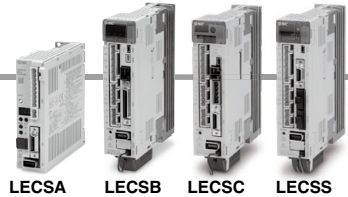
LECS A 1 - S1

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



LECSA

LECSB

LECSC

LECSS

Compatible motor type

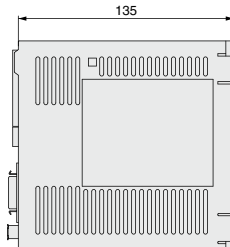
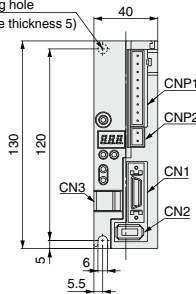
Symbol	Type	Capacity	Encoder
S1	AC servo motor (S2)	100 W	Incremental
S3	AC servo motor (S3)	200 W	
S4	AC servo motor (S4)*	400 W	
S5	AC servo motor (S6)	100 W	Absolute
S7	AC servo motor (S7)	200 W	
S8	AC servo motor (S8)*	400 W	

* Only available for power supply voltage "200 to 230 VAC".

Dimensions

LECSA

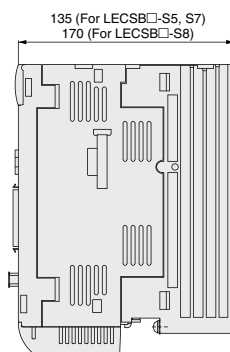
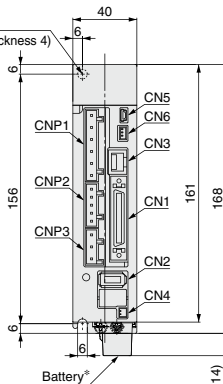
2 x $\phi 6$ Mounting hole
(Bearing surface thickness 5)



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

$\phi 6$ Mounting hole
(Bearing surface thickness 4)



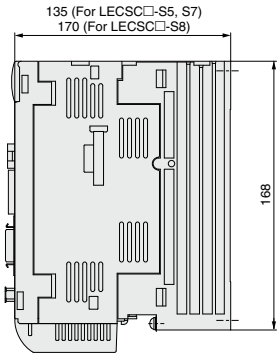
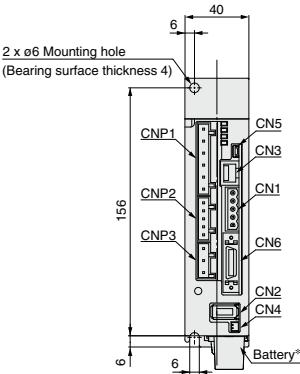
Connector name	Description
CN1	I/O signal connector
CN2	Encoder connector
CN3	RS-422 communication connector
CN4	Battery connector
CN5	USB communication connector
CN6	Analog monitor connector
CNP1	Main circuit power supply connector
CNP2	Control circuit power supply connector
CNP3	Servo motor power connector

* Battery included.



Dimensions

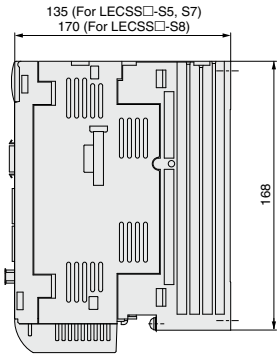
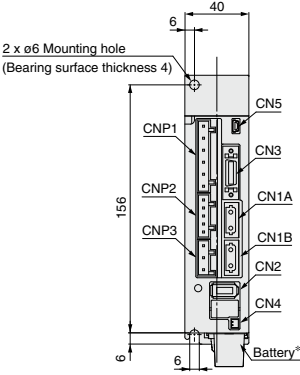
LECSC□



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

* Battery included.

LECSC□



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

* Battery included.

Specifications**Series LECSA**

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)				
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 [M Ω]		Between the housing and SG: 10 (500 VDC)				
Weight [g]		600				700

Series LECSB

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)		Three 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)				
Function	In-position range setting [pulse]	0 to ±10000 (Command pulse unit)				
	Error excessive	±3 rotations				
	Torque limit	Parameter setting or external analog 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.

Specifications

Series LECSC

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, RS-422 communication CC-Link communication (1 station occupied): 31 points CC-Link communication (2 stations occupied): 255 points RS-422 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 cable extensions and the cable length between stations.

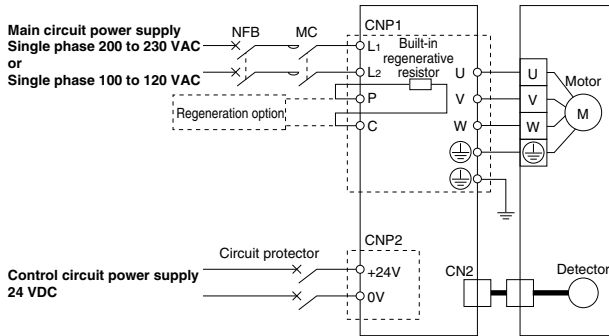
*2 USB communication and RS422 communication cannot be performed at the same time.

Series LECSS

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

Power Supply Wiring Example: LECSA

LECSA-□-□

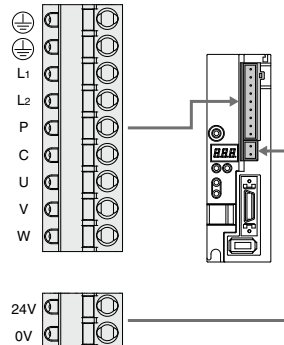


Main Circuit Power Supply Connector: CNP1 * Accessory

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).
L1	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
L2		
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



LEF

LEJ

LEL

LEY
LEYG

LES
LESH

LEPY
LEPS

LER

LEH

LECA6
LECP6

LEC-G

LECP1

LECPA

LECS□

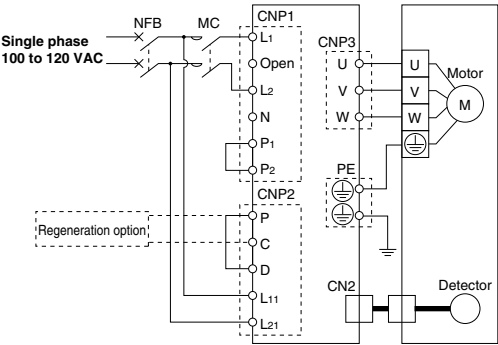
LAT3

Power Supply Wiring Example: **LECSB, LECS, LECS**

LECSB1-□

LECS1-□

LECS1-□

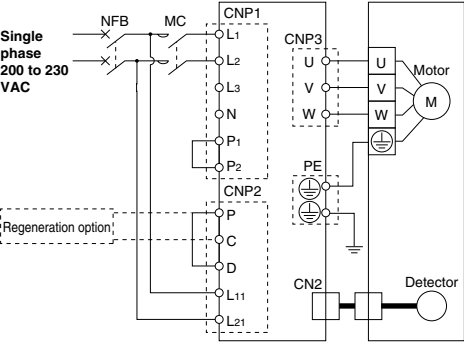


LECSB2-□

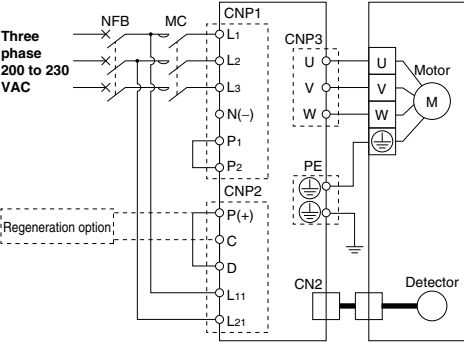
LECS2-□

LECS2-□

For single phase 200 VAC



For three phase 200 VAC



Note) For single phase 200 to 230 VAC, power supply should be connected to L1 and L2 terminals, with nothing connected to L3.

Main Circuit Power Supply Connector: CNP1 * Accessory

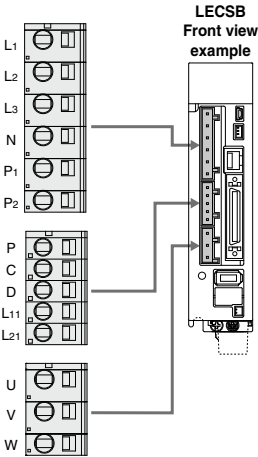
Terminal name	Function	Details
L1	Main circuit power supply	Connect the main circuit power supply. LECSB1/LECS1/LECS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L1,L2 LECSB2/LECS2/LECS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1,L2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1,L2,L3
L2		
L3		
N		
Do not connect.		
P1	Do not connect.	Do not connect.
P2		
Connect between P1 and P2. (Connected at time of shipping.)		

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		
L11	Control circuit power supply	Connect the control circuit power supply. LECSB1/LECS1/LECS1: Single phase 100 to 120 VAC, 50/60 Hz Connection terminal: L11, L21 LECSB2/LECS2/LECS2: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L11, L21 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L11, L21
L21		

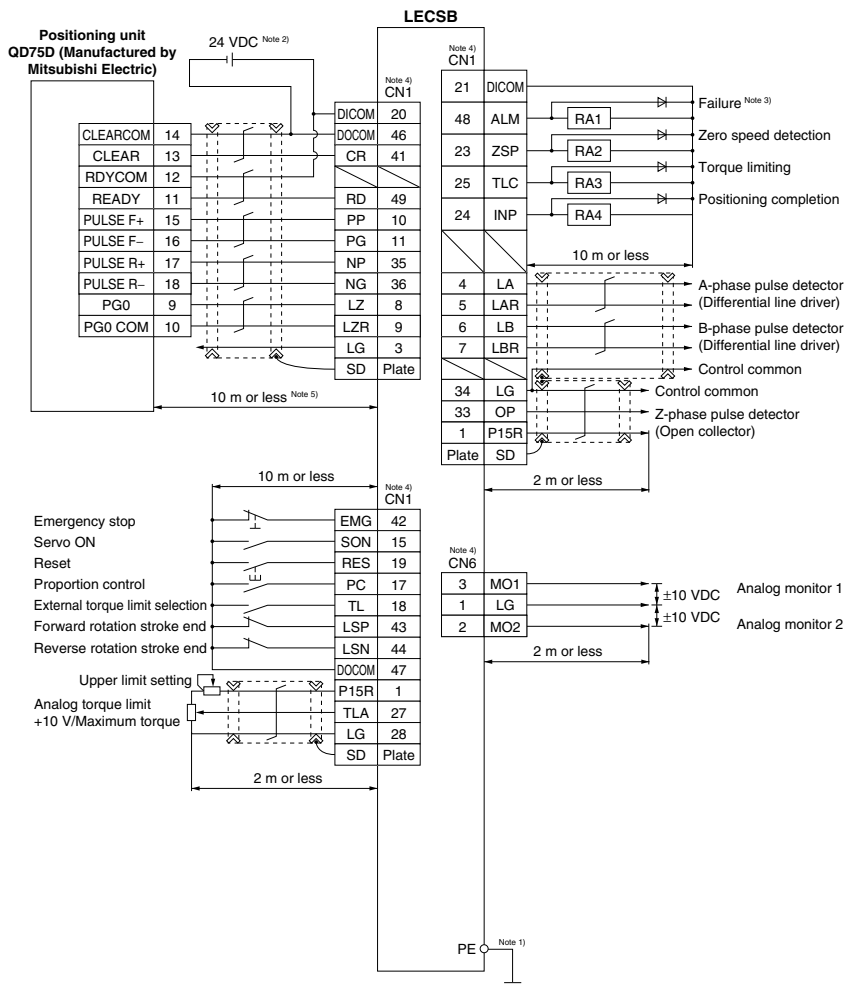
Motor Connector: CNP3 * Accessory

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)	



Control Signal Wiring Example: LECSB

This wiring example shows connection with a positioning unit (QD75D) manufactured by Mitsubishi Electric as when used in position control mode. Refer to the LECSB operation manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.



Note 1) For preventing electric shock, be sure to connect the driver circuit power supply connector (CNP1)'s protective earth (PE) terminal to the control panel's protective earth (PE).

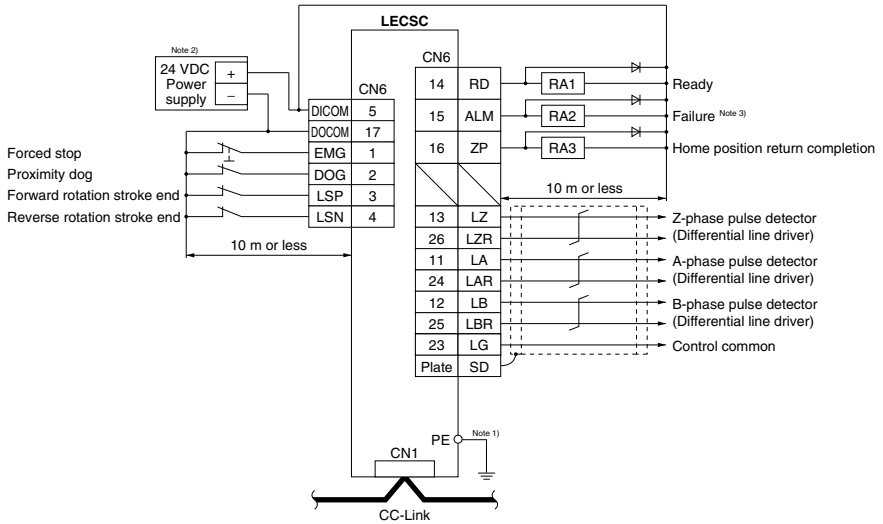
Note 2) For interface use, supply 24 VDC $\pm 10\%$ 300 mA using an external source.

Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.

Note 4) The same name signals are connected inside the driver.

Note 5) For command pulse input with a differential line driver method. For open collector method, it is 2 m or less.

Control Signal Wiring Example: LECS

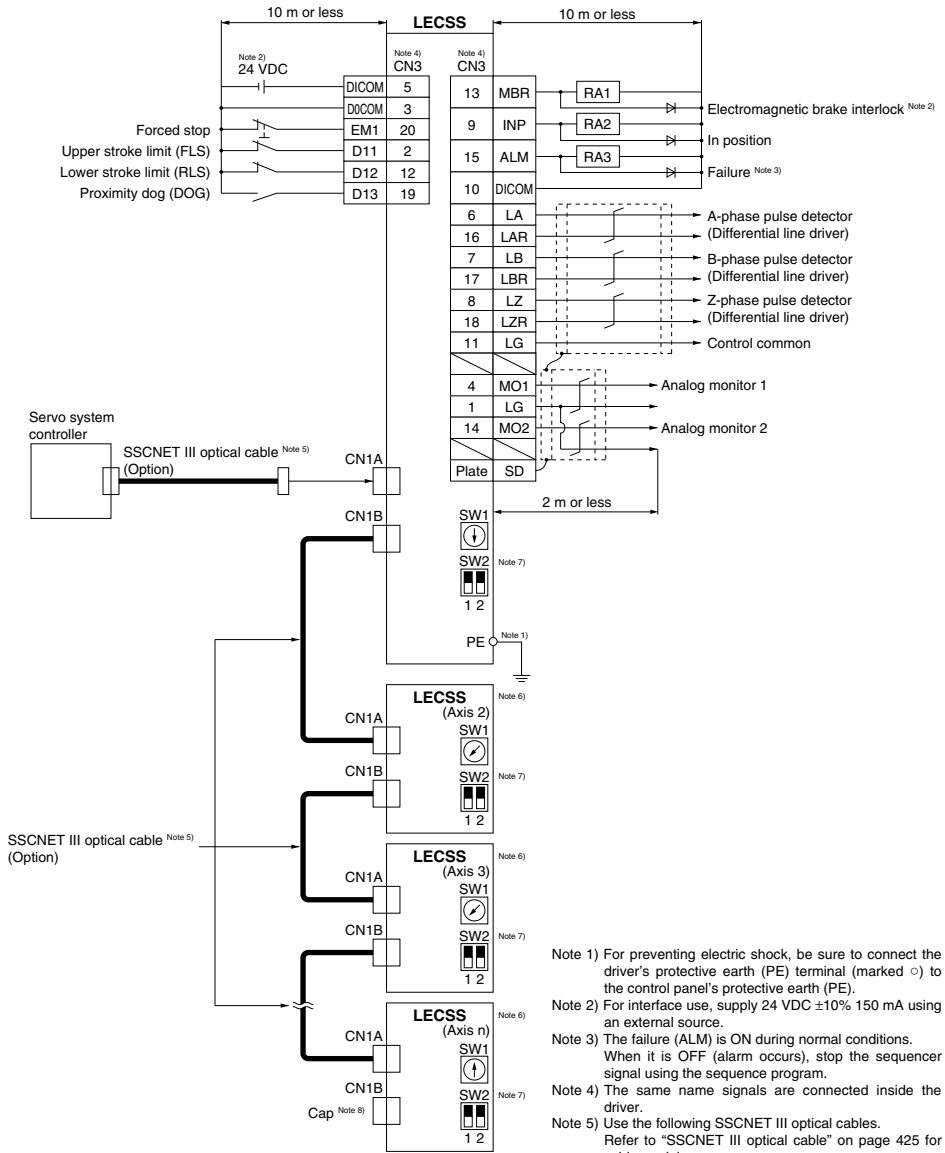


Note 1) For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ○) to the control panel's protective earth (PE).

Note 2) For interface use, supply 24 VDC $\pm 10\%$ 150 mA using an external source.

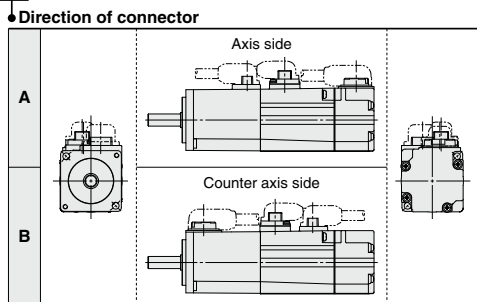
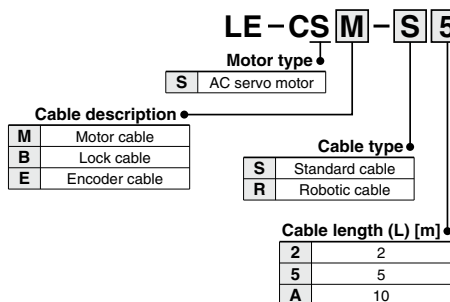
Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.

Control Signal Wiring Example: **LECSS**



- Note 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).
- Note 2) For interface use, supply 24 VDC $\pm 10\%$ 150 mA using an external source.
- Note 3) The failure (ALM) is ON during normal conditions. When it is OFF (alarm occurs), stop the sequencer signal using the sequence program.
- Note 4) The same name signals are connected inside the driver.
- Note 5) Use the following SSCNET III optical cables. Refer to "SSCNET III optical cable" on page 425 for cable models.
- | Cable | Cable model | Cable length |
|--------------------------|-------------|---------------|
| SSCNET III optical cable | LE-CSS-□ | 0.15 m to 3 m |
- Note 6) Connections from Axis 2 onward are omitted.
- Note 7) Up to 16 axes can be set.
- Note 8) Be sure to place a cap on unused CN1A/CN1B.

Motor cable, Lock cable, Encoder cable (LECS□ common)

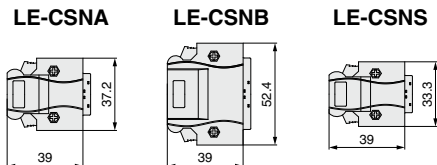


Technical drawing of the probe assembly showing dimensions: 13, 30, L, 37.4, and 18.8.

* LE-CSM-S□□ is MR-PWS1CBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSB-S□□ is MR-BKS1CBL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSE-S□□ is MR-J3NCBCL□M-A□-L manufactured by Mitsubishi Electric.
LE-CSM-R□□ is MR-PWS1CBL□M-A□-H manufactured by Mitsubishi Electric.
LE-CSB-R□□ is MR-BKS1CBL□M-A□-H manufactured by Mitsubishi Electric.
LE-CSE-R□□ is MR-J3NCBCL□M-A□-H manufactured by Mitsubishi Electric.

LE – CSN **A**

Driver type	
A	LECSA□, LECS□
B	LECSB□
S	LECSS□



* LE-CSNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit)
manufactured by 3M or equivalent item.
LE-CSNB: 10150-3000PE (connector)/10350-52F0-008 (shell kit)
manufactured by 3M or equivalent item.
LE-CSNS: 10120-3000PE (connector)/10320-52F0-008 (shell kit)
manufactured by 3M or equivalent item.

LE-CSS - 1

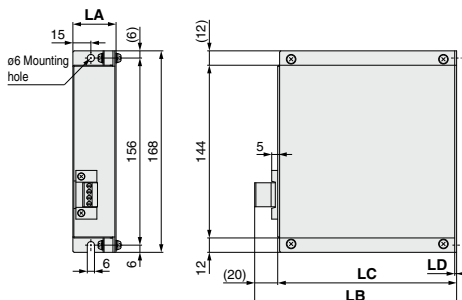
Motor type		Cable length	
S	AC servo motor	L	0.15 m
Cable description		K	0.3 m
S	SSCNET III optical cable	J	0.5 m
		1	1 m
		3	3 m

* LE-CSS-□ is MR-J3BUS□M
manufactured by Mitsubishi Electric

LEC-MR-RB-

Regeneration option type	
032	Allowable regenerative power 30 W
12	Allowable regenerative power 100 W

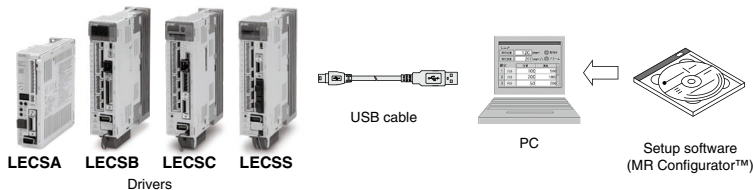
* Confirm regeneration option to be used in "Model Selection".



Model	LA	LB	LC	LD
LEC-MR-RB-032	30	119	99	1.6
LEC-MR-RB-12	40	169	149	2

* MR-RB-□ manufactured by Mitsubishi Electric.

Options



Setup software (MR Configurator™) (LECSA, LECSB, LECS, LECS common)

LEC-MR-SETUP221□

● Display language

Nil	Japanese version
E	English version

* MRJW3-SETUP221 manufactured by Mitsubishi Electric.
Refer to Mitsubishi Electric's website for operating environment and version update information.
MR Configurator™ is a registered trademark or trademark of Mitsubishi Electric.

Adjustment, waveform display, diagnostics, parameter read/write, and test operation can be performed upon a PC.

Compatible PC

When using setup software (MR Configurator™), use an IBM PC/AT compatible PC that meets the following operating conditions.

Hardware Requirements

Equipment		Setup software (MR Configurator™) LEC-MR-SETUP221□
Note 1) Note 2) Note 3) PC	OS	Windows®98, Windows®Me, Windows®2000 Professional, Windows®XP Professional / Home Edition, Windows Vista® Home Basic / Home Premium / Business / Ultimate / Enterprise Windows®7 Starter / Home Premium / Professional / Ultimate / Enterprise
	Available HD space	130 MB or more
	Communication interface	Use USB port
Display		Resolution 1024 x 768 or more Must be capable of high color (16-bit) display. The connectable with the above PC
Keyboard		The connectable with the above PC
Mouse		The connectable with the above PC
Printer		The connectable with the above PC
USB cable		LEC-MR-J3USB Note 4, 5)

Note 1) Before using a PC for setting LECSA point table method/program method or LECS point table No. input, upgrade to version C5 (Japanese version) /version C4 (English version). Refer to Mitsubishi Electric's website for version upgrade information.
Note 2) Windows, Windows Vista, Windows 7 are registered trademarks of Microsoft Corporation in the United States and/or other countries.
Note 3) This software may not run correctly depending on the PC that you are using.
Note 4) Not compatible with 64-bit Windows® XP and 64-bit Windows Vista®.
Note 5) Order USB cable separately.

USB cable (3 m)

LEC-MR-J3USB

* MR-J3USB manufactured by Mitsubishi Electric.

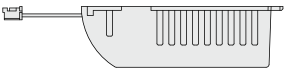
Cable for connecting PC and driver when using the setup software (MR Configurator™).
Do not use any cable other than this cable.

Battery (only for LECSB, LECS or LECS)

LEC-MR-J3BAT

* MR-J3BAT manufactured by Mitsubishi Electric.

Battery for replacement.
Absolute position data is maintained by installing the battery to the driver.





Series LECS□

Specific Product Precautions 1

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

Please download it via our website, <http://www.smcworld.com>

Design/Selection

Warning

1. Use the specified voltage.

If the applied voltage is higher than the specified voltage, malfunction and damage to the driver may result. If the applied voltage is lower than the specified voltage, there is a possibility that the load cannot be moved due to internal voltage drop. Check the operating voltage prior to start. Also, confirm that the operating voltage does not drop below the specified voltage during operation.

2. Do not use the products outside the specifications.

Otherwise, fire, malfunction or damage to the driver/actuator can result. Check the specifications prior to use.

3. Install an emergency stop circuit.

Install an emergency stop outside the enclosure in easy reach to the operator so that the operator can stop the system operation immediately and intercept the power supply.

4. To prevent danger and damage due to a breakdown or malfunction of these products, which may occur at a certain probability, a backup system should be arranged in advance by using a multiple-layered structure or by making a fail-safe equipment design, etc.

5. If there is a risk of fire or personal injury due to abnormal heat generation, sparking, smoke generated by the product, etc., cut off the power supply from this product and the system immediately.

Handling

Warning

1. Never touch the inside of the driver and its peripheral devices.

Otherwise, electric shock or failure can result.

2. Do not operate or set up this equipment with wet hands.

Otherwise, electric shock can result.

3. Do not use a product that is damaged or missing any components.

Electric shock, fire or injury can result.

4. Use only the specified combination between the electric actuator and driver.

Otherwise, it may cause damage to the driver or to the other equipment.

5. Be careful not to touch, get caught or hit by the workpiece while the actuator is moving.

An injury can result.

6. Do not connect the power supply or power up the product until it is confirmed that the workpiece can be moved safely within the area that can be reached by the workpiece.

Otherwise, the movement of the workpiece may cause an accident.

7. Do not touch the product when it is energized and for some time after the power has been disconnected, as it is very hot.

Otherwise, it may cause burns due to the high temperature.

8. Check the voltage using a tester at least 5 minutes after power-off when performing installation, wiring and maintenance.

Otherwise, electric shock, fire or injury can result.

Handling

Warning

9. Static electricity may cause a malfunction or damage the driver. Do not touch the driver while power is supplied to it.

Take sufficient safety measures to eliminate static electricity when it is necessary to touch the driver for maintenance.

10. Do not use the products in an area where they could be exposed to dust, metallic powder, machining chips or splashes of water, oil or chemicals.

Otherwise, a failure or malfunction can result.

11. Do not use the products in a magnetic field.

Otherwise, a malfunction or failure can result.

12. Do not use the products in an environment where flammable, explosive or corrosive gases, liquids or other substances are present.

Otherwise, fire, explosion or corrosion can result.

13. Avoid heat radiation from strong heat sources, such as direct sunlight or a hot furnace.

Otherwise, it will cause a failure to the driver or its peripheral devices.

14. Do not use the products in an environment with cyclic temperature changes.

Otherwise, it will cause a failure to the driver or its peripheral devices.

15. Do not use the products in an environment where surges are generated.

Devices (solenoid type lifters, high frequency induction furnaces, motors, etc.) that generate a large amount of surge around the product may lead to deterioration or damage to the internal circuits of the products. Avoid supplies of surge generation and crossed lines.

16. Do not install these products in a place subject to vibration and impact.

Otherwise, a malfunction or failure can result.

17. When a surge generating load such as a relay or solenoid valve is directly driven, use a product that incorporates a surge absorption element.

Mounting

Warning

1. Install the driver and its peripheral devices on fireproof material.

Direct installation on or near flammable material may cause fire.

2. Do not install these products in a place subject to vibration and impact.

Otherwise, a malfunction or failure can result.

3. The driver should be mounted on a vertical wall in a vertical direction.

Also, do not cover the driver's suction/exhaust ports.

4. Install the driver and its peripheral devices on a flat surface.

If the mounting surface is not flat or uneven, excessive force may be applied to the housing and other parts resulting in a malfunction.

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LECS□

LAT3



Specific Product Precautions 2

Be sure to read before handling. Refer to page 459 for Safety Instructions and the Operation Manual for Electric Actuator Precautions.

Please download it via our website, <http://www.smcworld.com>

Power Supply

⚠ Caution

1. Use a power supply with low noise between lines and between power and ground.
In cases where noise is high, use an isolation transformer.
2. Take appropriate measures to prevent surges from lightning. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.

Wiring

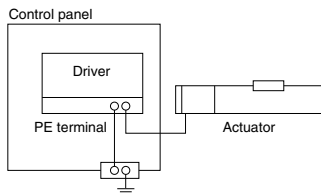
⚠ Warning

1. The driver will be damaged if a commercial power supply (100V/200V) is added to the driver's servo motor power (U, V, W). Be sure to check wiring such as wiring mistakes when the power supply is turned on.
2. Connect the ends of the U, V, W wires from the motor cable correctly to the phases (U, V, W) of the servo motor power. If these wires do not match up, it is unable to control the servo motor.

Grounding

⚠ Warning

1. For grounding 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 malfunction is caused by the ground, it may be disconnected.

Maintenance

⚠ Warning

1. Perform maintenance checks periodically.
Confirm wiring and screws are not loose.
Loose screws or wires may cause unexpected malfunction.
2. Conduct an appropriate functional inspection and test after completed maintenance.
In case of any abnormalities (if the actuator does not move or the equipment does not operate properly, etc.), stop the operation of the system.
Otherwise, unexpected malfunction may occur and safety cannot be assured.
Conduct a test of the emergency stop to confirm the safety of the equipment.
3. Do not disassemble, modify or repair the driver or its peripheral devices.
4. Do not put anything conductive or flammable inside the driver.
Otherwise, fire can result.
5. Do not conduct an insulation resistance test or insulation withstand voltage test.
6. Reserve sufficient space for maintenance.
Design the system so that it allows required space for maintenance.