



# ASEP/PSEP/DSEP

## First Step Guide Fifth Edition

Thank you for purchasing our product.  
Make sure to read the Safety Guide and detailed Instruction Manual (CD/DVD) included with the product in addition to this First Step Guide to ensure correct use.  
This Instruction Manual is original.

**Warning :** Operation of this equipment requires detailed installation and operation instructions which are provided on the CD/DVD Manual included in the box this device was packaged in. It should be retained with this device at all times.  
A hardcopy of the Manual can be requested by contacting your nearest IAI Sales Office listed at the back cover of the Instruction Manual or on the First Step Guide.

- Using or copying all or part of this Instruction Manual without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the sentences are registered trademarks.

## Product Check

This product is comprised of the following parts if it is of standard configuration.  
If you find any fault in the contained model or any missing parts, contacts us or our distributor.

### 1. Parts

No.	Part Name	Model	Reference
1	Controller	Refer to "How to read the model plate", "How to read the model of the controller."	
Accessories			
2	I/O Flat Cable	Standard type	CB-APSEP-PIO***
		Dust-proof type (Equivalent to IP53)	CB-APSEPW-PIO***
3	Power Connector	MC1.5/5-ST-3.5 (Supplier : PHOENIX CONTACT)	Applicable Cable Size 0.75 to 2mm <sup>2</sup> (AWG18 to 14)
4	Spacer	PFP-S (Supplier : OMRON)	
5	Absolute Battery Unit (For Simplified Absolute Type Only)	SEP-ABUM (Standard type)	
6	Instruction Manual (CD/DVD)	SEP-ABUM-W (Dust-proof type)	
7	Safety Guide		

### 2. Teaching Tool (to be purchased separately)

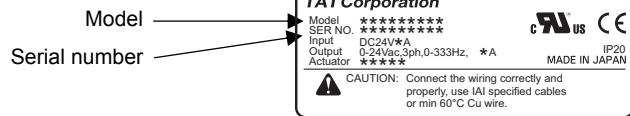
For the setups such as position setting and parameter setting using the teaching operation, the teaching tool is required. Please prepare either of the following teaching tools.

No.	Part Name	Model
1	PC Software (Includes RS232C Exchange Adapter + Peripheral Communication Cable)	RCM-101-MW
2	PC Software (Includes USB Exchange Adapter + USB Cable + Peripheral Communication Cable)	RCM-101-USB
3	Teaching Pendant (Touch Panel Teaching)	CON-PTA
4	Teaching Pendant (Touch panel teaching equipped with a dead man's switch)	CON-PDA
5	Teaching Pendant (Touch panel teaching equipped with a dead man's switch + TP adapter (RCB-LB-TG))	CON-PGA
6	Teaching Pendant dedicated for SEP Controller (Touch Panel Teaching)	SEP-PT
7	Teaching Pendant (Touch Panel Teaching)	CON-PT <sup>(Note 1)</sup>
8	Teaching Pendant (Touch panel teaching equipped with a dead man's switch)	CON-PD <sup>(Note 1)</sup>
9	Teaching Pendant (Touch panel teaching equipped with a dead man's switch + TP adapter (RCB-LB-TG))	CON-PG <sup>(Note 1)</sup>

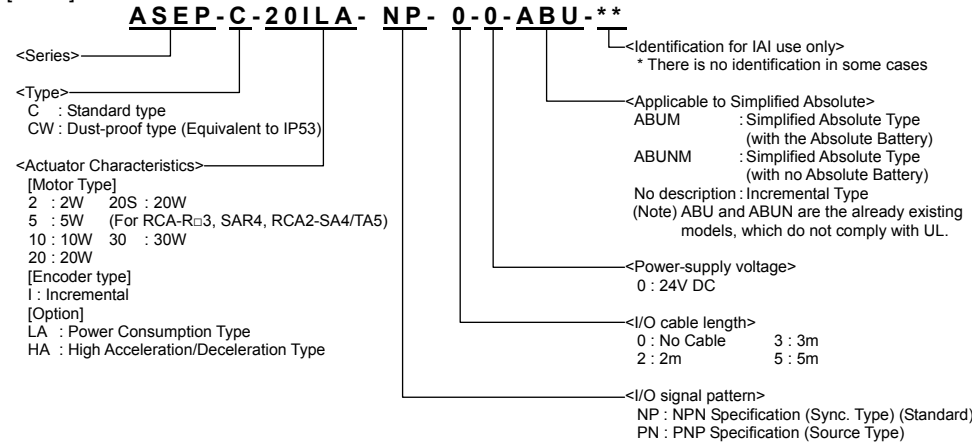
### 3. Instruction manuals related to this product, which are contained in the instruction manual (CD/DVD).

No.	Part Name	Model
1	ASEP/PSEP/DSEP Instruction Manual	ME0267
2	PC Software RCM-101-MW/RCM-101-USB Instruction Manual	ME0155
3	Touch panel teaching CON-PTA/PDA/PGA Instruction Manual	ME0294
4	Teaching Pendant dedicated for SEP Controller (Touch Panel Teaching) Instruction Manual	ME0217

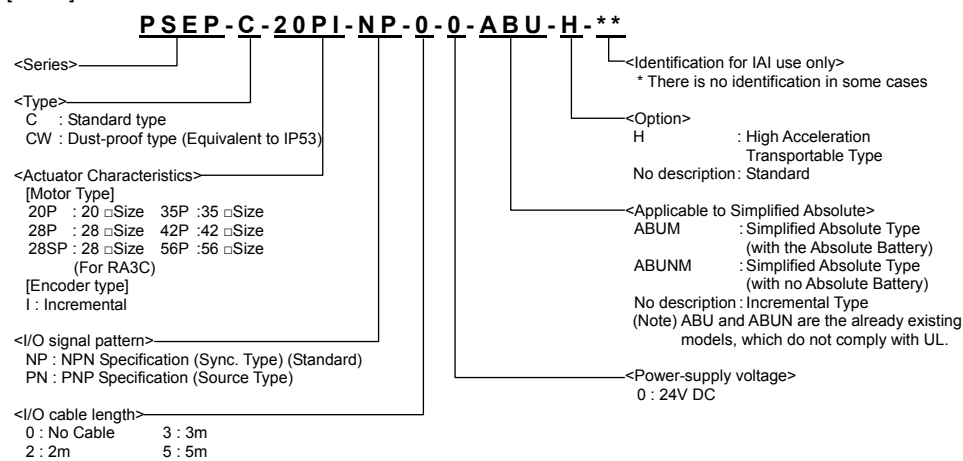
### 4. How to read the model plate



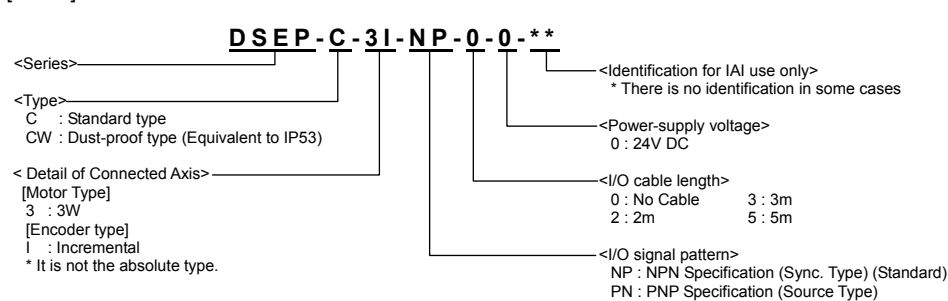
### 5. How to read the model of the controller [ASEP]



### [PSEP]



### [DSEP]



## Basic Specifications

Specifications								
Item			ASEP		PSEP		DSEP	
Number of controlled axes			1-axis					
Power-supply voltage			24V DC ±10%					
Control power capacity			0.5A (For Simple Absolute Type,0.8A)					
Load current	Motor type	Rated	Low Power Consumption	MAX. (Note 1)	Rated	MAX. (Note 2)	Rated	MAX.
	2W	0.8A		4.6A				
	5W	1.0A		6.4A				
	10W (RCL series)	1.3A		6.4A				
	10W (RCA/RCA2 series)	1.3A	2.5A	4.4A				
	20W	1.3A	2.5A	4.4A				
	20W (Model code display 20S)	1.7A	3.4A	5.1A				
	30W	1.3A	2.2A	4.4A				
	20P				0.17A	2.0A		
	28P				0.17A	2.0A		
	35P				0.9A	2.0A		
	42P				0.9A	2.0A		
	56P				0.9A	2.0A		
	3W						0.7A	1.5A
Heat generation			8.4W		9.6W		4W	
Rush current			MAX. 10A					
Motor control system			Sinusoidal wave (AC) driving		Weak field-magnet vector control		Square wave (DC) drive	
Applicable encoder resolution	RCA Series	800 Pulse/rev						
	RCA2 series	RCA2-***N	1048 Pulse/rev					
		Except for RCA2-***N	800 Pulse/rev					
	RCL series	RA1L, SA1L, SA4L, SM4L,	715 Pulse/rev					
		RA2L, SA2L, SA5L, SM5L,	855 Pulse/rev					
		RA3L, SA3L, SA6L, SM6L,	1145 Pulse/rev					
		RCP2, RCP3, RCP4						
	RCD							800 Pulse/rev
Actuator cable length			MAX. 20m					
Serial communication interface (SIO port)			RS485 : 1CH (based on Modbus Protocol RTU/ASCII)					
External interface			Signal I/O dedicated for 24V DC (selected from NPN/PNP) ... Input 4 points max., output 4 points max. Cable length MAX. 10m					
Data setting and input			PC software, touch panel teaching, teaching pendant					
Data retention memory			Position data and parameters are saved in the nonvolatile memory. (About 100,000 times of reloading (Note 3))					
Operation mode/No. of positions			Positioner mode Positioning points : 2 to 3 points					
LED display (mounted on front panel)			1 point (for controller status display)					
Forcibly releasing of electromagnetic brake switch			None Supply 24V DC 150mA to BK on power connector when a compulsory release of the brake is required.					None Brake cannot be compulsorily released.
Dielectric withstanding voltage/ resistance			500V DC 10MΩ					
Protection Function against Electric Shock			Class I basic insulation					
Cooling method			Natural air-cooling					
Environment	Ambient air Temperature	0 to 40°C						
	Ambient humidity	85% RH or less (non-condensing)						
	Ambient environment	[Refer to 1.5 Installation Environment.]						
	Ambient storage temperature	-25 to 65°C (Battery to be stored at 40°C or lower)						
	Usage altitude	1000m or lower above sea level						
	Protection code	IP20: Equivalent to IP53 (Option) with the installation of the dust-proof cover						
	Vibration durability	Frequency 10 to 57Hz / Swing width : 0.075mm Frequency 57 to 150Hz / Acceleration : 9.8m/ S <sup>2</sup> XYZ Each direction Sweep time : 10 minutes Number of sweep : 10 times						
	Weight	130g or less, 160g or less (INC-Dust-proof type)						
External dimensions			30W × 100H × 66.2D (mm)					

Note 1 The current reaches its maximum level when the servo-motor exciting phase is detected which is to be performed in the first servo-motor turning ON processing after the power injection.  
(Normal: Approx. 1 to 2 sec, Max.: 10 sec)

Note 2 The excitation detection operation is performed after the power is input. In such a case, the current becomes maximum. (normally 100 msec)  
However, a current of approx. 6.0A flows if the motor driving power is turned on again after its shutdown. (for approx. 1 to 2 msec)

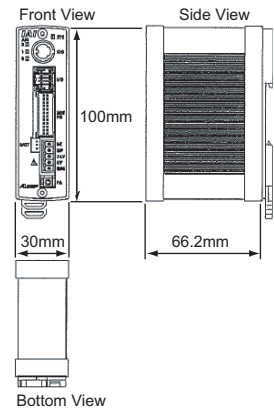


As a + 24V DC power supply, select the power supply of the "peak load support" specification or one with sufficient capacity. In the case that the capacity margin is not sufficient, voltage might be dropped in a moment. Especially, the power supply equipped with remote sensing reacts to the transient voltage drop and raises the voltage for adjustment, which may result in overvoltage error.

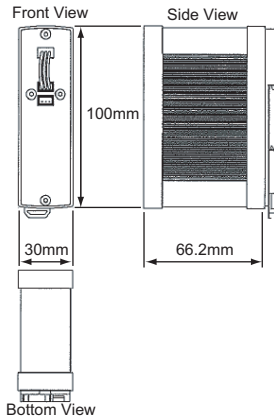
**⚠ Note1:** Position data and parameters are written to EEPROM. The limitation for the reload is about 100,000 times. Take the greatest care.  
Do not turn OFF the power to the unit during the reloading operation.

## External Dimensions

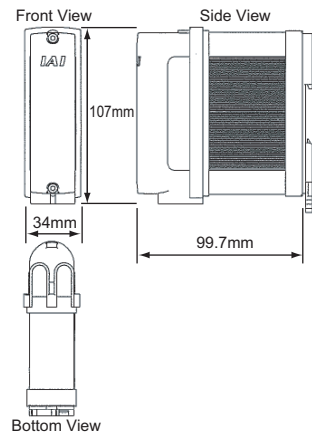
### [ASEP/PSEP/DSEP]



### [Absolute Battery Unit (SEP-ABUM) (Option)]



### [Dust-Proof Cover (Option)]



## Installation Environment

This product is capable for use in the environment of pollution degree 2\*1 or equivalent.

\*1 Pollution Degree 2 : Environment that may cause non-conductive pollution or transient conductive pollution by frost (IEC60664-1)

Do not use this product in the following environment.

- Location where the surrounding air temperature exceeds the range of 0 to 40°C
- Location where condensation occurs due to abrupt temperature changes
- Relative humidity less than 10%RH or greater than 85%RH
- Location exposed to corrosive gases or combustible gases
- Location exposed to significant amount of dust, salt or iron powder
- Location subject to direct vibration or impact
- Location exposed to direct sunlight
- Location where the product may come in contact with water, oil or chemical droplets

When using the product in any of the locations specified below, provide a sufficient shield.

- Location subject to electrostatic noise
- Location where high electrical or magnetic field is present
- Location with the mains or power lines passing nearby

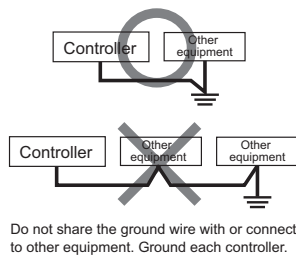
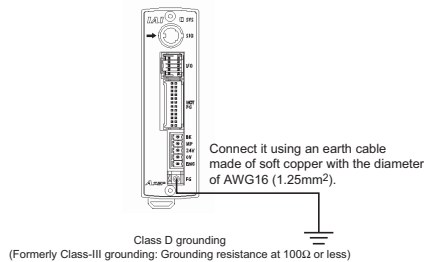
For Dust-proof type (Equivalent to IP53)

The protection structure level is enhanced to IP53 with the installation of the dust-proof cover (option).

"5" in IP53 stands for the structure	Where the amount of dust which can affect the normal operation and safety, can not enter the unit.
"3" in IP53 stands for the structure	Where normal operation and safety is not affected even with the precipitation from above.

## Installation and Noise Elimination

### 1. Noise Elimination Grounding (Frame Ground)



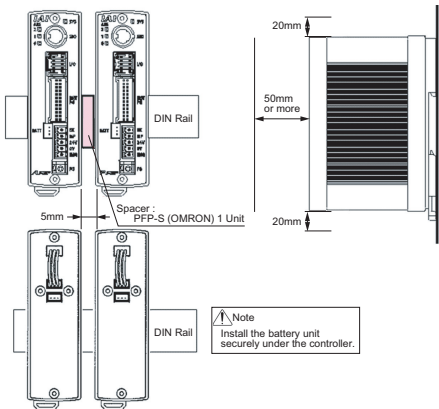
2. Precautions regarding wiring method
  - 1) Twist the wires for the 24V DC power unit.
  - 2) Separate signal lines and encoder cables from high-power lines such as the power wire.
3. Noise Sources and Elimination

Carry out noise elimination measures for power devices on the same power path and in the same equipment.

The following are examples of measures to eliminate noise sources.

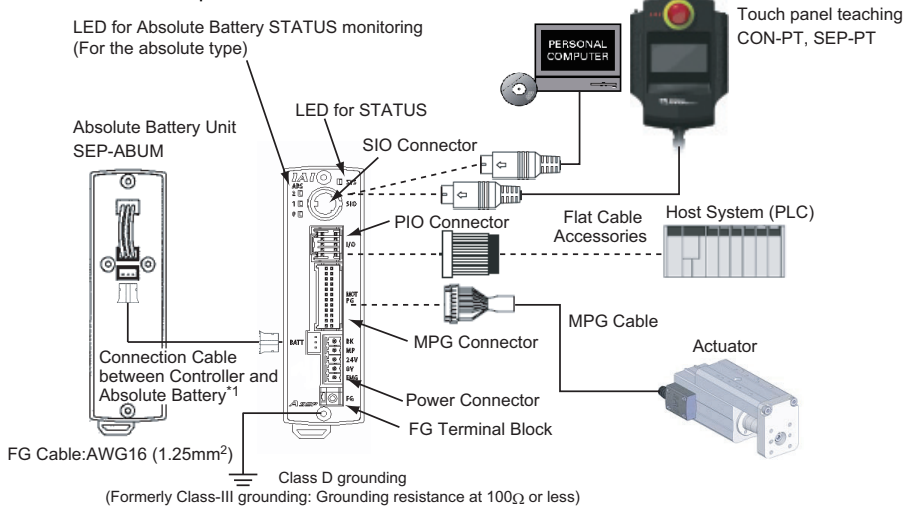
  - 1) AC solenoid valves, magnet switches and relays  
[Measure] Attach the surge absorber in parallel with the coil.
  - 2) DC solenoid valves, magnet switches and relays  
[Measure] Attach the diode in parallel with the coil.  
For the DC relay, use the built-in diode type.

4. Heat Radiation and Installation  
Conduct design and manufacture in consideration of the control box size, controller layout and cooling in such a way that the temperature around the controller will be 40°C or less.



## Wiring

### • Connection Example



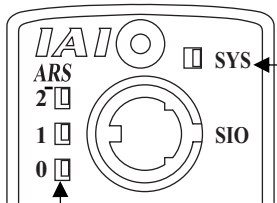
Actuators Series	MPG Cable □□□ shows the cable length. (Example:050=5m)	Applicable Controller
RCP2 (except for Small Rotary Type)	CB-PSEP-MPA□□□	PSEP
RCP2-RT□ (Small Rotary Type)	CB-RPSEP-MPA□□□	
RCP3	CB-PCS-MPA□□□ CB-APSEP-MPA□□□ Extension Cable: CB-APSEP-MPA□□□JY (JYP)	
RCA2, RCL	CB-ACS-MPA□□□	ASEP
RCA2, RCL	CB-APSEP-MPA□□□ Extension Cable: CB-APSEP-MPA□□□JY (JYP)	ASEP
RCD	CB-CA-MPA	DSEP
RCA	CB-ASEP-MPA□□□	ASEP

\*1 Connection Cable between Controller and Absolute Battery

CB-APSEP-ABM005..... Applicable Controller : ASEP-C-□-□-□-0-ABUM□  
PSEP-C-□-□-□-0-ABUM□

CB-APSEP-AB005 ..... Applicable Controller : ASEP-C-□-□-□-0-ABU□  
PSEP-C-□-□-□-0-ABU□  
(Existing models: Not complied with UL)

## LED indication



### LED for STATUS teaching

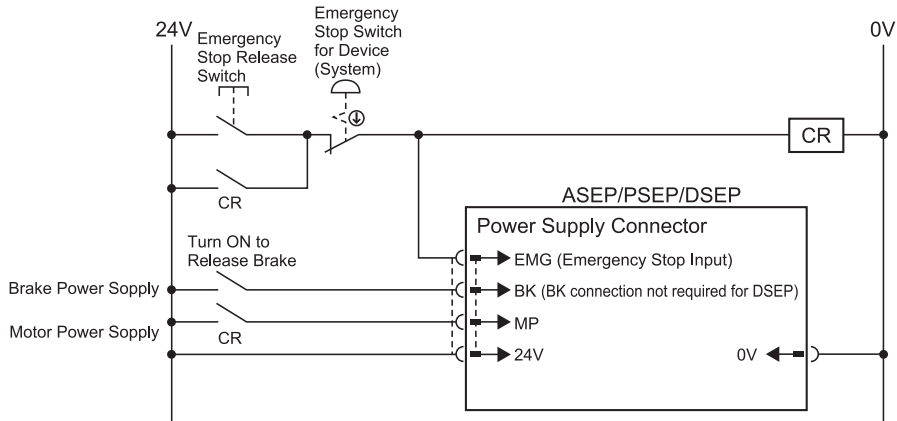
Indication Status	Description
Green Light is turned ON.	Servo ON Status
Flashing in green (1Hz)	Servo-motor Auto OFF condition
Red Light is turned ON.	In the alarm issue or emergency stop
Light is turned OFF	Servo OFF Status

### LED for Absolute Battery STATUS monitoring (in the case of Simplified Absolute Type)

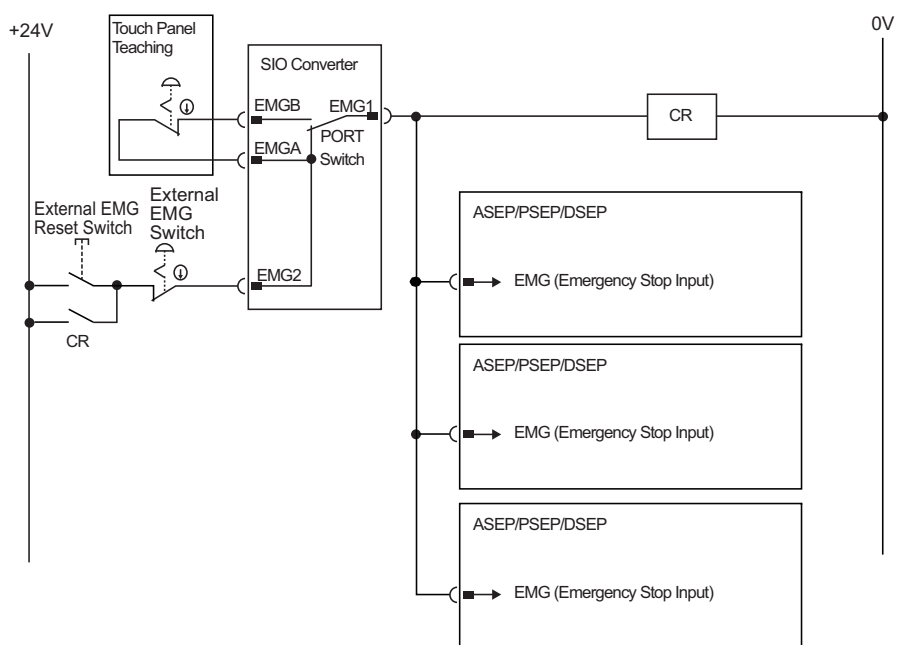
Symbol	Indication Status	Description
2	Green Light is turned ON.	System Normal
	Red Light is turned ON.	System abnormality
1	Green Light is turned ON.	Absolute Unit Reset Complete (ST2 lighting ON in Green)
	Red Light is turned ON.	• Absolute Unit Reset Incomplete (ST2 lighting ON in Green) • Hardware Error (ST2 lighting ON in Red)
0	Green Light is turned ON.	Battery Fully Charged
	Orange Light is turned ON.	In Battery Charging Operation
	Red Light is turned ON.	Battery Disconnected

## Power Supply and Emergency Stop Circuit

This is an example for the emergency stop circuit applied to the entire system.



This is an example for the emergency stop when multiple controllers are connected.





## PIO Connector

### • Operation Pattern

The ASEP, PSEP or DSEP controller has the 6 operation patterns (For PIO Pattern, refer to the Item for Setting). Each of these 6 patterns is described as in the table. Also, the corresponding air cylinder circuit is described for reference.

Operation Pattern	Contents	Electric Cylinder Connection Procedure	Air Cylinder Circuit (Reference)
PIO Pattern 0 Single Solenoid System [Standard Point-to-Point Movement]	The actuator point-to-point movement is available using the same control function as for the air cylinder. The target position setting (forward end and backward end) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		
PIO Pattern 0 Double Solenoid System [Standard Point-to-Point Movement]			
PIO Pattern 1 Single Solenoid System (Point-to-Point Movement) [Movement Speed Setting]	The actuator point-to-point movement is available using the same control function as for the air cylinder. The speed change in the movement operation is available. The target position setting (forward end and backward end) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		
PIO Pattern 1 Double Solenoid System (Point-to-Point Movement) [Movement Speed Setting]			
PIO Pattern 2 Single Solenoid System (Point-to-Point Movement) [Target Position Setting (Position Data) Change]	The actuator point-to-point movement is available using the same control function as for the air cylinder. The change-over between the positioning and pressing operations during the operation is available. The target position setting (forward end and backward end) is available.		
PIO Pattern 2 Double Solenoid System (Point-to-Point Movement) [Target Position Setting (Position Data) Change]	Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		
PIO Pattern 3 [2-Input, 3-Point Movement]	The actuator 3-Point Movement is available using the same control function as for the air cylinder. The target position setting (forward end, backward end and Intermediate Point) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation at the positions except for the intermediate position is available.		
PIO Pattern 4 [3-Input, 3-Point Movement]	The actuator 3-Point Movement is available using the same control function as for the air cylinder. The target position setting (forward end, backward end and Intermediate Point) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation at the positions except for the intermediate position is available.		

Operation Pattern	Contents	Electric Cylinder Connection Procedure	Air Cylinder Circuit (Reference)
PIO Pattern 5 [Continuous Reciprocating Operation]	The actuator's point-to-point reciprocating operation is performed between the forward end and backward end. The target position setting (forward end and backward end) is available. Speed and acceleration settings in the actuator movement are available. The pressing operation is available.		

(Note) The air cylinder circuit is described with the symbols for the signals corresponding to those in ASEP/PSEP/DSEP. Refer to "Details of Each I/O Signal".

### • PIO Connector Signal Allocation to Each PIO Pattern

Pattern	0	1	2	3	4	5
	Point-to-Point Movement (standard)	Point-to-Point Movement (Movement Speed Setting)	Point-to-Point Movement (Target Position Setting Change)	3-Point Movement (2-Input)	3-Point Movement (3-Input)	Point-to-Point Reciprocating Movement (Continuous Reciprocating Operation)
Pin No.	Single	Double	Single	Double	Single	Double
1	BR	COM	24V	24V	24V	24V
2	RD	COM	0V	0V	0V	0V
3	OR	0	ST0	ST0	ST0	ST0
4	YW	1	*STP	ST1(-)	*STP	ST1(-)
5	GN	2	RES	SPDC (RES)	CN1 (RES)	RES
6	BL	3	- /SON	- /SON	- /SON	- /SON
7	PL	0	LS0/PE0	LS0/PE0	LS0/PE0	LS0/PE0
8	GY	1	LS1/PE1	LS1/PE1	LS1/PE1	LS1/PE1
9	WT	2	HEND/SV	HEND/SV	HEND/SV	HEND/SV
10	BK	3	*ALM/SV	*ALM/SV	*ALM/SV	*ALM/SV

The description in the brackets shows the condition before the home return operation.

### • Details of Each I/O Signal

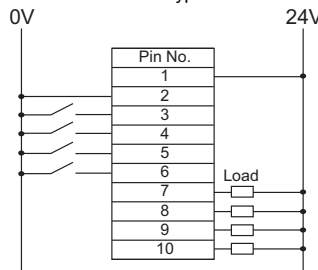
Signal Type	Symbol	Signal Name	Function
Power Input	24V	I/O Power supply +	It is the common power source for I/O circuit. The positive (+) side of 24V DC is connected.
	0V	I/O Power supply -	It is the common power source for I/O circuit. The positive (-) side of 24V DC is connected.
PLC Output	ST0	• Movement Signal [Single Solenoid System] • Backward End Movement Signal [Double Solenoid System] • Movement Signal 1 [PIO Pattern 3]	The positioning to the corresponding target position is performed, when the signal leading edge created in the mode change from OFF to ON, or ON level is detected.
	ST1	• Forward End Movement Signal • Movement Signal 2 [PIO Pattern 3]	
	ST2	Intermediate Point Movement Signal	
	*STP	Pause Signal	When this signal is turned OFF the deceleration is stopped. When the signal is turned ON again, the movement is re-started.
	RES	Reset Signal	When the signal leading edge created in the mode change from OFF to ON, is detected, the currently issued alarm is reset. * Depending on the alarm level, alarm reset might not be available. [Refer to the Trouble Shooting for the details.]
	SON	Servo ON signal	During the time when this signal is turned ON, the servo-motor is in the ON mode.
	SPDC	Movement Speed Change Signal	When the movement speed is changed during the movement, do it with this signal turned ON. * This signal is effective when the PIO pattern 1 has been set.
PLC Input	CN1	Target Position Change Signal	When the conditions for the positioning operation or pressing operation, etc., are changed to operate the system, turn ON this signal. When this signal is turned ON or OFF during the operation, the position data is changed. * This signal is effective when the PIO pattern 2 has been set.
	ASTR	Continuous Reciprocating Operation Signal	During the time when this signal is turned ON, the actuator's continuous reciprocating operation is performed between the forward end and the backward and. When this signal is turned OFF during the movement operation, after the actuator is positioned to the current target, it is stopped. * This signal is effective when the PIO pattern 5 has been set.
	LS0	Backward End Position Detection	The same operation as of the limit switch of the air cylinder is performed.
	LS1	Forward End Position Detection	It is turned ON when the current position is within the positioning width for each position detection output.
	LS2	Intermediate Point Detection	
	PE0	Backward End Point Positioning Completion	This signal is turned ON when the current position goes within the positioning width, and the positioning to the target position is complete.
	PE1	Forward End Point Positioning Completion	It is turned OFF in the Servo-Motor OFF mode or the Emergency Stop Mode.
	PE2	Intermediate Point Positioning Completion	
	HEND	Home return completion	This signal is turned ON when the home return operation is completed.
	SV	Servo ON signal	This signal is turned ON when the servo-motor is turned ON and driving is enabled.
	*ALM	Alarm Output Signal	This signal is turned ON when the controller is in the normal condition and turned OFF when the controller is in the alarm condition. In such case, monitor this signal in the PLC and take an appropriate measure.

⚠ Note : For the PLC output signal, keep it ON for at least 7ms or more.

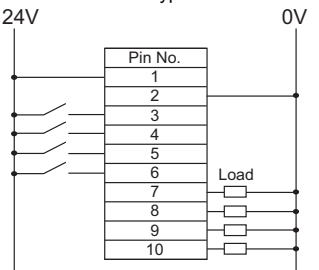
### • I/O Circuit Section

	Input section	Output section
Specifi- cation	Input voltage	24V DC ±10%
	Input current	4mA 1circuit
	ON/OFF voltage	ON voltage MIN. 18V DC OFF voltage MAX. 6V DC
NPN		
PNP		

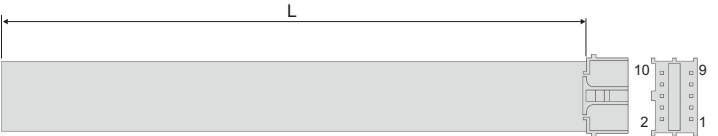
### NPN Type



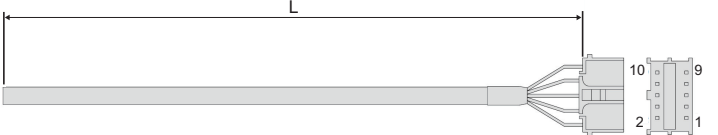
### PNP Type



Model:CB-APSEP-PIO□□□□□For ASEP-C, PSEP-C  
(□□□ shows the cable length L Example.020=2m)



Model:CB-APSEP-W-PIO□□□□□For ASEP-CW, PSEP-CW  
(□□□ shows the cable length L Example.020=2m)

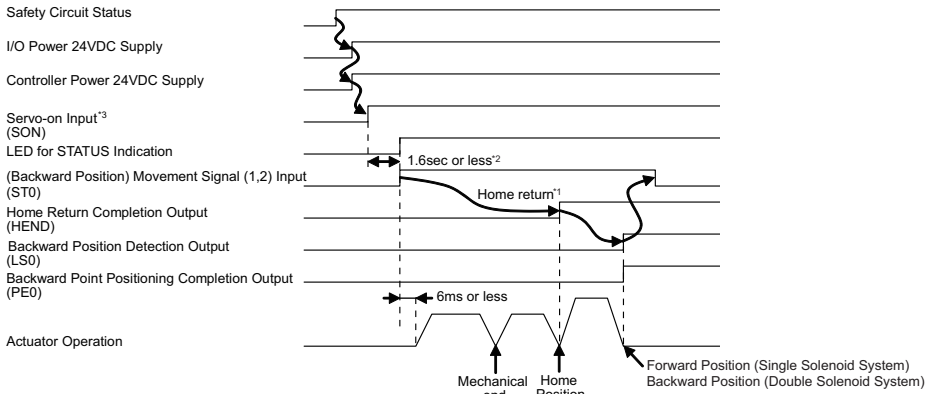


Connector		51353-1000 (Manufactured by MOLEX)	
No.	Color		Signal Name
	CB-APSEP-PIO□□□□	CB-APSEP-PW□□□□	
1	BR	BR	24V
2	RD	BR, WT	0V
3	OR	RD	IN0
4	YW	RD, WT	IN1
5	GN	YW	IN2
6	BL	YW, WT	IN3
7	PL	GN	OUT0
8	GY	GN, WT	OUT1
9	WT	BK	OUT2
10	BK	BK, WT	OUT3

## Timing Chart

### [1] Supply Power → Operation Ready

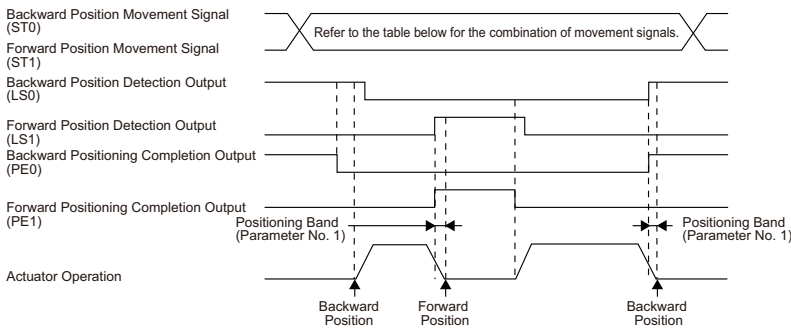
- 1) Cancel the emergency stop condition or make the motor drive power supply available to turn on.
- 2) Supply 24V DC I/O power.
- 3) Supply 24V DC for the controller.
- 4) Input Servo-on Signal from PLC side\*<sup>3</sup>.
- 5) Input the backward position movement signal from PLC side, first (to perform home-return operation).



- \*1. When the home-return operation is set to "MANU" in the initial setting and the first ST0 is turned ON, the actuator is returned to the home position and the operation is started. When it is set to "AUTO", the actuator is returned to the home position automatically after the Servo-on is input. The above are effective only when the actuator is incremental type (for the absolute type, the home return operation is not required).
- \*2. When the Servo-on signal is input for the first time after the power is supplied, input the movement command after the delay time of 1.6sec or more. In the second time or later, make the delay time for 60ms or more.
- \*3. When the servo control is set to "Enable" in the initial setting, the servo is turned on by means of inputting the SON signal. When it is set to "Disable" the servo is turned on automatically.

### [2] Point-to-Point Movement ---[PIO Pattern 0 to 2]

With the combination of ST0 and ST1, the actuator moves to the target position.

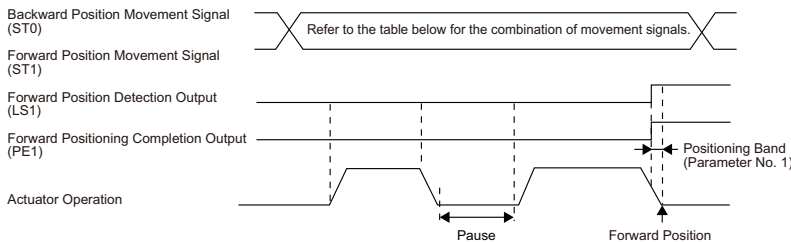


Solenoid Type	Input Signal	Forward Position Movement	Backward Position Movement
Single	ST0	ON	OFF
	ST1	Not for use	
Double	ST0	OFF	ON
	ST1	ON	OFF

(Note) Make sure ST0 and ST1 are not set to ON at the same time.

### [3] Pause during Movement ---[PIO Pattern 0 to 2]

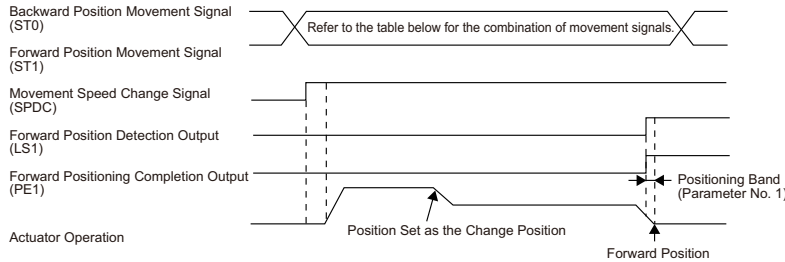
\*Actuator movement can be paused by STP input or with the combination of ST0 and ST1. Shown below is an example for the forward position movement.



Solenoid Type	Input Signal	Executing Pause Command
Single	*STP	ON
	No relation to ST0 condition	
Double	ST0	OFF
	ST1	OFF

### [4] Speed Change during Movement ---[PIO Pattern 1]

Movement speed can be changed while the actuator is in a movement to the target position. If SPDC is turned on and a movement command is issued, the actuator is moved at the changed speed from the position specified in the position setting. Shown below is an example for the forward position movement.

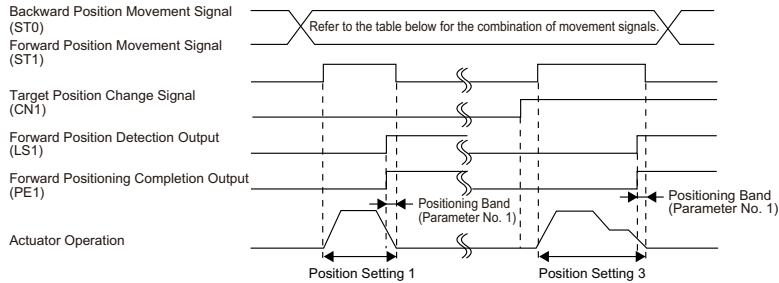


Solenoid Type	Input Signal	Forward Position Movement	Backward Position Movement
Single	ST0	ON	OFF
	ST1	Not for use	
Double	ST0	OFF	ON
	ST1	ON	OFF

(Note) Make sure ST0 and ST1 are not set to ON at the same time.

### [5] Target Position Change ---[PIO Pattern 2]

When the operation is to be performed with the two types of works set differently from each other, the setting change can be performed only by sending a single signal from PLC. When the movement command is issued after CN1 is turned on, the actuator is moved using the Position Setting 3 setting in the case of moving to the forward position. In the case of moving to the backward position, the Position Setting 2 is applied. Shown below is an example for the forward position movement.

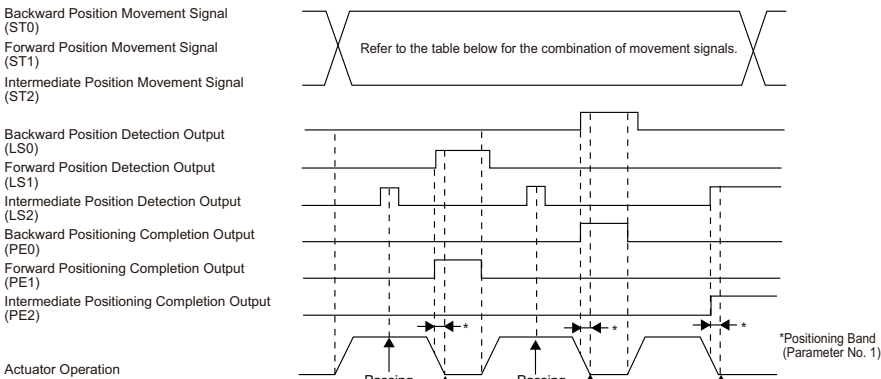


Solenoid Type	Input Signal	Forward Position Movement	Backward Position Movement
Single	ST0	ON	OFF
	ST1	Not for use	
Double	ST0	OFF	ON
	ST1	ON	OFF

(Note) Make sure ST0 and ST1 are not set to ON at the same time.

### [6] 3-Point Movement ---[PIO Pattern 3, 4]

With the combination of ST0, ST1 and ST2, the actuator moves to the target position.

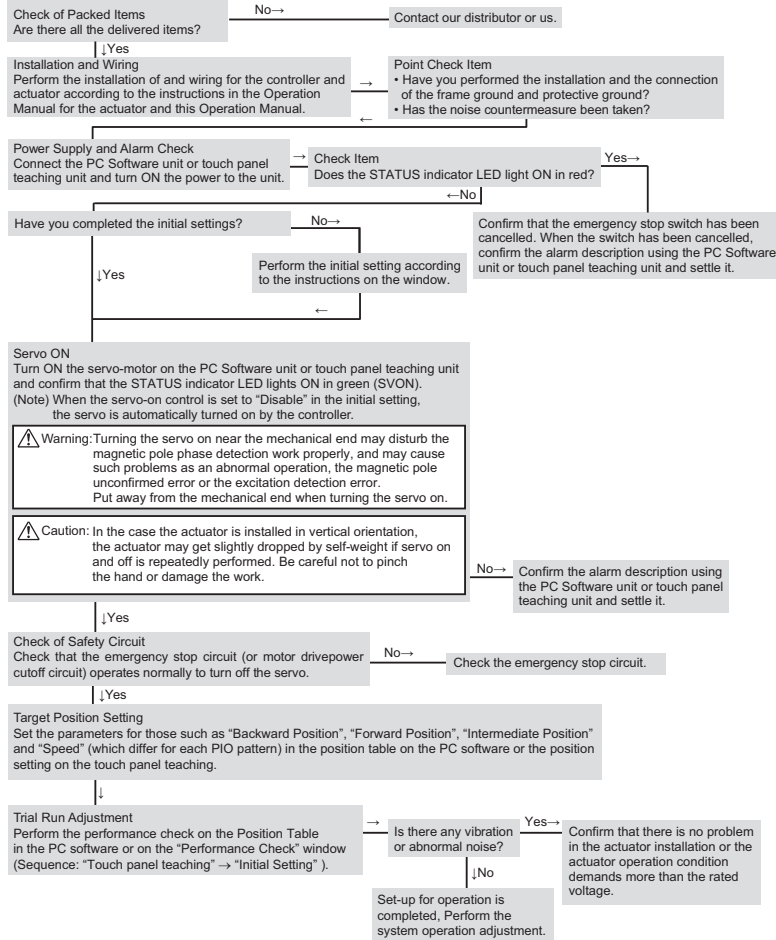


PIO pattern	Solenoid Type	Input Signal	Forward Position Movement	Backward Position Movement	Intermediate Position Movement
3	Single	ST0	OFF	ON	ON
		ST1	ON	OFF	ON
		ST2	Not for use		
4	Double	ST0	OFF	ON	OFF
		ST1	ON	OFF	OFF
		ST2	OFF	OFF	ON

(Note) Make sure ST0 and ST1 are not set to ON at the same time.

## Starting Procedures

When using this product for the first time, make sure to avoid mistakes and incorrect wiring by referring to the procedure below.



## Troubleshooting

Shown below are the alarms that you may often see while in a boot. Have an appropriate treatment following the instructions below.

Please refer to the Instruction Manual for other alarms.

### 1. Alarm Level

Alarm Level	Normal/Error Lamp	Condition in Error Occurrence	Cancellation Method
Operation Cancellation	Red Light is turned ON.	Actuator compulsory stop (Motor power (servo) turns off after deceleration and stop.)	Perform a reset with the reset signal (RES) or by using a teaching tool such as PC software
Cold Start	Red Light is turned ON.	Actuator compulsory stop (Motor power (servo) turns off after deceleration and stop. Home-return completion status will be cancelled.)	Cut and supply the power again (Home-return operation needs to be performed again.)

### 2. Alarm Code

Error Level	Code	Alarm Name	Cause/Treatment
Operation Cancellation	082	Movement Command in Incomplete Home Return	Cause: The movement command is input while the home return has not been completed. Treatment: Input ST0 signal to perform the home return operation.
	084	Movement Command during Home Return Operation	Cause: The movement command is input during the home return operation. Treatment: Cancel the movement command, reset the alarm, and perform the home-return operation again.
Cold Start	0E5	Encoder Receive Error	Cause: Such a case is considered like the connector inside the controller is off the position. Treatment: Supply the power to the controller again, and if the problem still occurs, please contact us.
	0E7	A-, B- and Z-phase Wire Breaking	The encoder signal is not detected properly. Cause: Such case is considered like the connector on the actuator connection cable is loosened or the wire broke. Treatment: Check the condition of the actuator connection cable and have a continuity check. Please contact us if no abnormality is detected in these checks.
	0E8	A and B-phase Wire Breaking	The encoder signal is not detected properly. Cause: Such case is considered like the connector on the actuator connection cable is loosened or the wire broke.
	0E9	A-phase Wire Breaking	Treatment: Check the condition of the actuator connection cable and have a continuity check. Please contact us if no abnormality is detected in these checks.
	0EA	B-phase Wire Breaking	



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