RoboCylinder 3-position controller **MEC** (*Mechanical Engineer Control*)

### Feature

1. **Low Cost**  
   The PMEC package, which comes with a controller, power supply, acceleration/speed change function and PC connection cable, among others, is at an affordable price. The MEC PC software can be downloaded free of change from IAI's website.

2. **Easy Operation**  
   Even a beginner can set up the controller without reading the operation manual. The acceleration and speed can be changed using the knobs on the controller.
   * Setting range for acceleration/speed varies depending on the actuator. Please refer to the instruction manual for further detail.

3. **Easy Replacement from your Air-cylinder System**  
   Operation signals are exactly the same as those used to operate air cylinders. This means that you can use the program of your current PLC directly.

4. **Push-motion Operation/Intermediate Stopping**  
   Push-motion operation can be performed in the same manner as you would with any air-cylinder system. Also, you can cause the actuator to stop at any desired intermediate point between the home position and stroke end by changing the setting of the intermediate point using the MEC PC software.
### Model List

<table>
<thead>
<tr>
<th>Series</th>
<th>PMEC</th>
<th>AMEC</th>
</tr>
</thead>
</table>

#### External View

<table>
<thead>
<tr>
<th>Applicable actuators</th>
<th>RCP2 / RCP3</th>
<th>RCA / RCA2 / RCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>115V</td>
<td>100-240V</td>
</tr>
<tr>
<td>Conformity</td>
<td>–</td>
<td>CE</td>
</tr>
<tr>
<td>Accessories</td>
<td>Power supply cable (2m) USB cable (3m) I/O cable (2m) I/O connector EMG connector Standard mounting bracket</td>
<td></td>
</tr>
</tbody>
</table>

### Model

#### PMEC

- **Series**: C Standard, I Incremental
- **Type**: 20F For 20 pulse motor, 28F For 28 pulse motor, 28S For 28 pulse motor (dedicated for RCP2-RA3C), 35F For 35 pulse motor, 42F For 42 pulse motor, 56F For 56 pulse motor
- **I/O type**: NP NPN type, PN PNP type
- **I/O cable length**: 2m
- **Power supply voltage**: Single phase AC115V

#### AMEC

- **Series**: C Standard, I Incremental
- **Type**: 2 For 2W motor, 5 For 5W motor, 10 For 10W motor, 20 For 20W motor, 20S For 20W motor (dedicated for RCA2-SAC/TAC5C/RCA-RA3T), 30 For 30W motor
- **I/O type**: NP NPN type, PN PNP type
- **I/O cable length**: 2m
- **Power supply voltage**: Single phase AC115V
### System Configuration

![System Configuration Diagram]

**PLC**

- PIO Unit
- I/O connector: Supplied with the controller
  - I/O cable (2m): See page P486 for maintenance cables.

**Actuator**

- Motor-Encoder Integrated Cable: Supplied with the actuator
  - See page P486 for maintenance cables.

**PC software**

- Download

**Teaching Pendant for RoboCylinder**

*Model CON-PT-ENG*

- Option
  - USB cable (3m): Supplied with the controller
  - USB connector

**Compatible Controllers**

- Actuator: PMEC, AMEC
- Controllers: RCP2 series, RCP3 series, RCA series, RCA2 series, RCL series

- PMEC: Single-phase AC115V or Single-phase AC100~240V
- AMEC: Single-phase AC115V

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**I/O Signal Table**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Wire Color</th>
<th>Signal Type</th>
<th>2-Position Travel</th>
<th>3-Position Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
<td>PIO power</td>
<td>24V</td>
<td>24V</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td></td>
<td>0V</td>
<td>0V</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
<td>Input</td>
<td>ST0 (Solenoid A: ON moves to end position, OFF moves to home position)</td>
<td>ST0 (Solenoid A: Move signal 1)</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td></td>
<td>—</td>
<td>ST1 (Solenoid B: Move signal 2)</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td></td>
<td>RES (Alarm reset)</td>
<td>RES (Alarm reset)</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7</td>
<td>Purple</td>
<td>Output</td>
<td>LSO (home position detection)/PE0 (home positioning complete)*1</td>
<td>LSO (home position detection)/PE0 (home positioning complete)*1</td>
</tr>
<tr>
<td>8</td>
<td>Gray</td>
<td></td>
<td>LSI (end position detection)/PE1 (end positioning complete)*1</td>
<td>LSI (end position detection)/PE1 (end positioning complete)*1</td>
</tr>
<tr>
<td>9</td>
<td>White</td>
<td></td>
<td>HEND (Homing complete)</td>
<td>LSE2 (Intermediate point detection)/PE2 (Intermediate positioning complete)*1</td>
</tr>
<tr>
<td>10</td>
<td>Black</td>
<td></td>
<td>* ALM (alarm)*2</td>
<td>* ALM (alarm)*2</td>
</tr>
</tbody>
</table>

*1: Signals PE0 through PE3 will be output if the pushing motion was enabled in the initial setting. Otherwise, LSO through LS2 will be output.
*2: * ALM is ON when normal, and OFF when it is activated.

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**MEC PC software**

By using the MEC PC software you can change the stop position data or run a test operation.

In addition, you can change the setting on the intermediate stop function, pushing function or change the coordinates.

The MEC PC software can be downloaded from the IAI website.
**Explanation of PIO Patterns**

**PIO Pattern (2-position travel)**

This motion pattern is between two positions, the home position and the end position. The home and end position can be configured numerically (using the MEC PC software or the optional touch panel teaching pendant).

Two motions are possible: A positioning motion moves the rod or the slider to the specified position, and a pushing motion presses the rod against a workpiece.

**Positioning**

When ST0 is turned ON, the slider/rod moves at 50mm/s to the end position (30mm position).

When ST0 is turned OFF, the slider/rod returns to the home position (0mm position) at 20mm/s.

**End Position Data**

<table>
<thead>
<tr>
<th>Position</th>
<th>30mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>50mm/s</td>
</tr>
<tr>
<td>Pushing Force</td>
<td>–</td>
</tr>
<tr>
<td>Width</td>
<td>–</td>
</tr>
</tbody>
</table>

**Home Position Data**

<table>
<thead>
<tr>
<th>Position</th>
<th>0mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>20mm/s</td>
</tr>
<tr>
<td>Pushing Force</td>
<td>–</td>
</tr>
<tr>
<td>Width</td>
<td>–</td>
</tr>
</tbody>
</table>

* The pushing motion is performed when there is a numerical value in the controller's push force data. (If there is no numerical value, a positioning motion is performed instead.)

**PIO Pattern (2-position travel)**

This motion pattern is between two positions, the home position and the end position, which enables a pushing motion of the rod against a workpiece.

**Push**

When the input 0 is turned ON, the actuator moves the rod to the 20mm position at 80mm/s, and from there, pushes it at slower speed to the 30mm position.

**End Position Data**

<table>
<thead>
<tr>
<th>Position</th>
<th>30mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>80mm/s</td>
</tr>
<tr>
<td>Pushing Force</td>
<td>50%</td>
</tr>
<tr>
<td>Width</td>
<td>10mm</td>
</tr>
</tbody>
</table>

**PIO Pattern (3-position travel)**

This motion pattern enables moves between three positions: the end position and the home position, as well as an intermediate position.

The positions are switched by combining two signals, ST0 and ST1.

**Positioning**

When only ST0 is turned ON, the actuator moves to the end position at a set acceleration and speed.

When only ST1 is turned ON, the actuator moves to the end position at a set acceleration and speed.

When both ST0 and ST1 are turned ON, it will move to the intermediate position at the set acceleration and speed. When both are turned OFF, it stops at the current position.
### Specifications Table

<table>
<thead>
<tr>
<th>Item</th>
<th>PMEC Type</th>
<th>AMEC Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller Type</td>
<td>CEMAC</td>
<td>EMP</td>
</tr>
<tr>
<td>Connectible Actuators</td>
<td>RCP2/RCP3 Series Actuators</td>
<td>RCA/RC2/RCL Series Actuators</td>
</tr>
<tr>
<td>Number of Controllable Axes</td>
<td>Single axis</td>
<td></td>
</tr>
<tr>
<td>Operation Method</td>
<td>Positioner Type</td>
<td></td>
</tr>
<tr>
<td>Number of Positions</td>
<td>2 positions / 3 positions</td>
<td></td>
</tr>
<tr>
<td>Backup Memory</td>
<td>EEPROM</td>
<td></td>
</tr>
<tr>
<td>I/O Connector</td>
<td>10-pin terminal block</td>
<td></td>
</tr>
<tr>
<td>I/O Points</td>
<td>4 input points / 4 output points</td>
<td></td>
</tr>
<tr>
<td>Power for I/O</td>
<td>Externally supplied DC24V±10%</td>
<td></td>
</tr>
<tr>
<td>Serial Communication</td>
<td>RS485: 1ch/USB: 1ch</td>
<td></td>
</tr>
<tr>
<td>Position Detection Method</td>
<td>Incremental encoder</td>
<td></td>
</tr>
<tr>
<td>Power Supply Voltage</td>
<td>AC100V-115V±10%</td>
<td>AC90V–264V</td>
</tr>
<tr>
<td>Rated Current</td>
<td>1.3A</td>
<td>0.67A (AC100V)/0.36A (AC200V)</td>
</tr>
<tr>
<td>Rush Current</td>
<td>30A</td>
<td>15A (AC100V)/30A (AC200V)</td>
</tr>
<tr>
<td>Leak Current</td>
<td>0.50mA max</td>
<td>0.40mA max (AC100V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.75mA max (AC200V)</td>
</tr>
<tr>
<td>Dielectric Strength Voltage</td>
<td>DC500V 1MΩ</td>
<td></td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>XYZ directions 10–57Hz One-side amplitude 0.035mm (continuous), 0.075mm (intermittent)</td>
<td>57–150Hz 4.9m/s² (continuous), 9.8m/s² (intermittent)</td>
</tr>
<tr>
<td>Ambient Operating Temperature</td>
<td>0–40°C</td>
<td></td>
</tr>
<tr>
<td>Ambient Operating Humidity</td>
<td>10–85% RH (non-condensing)</td>
<td></td>
</tr>
<tr>
<td>Ambient Operating Atmosphere</td>
<td>Free from corrosive gases</td>
<td></td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP20</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>500g</td>
<td>568g</td>
</tr>
</tbody>
</table>

Note: The minimum/maximum speeds vary depending on the actuator model. For more information, see the instruction manual, or contact IAI.

### Outer Dimensions

[Diagram showing outer dimensions with standard mounting bracket]

The standard mounting bracket is supplied with the controller.
Names of Parts and Functions

1. PIO connector — Connects with a PLC or other external controllers to communicate inputs and outputs (I/O).
2. Power LED — When the power is ON, it illuminates in green.
3. Control panel — See below.
4. Brake switch
   - Release: Used to release the brake of the actuator
   - Normal: The controller automatically controls the brake of the actuator
5. USB connector — When using MEC PC software, connect to the computer via USB.
6. AC inlet — Insert the power supply cable.
7. EMG connector — Connect the emergency stop button. Short-circuit it if you will not be using an emergency stop button.
8. M/PG connector — Insert the motor / encoder cable that connects with the actuator.
9. Status LED
   - RUN (Green): Indicates the servo status. On = Servo ON, Off= Servo OFF (Energy-saving) status Flashing (1Hz) = Auto servo OFF
   - ALM (Red): The LED illuminates if an alarm is turned ON or if the controller has come to an emergency stop.
   - EMG (Red): The LED illuminates if an emergency stop button is pressed.
10. SIO Connector — Connects with the teaching pendant (CON-PT-M-ENG).

Explanation of Terms
- FWD POS: Motion toward the end position
- BACK POS: Motion toward the home position
- Middle: Motion toward an intermediate position
- Enabled from the MEC PC software. Simultaneously press “FWD POS” and “BACK POS” to switch.
- During a 2-position stop, simultaneous pressing is disabled.
- The LED illuminates if an alarm is turned ON or if the controller has come to an emergency stop.
- During a 2-position stop, simultaneous pressing is disabled.

Acceleration/Speed Settings
Configure the actuator’s motion.

Acceleration / Speed knob
By turning the knob, you can change the speed between 1%~100% of the actuator’s maximum speed or rated acceleration / deceleration.
* The minimum speed may be less than 1% in some cases.

SAVE button
Saves the speed and acceleration adjusted above.

Explanation of the Control Panel
- HOME button
  - When starting, homing is performed first to confirm the 0mm coordinate.
- Manual button
  - Press this button to set the acceleration and/or speed, or to run a test operation. (Press for at least 1 second)
- AUTO button
  - Press this button when operating from the MEC PC software or the PLC commands. (Press for at least 1 second)
- Test Operation
  - Confirm the saved motion by physically running the actuator.
- FWD button
  - In a 2-position travel, the actuator moves from the BACK position to the FWD position.
  - In a 3-position travel, the actuator moves from the BACK position to the intermediate position, then to the FWD position.
- BACK button
  - The actuator returns to the starting position.
- RUN button
  - In a 2-position travel, the actuator moves back and forth between the FWD and BACK positions. In a 3-position travel, the actuator moves back and forth between the BACK position, intermediate position, FWD position, then BACK position.
- STOP button
  - Stops the above operation.

PIO connector — Connects with a PLC or other external controllers to communicate inputs and outputs (I/O).
Power LED — When the power is ON, it illuminates in green.
Control panel — See below.
Brake switch — Used to release the brake of the actuator.
USB connector — When using MEC PC software, connect to the computer via USB.
AC inlet — Insert the power supply cable.
EMG connector — Connect the emergency stop button. Short-circuit it if you will not be using an emergency stop button.
M/PG connector — Insert the motor / encoder cable that connects with the actuator.
Status LED
- RUN (Green): Indicates the servo status. On = Servo ON, Off= Servo OFF (Energy-saving) status Flashing (1Hz) = Auto servo OFF
- ALM (Red): The LED illuminates if an alarm is turned ON or if the controller has come to an emergency stop.
- EMG (Red): The LED illuminates if an emergency stop button is pressed.
● Teaching pendant for position controller

Features  Data input device easy-to-operate even for beginners with a simple interactive menu screen. Operation arrangements such as positioning of home, end or intermediate position, setting of speed or push force and movement to jog/inching/order position are available.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>CON-PT-M-ENG / CON-PT-M-ECH</td>
</tr>
<tr>
<td>Type</td>
<td>Standard</td>
</tr>
<tr>
<td>Function</td>
<td>Input/edit position data, Movement functions, Test input and output signals, Edit parameters, Switch language (English, Japanese or Chinese)</td>
</tr>
<tr>
<td>Label</td>
<td>3-color LED with backlight</td>
</tr>
<tr>
<td>Ambient operating temp./humidity</td>
<td>0 ~ 50°C  20 ~85%RH (no condensation)</td>
</tr>
<tr>
<td>Environmental resistance</td>
<td>IP40</td>
</tr>
<tr>
<td>Weight (including cable)</td>
<td>750g</td>
</tr>
<tr>
<td>Accessories</td>
<td>Touch pen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strap model STR-1</td>
</tr>
</tbody>
</table>
• DIN Rail Mounting Bracket  MEC-AT-D

- Dimensions

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• Maintenance cable

- List of maintenance cable models

<table>
<thead>
<tr>
<th>Type</th>
<th>Cable length</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated motor-encoder cable</td>
<td>1m</td>
<td>CB-APSEP-MA010</td>
</tr>
<tr>
<td></td>
<td>3m</td>
<td>CB-APSEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-APSEP-MA050</td>
</tr>
<tr>
<td>PMEC ↔ RCP2</td>
<td>1m</td>
<td>CB-PSEP-MA010</td>
</tr>
<tr>
<td></td>
<td>3m</td>
<td>CB-PSEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-PSEP-MA050</td>
</tr>
<tr>
<td>PMEC ↔ RCP2-RTBS/RTBSL-RTCS/RTCSL</td>
<td>1m</td>
<td>CB-RPSEP-MA010</td>
</tr>
<tr>
<td></td>
<td>3m</td>
<td>CB-RPSEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-RPSEP-MA050</td>
</tr>
<tr>
<td>AMEC ↔ RCA2/RCL</td>
<td>1m</td>
<td>CB-PSEP-MA010</td>
</tr>
<tr>
<td></td>
<td>3m</td>
<td>CB-PSEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-PSEP-MA050</td>
</tr>
<tr>
<td>PMEC ↔ RCP3</td>
<td>1m</td>
<td>CB-APSEP-MA010</td>
</tr>
<tr>
<td></td>
<td>3m</td>
<td>CB-APSEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-APSEP-MA050</td>
</tr>
<tr>
<td>AMEC ↔ RCA2/RCL</td>
<td>1m</td>
<td>CB-PSEP-MA010</td>
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<tr>
<td></td>
<td>3m</td>
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<td></td>
<td>5m</td>
<td>CB-PSEP-MA050</td>
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<tr>
<td>PMECE ↔ RCP2</td>
<td>1m</td>
<td>CB-ASEP-MA010</td>
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<tr>
<td></td>
<td>3m</td>
<td>CB-ASEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-ASEP-MA050</td>
</tr>
<tr>
<td>AMEC ↔ RCA2/RCL</td>
<td>1m</td>
<td>CB-PSEP-MA010</td>
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<tr>
<td></td>
<td>3m</td>
<td>CB-PSEP-MA030</td>
</tr>
<tr>
<td></td>
<td>5m</td>
<td>CB-PSEP-MA050</td>
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<tr>
<td>I/O cable</td>
<td>2m</td>
<td>CB-APMEC-PIO020-NC</td>
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<td>3m</td>
<td>CB-APMEC-PIO030-NC</td>
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<td></td>
<td>5m</td>
<td>CB-APMEC-PIO050-NC</td>
</tr>
<tr>
<td>USB cable</td>
<td>3m</td>
<td>CB-SEL-USB030</td>
</tr>
</tbody>
</table>
Components for maintenance

Please refer to the models mentioned below when arrangements such as cable replacement are needed after purchasing the product.

[RCP3/RCP2 (for specific models*) /RCA2/RCL]-[PMEC/AMEC] Motor/P3-A3-encoder integrated cable

Model **CB-APSEP-MPA**

* For RCP2-GRSS/GRLS/GRST/GRHM/GRHB-SRA4R/GRSG4R/GRGD4R

Min. bend radius = 68mm or larger (when movable unit is used)

[RCP2]-[PMEC] Motor/P1-encoder cable

Model **CB-PSEP-MA**

Min. bend radius = 68mm or larger (when movable unit is used)

[RCA]-[AMEC] Motor/A3-encoder cable

Model **CB-ASEP-MA**

Min. bend radius = 68mm or larger (when movable unit is used)
**[RCP2 small rotary]-[PMEC] Small rotary motor/P3-encoder integrated cable**

**Model** CB-RPSEP-MPA

- **Mechanical side**
  - Pin number: A1, B1, A2, B2, A3, B3, A6, B6, A7, B7, A8, B8, A4, B4, A5, B5, A9, B9, A10, B10, A11, B11
  - Color: Black (ØA), Brown (Ø/A), Green (ØB), Yellow (VMM), Red (Ø/B), Orange (L+S), Gray (LS-), Red (A+), Green (A-), Black (B+), Brown (B-)

- **Controller side**
  - Pin number: 1, 2, 5, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24
  - Color: White (label), Black (label), NC, Shield (FG)

Min. bend radius r=68mm or larger (when movable unit is used)

**I/O cable for PMEC-C/AMEC-C**

**Model** CB-APMEC-PIO

- **Flat cable (10 pin)**

**Pin NO.** | **Electric wire color** | **Signal**
--- | --- | ---
1 | Brown | \(\text{P1O} \) \(\text{Power} \)
2 | Red | \(\text{P1O} \) \(\text{Power} \)
3 | Orange | \(\text{Input} \)
4 | Yellow | \(\text{Input} \)
5 | Green | \(\text{Input} \)
6 | Blue | \(\text{Input} \)
7 | Purple | \(\text{Input} \)
8 | Grey | \(\text{Input} \)
9 | White | \(\text{Output} \)
10 | Black | \(\text{Output} \)
Feature

1 Can operate with same signal as a solenoid valve.

The signal that operates the actuator is the same as the signal that operates the air cylinder. Therefore, the PLC program currently in use can be used without modification even if the air cylinder is replaced by an electric-powered cylinder. Either a single solenoid or a double solenoid may be used.

2 Establishes a dustproof type that supports IP53.

We provide dustproof type controllers with an IP53 equivalent (*1) protection structure, so that the controller can be mounted outside the control panel.

(Note 1) Bottom surface excluded.

3 Provides the simple absolute type that can be operated immediately upon power-ON without homing.

Since the simple absolute type can store the current position with the assistance of the absolute battery unit during power-up or after the emergency stop is deactivated; it can start the next operation at that position.

(Note 1) When the actuator is connected to the simple absolute type controller, the model is considered an incremental model.

(Note 2) It can not be used for the linear servo type.

4 Pushing and intermediate stop operation is available.

Like air cylinders, the pushing operation is available. In this operation, you can stop with a rod being pushed to a workpiece. Since the force for the push operation is adjustable within a range between 20 to 70 % of the maximum pushing force and a signal is generated when it reaches the specified pushing force, it can be used to determine clamping or size of workpieces.

5 Easy data entry with the dedicated touch panel teaching unit.

Data, such as setting target positions or pushing force, are easily entered with the optional touch panel teaching model: CON-PT. Since the touch panel teaching unit provides an interactive menu and can be controlled directly on the screen, you can operate intuitively with no assistance from operation manuals.
Model List

<table>
<thead>
<tr>
<th>Series name</th>
<th>PSEP</th>
<th>ASEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Name</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Positioning method</td>
<td>Incremental encoder</td>
<td>Incremental encoder</td>
</tr>
<tr>
<td>Description</td>
<td>Position controller, for pulse motors, specialized to 2 positions / 3 positions positioning and easier control</td>
<td>Position controller, for servo motors, specialized to 2 positions / 3 positions positioning and easier control</td>
</tr>
<tr>
<td>Number of positions</td>
<td>2 positions / 3 positions</td>
<td>2 positions / 3 positions</td>
</tr>
</tbody>
</table>

* The absolute battery unit is attached to the simple absolute type (see P500).

Model

**PSEP**

Series Type: C

Motor: Incremental type

Encoder: Incremental encoder

I/O type: NPN type

I/O cable length: 0

Power supply voltage: DC24V

High acceleration compatible model: Standard

**ASEP**

Series Type: C

Motor: Incremental type

Encoder: Incremental encoder

I/O type: NPN type

I/O cable length: 0

Power supply voltage: DC24V

High acceleration compatible model: Standard

* If connecting to RCP3-SA4C/SA5C/SA6C or RCP3D-RA3C/SA5C, specify “H” for high-acceleration compatible model.
## System structure

### [PSEP]

- **PC Software**
  - See P499
  - RS232 version:
    - Model: RCM-101-MW-ENG
  - USB version:
    - Model: RCM-101-USB-ENG
  - Cable supplied with the PC software.
  - *Version older than 7.00.01.00 cannot be used with the SEP controller.*

- **Teaching Pendant for PCON/RPCON/PSEP**
  - See P497
  - Model: CON-PTM-ENG (standard)
  - Model: CON-PTM-M-ENG (with deadman switch)
  - Model: CON-PTM-M-S-ENG (safety compliant)

- **Absolute Battery Unit for SEP Controller**
  - Supplied with simple absolute type
  - Model: SEP-ABUM (standard)
  - Model: SEP-ABUM-W (for dustproof)
  - See P500

- **PIO Cable**
  - Model: CB-APSEP-PIO020 (standard)
  - Model: CB-APSEP-W-PIO020 (for dustproof)
  - Standard 2m
  - (Supplied with the controller)
  - See P502

- **Motor/P1-encoder Cable**
  - Model: CB-PSEP-MPA
  - Standard 1m / 3m / 5m
  - (Supplied with the actuator)
  - See P501

- **Motor/P3-encoder Cable**
  - Model: CB-PCS-MPA
  - Standard 1m / 3m / 5m
  - (Supplied with the actuator)
  - See P502

- **RCP2 Motor/P3-encoder Integrated Cable**
  - Model: CB-PSEP-MPA
  - Standard 1m / 3m / 5m
  - (Supplied with the actuator)
  - See P501

- **RCP2 Small Rotary Motor/P3-encoder Cable**
  - Model: CB-RTSEP-MPA
  - Standard 1m / 3m / 5m
  - (Supplied with the actuator)
  - See P501

- **Actuator: RCP2 series**
  - Rotary type RCP2-RT
  - Gripper type RCP2-GRS/GRM/GR3
  - (See below for small rotary)

- **Actuator: RCP3 series**
  - Linear Motor Type
  - Table/Arm Type
  - Gripper/ Rotary Type
  - Cleanroom Type
  - Splash-Proof

### Controllers

- **PCON**
- **RPCON**
- **PSEP**
- **ASEP**

### Motor Types

- **Pulse Motor**
- **Servo Motor (24V)**
- **Servo Motor (230V)**
- **Linear Motor**

### Other Components

- **DC24V Power Supply**
  - 24V
  - 0V
  - FG

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System structure

[ASEP]

PC Software
See P499
RS232 version:
<Model: RCM-101-MW-ENG>
USB version:
<Model: RCM-101-USB-ENG>
* Cable supplied with the PC software.
* Version older than 7.00.01.00 cannot be used with the SEP controller.

Teaching Pendant for
ACON/RACON/ASEP
See P497
<Model: CON-PT-M-ENG (standard)
<Model: CON-PT-M-ENG (with deadman switch)
<Model: CON-PG-M-ENG (safety compliant)

Field network
DeviceNet/CC-Link/ProfiBus

PIO Cable
<Model: CB-APSEP-PIO020 (standard)
<Model: CB-APSEP-PIO020 (for dustproof)
Standard 2m
(Supplied with the controller)
See P502

DC24V
24V @
0V @
FG @

Absolute Battery Unit for SEP Controller
(Model: SEP-ABUM)
(Model: SEP-ABUM-W (for dustproof)
See P500

Motor/A1-encoder Cable
<Model: CB-ACS-MPA
Standard 1m / 3m / 5m
(Supplied with the actuator)
See P501

Motor/P3-A3-encoder Integrated Cable
<Model: CB-APSEP-MPA
Standard 1m / 3m / 5m
(Supplied with the actuator)
See P502

Motor/A3-encoder Cable
<Model: CB-ASEP-MPA
Standard 1m / 3m / 5m
(Supplied with the actuator)
See P501

Actuator: RCA series

Actuator: RCA2/RCL series

<ACON/RACON/ASEL>

Note:
* Cable supplied with the PC software.
* Version older than 7.00.01.00 cannot be used with the SEP controller.
The SEP controller provides the following six PIO patterns from which you can choose for operation. Also, PIO patterns 0 to 2 support both the single solenoid and double solenoid signal configurations.

### PIO Pattern Description

<table>
<thead>
<tr>
<th>PIO Pattern Number</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIO Pattern Name</strong></td>
<td>Standard 2-position movement</td>
<td>Moving speed change</td>
<td>Position Data Change</td>
<td>2-input 3-position travel</td>
<td>3-input 3-position travel</td>
<td>Continuous cycle operation</td>
</tr>
<tr>
<td><strong>Feature</strong></td>
<td>Continuous cycle operation</td>
<td>2-position motion</td>
<td>2-position motion</td>
<td>3-position motion</td>
<td>3-position motion</td>
<td>Continuous motion between 2 positions</td>
</tr>
<tr>
<td></td>
<td>Push</td>
<td>Push</td>
<td>Push</td>
<td>Push</td>
<td>Push</td>
<td>Push</td>
</tr>
<tr>
<td></td>
<td>–</td>
<td>Changing speed during motion</td>
<td>Motion position data change</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Supported solenoid configurations</strong></td>
<td>Single</td>
<td>Double</td>
<td>Single</td>
<td>Double</td>
<td>Single</td>
<td>Double</td>
</tr>
</tbody>
</table>

### Input

<table>
<thead>
<tr>
<th>Input</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion signal</td>
<td>Motion signal 1</td>
<td>Motion signal</td>
<td>Motion signal 1</td>
<td>Motion signal</td>
</tr>
<tr>
<td>Pause signal</td>
<td>Motion signal 2</td>
<td>Pause signal</td>
<td>Motion signal 2</td>
<td>Motion signal 2</td>
</tr>
<tr>
<td>/Servo-ON signal</td>
<td>/Servo-ON signal</td>
<td>/Servo-ON signal</td>
<td>/Servo-ON signal</td>
<td>/Servo-ON signal</td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th>Output</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retract motion output signal</td>
<td>Retract motion output signal</td>
<td>Retract motion output signal</td>
<td>Retract motion output signal</td>
<td>Retract motion output signal</td>
</tr>
<tr>
<td>Extend motion output signal</td>
<td>Extend motion output signal</td>
<td>Extend motion output signal</td>
<td>Extend motion output signal</td>
<td>Extend motion output signal</td>
</tr>
<tr>
<td>Homing completion signal /Servo-ON output signal</td>
<td>Homing completion signal /Servo-ON output signal</td>
<td>Homing completion signal /Servo-ON output signal</td>
<td>Midpoint position output signal</td>
<td>Homing completion signal /Servo-ON output signal</td>
</tr>
<tr>
<td>Alarm output signal /Servo-ON output signal</td>
<td>Alarm output signal /Servo-ON output signal</td>
<td>Alarm output signal /Servo-ON output signal</td>
<td>Alarm output signal /Servo-ON output signal</td>
<td>Alarm output signal /Servo-ON output signal</td>
</tr>
</tbody>
</table>

* For the signals above, see the controller manuals (downloadable from our website).

### PIO Pattern 0 (Standard 2-Position travel)

This PIO pattern involves movements between two positions—the end position and the home position. The positions can be set numerically to any position (by inputting to the controller using the optional touch panel teaching pendant).

**Two motions are possible:** A “positioning motion” moves the rod or the slider to the specified position, and a "pushing motion" pushes the rod against a workpiece.

#### Positioning Motion (Single Solenoid)

- **Positioning Motion (Single Solenoid)**
  - **Input Signals:** Input 0 ON
  - **End Position Data:**
    - Position: 30
    - Speed: 100
    - Pushing force: –
    - Width: –

  - **Home Position Data:**
    - Position: 0
    - Speed: 50
    - Pushing force: –
    - Width: –

  - **When Input 0 is turned ON, the slider/rod moves to the end position (30mm coordinate) at a speed of 100mm/s.**

  - **When Input 0 is turned OFF, the slider/rod returns to the home position (0mm coordinate) at a speed of 50mm/s.**
Positioning Motion (Double Solenoid)

```
Input Signals
Input 0  OFF
Input 1  ON
Input 2  –
Input 3  –

(End position)
Position  30
Speed 100
Pushing force –
Width –
```

Input Signals
Input 0  ON
Input 1  OFF
Input 2  –
Input 3  –

(Home position)
Position  0
Speed 50
Pushing force –
Width –

---

Push motion (single solenoid)

```
Input Signals
Input 0  ON
Input 1  –
Input 2  –
Input 3  –

(End position)
Position 30
Speed 100
Pushing force 50
Width 10
```

---

Push motion (double solenoid)

```
Input Signals
Input 0  OFF
Input 1  ON
Input 2  –
Input 3  –

(End position)
Position 30
Speed 100
Pushing force 50
Width 10
```

---

* The pushing motion is performed only if there is a numerical value for the pushing force in the controller’s position data. (If there is no numerical value for the pushing force, a positioning motion will be performed instead.)
PIO Pattern 1 (Speed Change During Movement)
This PIO pattern involves movements between two positions—the end position and the home position. The speed can be changed in 2 stages. (The speed can be either increased or decreased.) The speed change occurs when the rod/slider passes the speed change position, specified in the position values.

(Single Solenoid)

![Graph showing speed change pattern]

### Input Signals
- **Input 0**: ON
- **Input 1**: 
- **Input 2**: ON
- **Input 3**: 

### Home Position Data
- **Position**: 0
- **Speed**: 50
- **Trigger point**: 12
- **Trigger speed**: 100
- **Pushing force**: –
- **Width**: –

### End Position Data
- **Position**: 30
- **Speed**: 100
- **Trigger point**: 12
- **Trigger speed**: 50
- **Pushing force**: –
- **Width**: –

---

PIO Pattern 2 (Position Change)
This PIO pattern involves movements between two positions—the end position and the home position. You can set 2 sets of data for the end / home positions, speed, pushing force, and pushing width. Switching between the 2 sets of data can be done by turning ON/OFF Input 2, which is the signal for switching the target position.

(Single Solenoid)

![Graph showing position change pattern]

### Input Signals
- **Input 0**: ON
- **Input 1**: 
- **Input 2**: ON
- **Input 3**: 

### End Position Data 1
- **Position**: 30
- **Speed**: 100
- **Pushing force**: –
- **Width**: –

### End Position Data 2
- **Position**: 20
- **Speed**: 50
- **Pushing force**: –
- **Width**: –
PIO Pattern 3 (2-Input 3-Position Travel)
This PIO pattern involves movements between 3 positions—the end position, the home position, and an intermediate position. Changing between the positions is done by a combination of 2 signals, Input 0 and Input 1.

**Positioning Motion**

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>OFF</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

When only Input 0 is turned ON, the rod moves to the home position at the specified speed.

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>ON</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

When Input 0 and Input 1 are both turned ON, the rod moves to the intermediate position at the specified speed.

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>ON</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

When only Input 1 is turned ON, the rod moves to the end position at the specified speed.

PIO Pattern 4 (3-Input 3-Position Travel)
This PIO pattern involves movements between 3 positions—the end position, the home position, and an intermediate position. Changing between positions is done by three signals—Input 0, Input 1 and Input 2, which are commanded to move to the home, end and intermediate positions, respectively.

**Positioning Motion**

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>–</td>
</tr>
</tbody>
</table>

When Input 0 is turned ON, the rod moves to the home position at the specified speed.

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>–</td>
</tr>
</tbody>
</table>

When Input 2 is turned ON, the rod moves to the intermediate position at the specified speed.

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>–</td>
</tr>
</tbody>
</table>

When only Input 1 is turned ON, the rod moves to the end position at the specified speed.

PIO Pattern 5 (Continuous Cycle Operation)
This PIO pattern involves continuous cycling between 2 positions—the end and home positions. When Input 0 (continuous operation signal) is turned ON, the rod continuously moves between the specified 2 positions.

If Input 0 is turned OFF while in motion, it stops after reaching the current destination.

**Positioning Motion**

**Input Signals**

<table>
<thead>
<tr>
<th>Input 0</th>
<th>Input 1</th>
<th>Input 2</th>
<th>Input 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

When Input 0 is turned ON, the rod moves continuously between the end and home positions at the specified speed.
### Specification Table

<table>
<thead>
<tr>
<th>Item</th>
<th>PSEP</th>
<th>Type</th>
<th>ASEP</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller type</td>
<td>PSEP</td>
<td>Type</td>
<td>ASEP</td>
<td>Type</td>
</tr>
<tr>
<td>Connected actuators</td>
<td>RCP2/RCP3 series actuator</td>
<td>RCA/RCA2/RCL series actuator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of control axes</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating method</td>
<td>Positioner Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of positions</td>
<td>2 positions/3 positions/4 positions*2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backup memory</td>
<td>EEPROM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O connector</td>
<td>10 pin connector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of I/O points</td>
<td>4 input points/4 output points</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O power supply</td>
<td>External power supply DC24Vs10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicated type for serial communication</td>
<td>RS485 1ch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication cable for peripheral equipment</td>
<td>CB-APSEP-PIO CB-APSEPW-PIO CB-APSEP-PIO CB-APSEPW-PIO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position detection method</td>
<td>Incremental encoder (Attaching an absolute battery unit makes the simple absolute specification possible *3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor-encoder</td>
<td>For RCP2 connection</td>
<td>CB-PSEP-MAA CB-PSEPW-MAA</td>
<td>(Connection not possible)</td>
<td></td>
</tr>
<tr>
<td>For RCP2 connection</td>
<td>CB-PSEP-MAA CB-PSEPW-MAA</td>
<td>(Connection not possible)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For RCA2/RCP3 connection</td>
<td>CB-APSEP-MAA CB-APSEPW-MAA</td>
<td>(Connection not possible)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For RCP2 mini rotary connection</td>
<td>CB-APSEP-MAA CB-APSEPW-MAA</td>
<td>(Connection not possible)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input voltage</td>
<td>DC24Vs10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlled power supply capacity</td>
<td>0.5A (0.8A for the simple absolute specification)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Motor Power Capacity

<table>
<thead>
<tr>
<th>Motor size</th>
<th>Rated value</th>
<th>Max.(*4)</th>
<th>Motor power output</th>
<th>Rated value</th>
<th>Maximum Power-saving(*5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20P</td>
<td>0.4A</td>
<td>2.0A</td>
<td>2W</td>
<td>0.8A</td>
<td>6.4A</td>
</tr>
<tr>
<td>28P</td>
<td>0.4A</td>
<td>2.0A</td>
<td>5W</td>
<td>1.0A</td>
<td>4.6A</td>
</tr>
<tr>
<td>35P</td>
<td>1.2A</td>
<td>2.0A</td>
<td>10W (for RCL)</td>
<td>1.3A</td>
<td>6.4A</td>
</tr>
<tr>
<td>42P</td>
<td>1.2A</td>
<td>2.0A</td>
<td>10W (for RCA2)</td>
<td>1.3A</td>
<td>4.4A</td>
</tr>
<tr>
<td>56P</td>
<td>1.2A</td>
<td>2.0A</td>
<td>20W</td>
<td>1.3A</td>
<td>5.1A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20W (for 205 motor)</td>
<td>1.7A</td>
<td>5.1A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30W</td>
<td>1.3A</td>
<td>2.2A</td>
</tr>
<tr>
<td>Inrush current (*1)</td>
<td>Max. 10A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Other Specifications

- **Motor Power Output**
  - **DC500V 1MΩ**
  - **10~57Hz**
  - **4.9m/s² (continuous), 9.8m/s² (intermittent)**
  - **0°C~40°C**
  - **1~2ms**
  - **0.6A**
  - **6.0A**
  - **5.1A**
  - **5.1A**
  - **3.2A**
  - **4.4A**
  - **4.4A**
  - **4.4A**

(*) upon power-ON, an electrical current of 5 to 12 times as much as the rated current, called "in rush current" flows for 1 to 2 ms. Note that the amount of inrush current varies based on the impedance of power source lines.

(2) This applies to the case where two position data points are set at each of the end and home positions during a "position change" motion pattern process.

(3) The simple absolute type controllers cannot be used for the linear servo type.

(4) The current reaches its maximum level during the servo motor excitation phase detection performed during the initial servo ON process after the power has been turned on. (Usually: Approx. 1 to 2 seconds, max. 10 seconds.)

(5) When power to the motor is turned ON after shutting it OFF, current of about 6.0 A flows (for approx.1~2ms).

(6) The max. value of current can be detected in the magnetic pole detection process or during collision or constraint. The condition continues for up to 10 seconds in the magnetic pole detection process. In this process the above current is required.

(7) The bottom surface is excluded.
**Names**

ASEP, PSEP, Incremental type

- Status LED (for SV, ALM, EMG)
- SIO connector
- PIO connector
- Motor-encoder cable connector
- Power connector
- FG connector
- Actuator model number sticker

ASEP, PSEP, Simple absolute type

- LED for ABS
- Status LED (for SV, ALM, EMG)
- SIO connector
- PIO connector
- Motor-encoder cable connector
- Battery connector
- Power connector
- FG connector
- Actuator model number sticker

**Outer dimensions**

**Standard type**

- Movable width of DIN securing tab: 5mm

**Dustproof type**

- Movable width of DIN securing tab: 5mm
### Touch Panel Teaching Pendant for Position Controller

**Feature 1** A data input device with an intuitive touch panel menu screen that is easy to operate, even for first-time users. You can use it to configure settings such as home / end positions, intermediate position, speed, and pushing force, or to run an adjustment operation such as jogging, inching, and moving to a specified position.

**Feature 2** Intuitive and interactive touch panel menus allow for easy configuration, even for first-time users.

#### Model & Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>CON-PT-M-ENG, CON-PD-M-ENG, CON-PG-M-S-ENG</td>
</tr>
<tr>
<td>Type</td>
<td>Standard type, Deadman switch type, Safety compliant type</td>
</tr>
<tr>
<td>Connectible controllers</td>
<td>PSEP/PCON/RPCON ASEP/ACON/RACON SCON/ERC2 (*)</td>
</tr>
<tr>
<td>3-position deadman switch</td>
<td>- O O</td>
</tr>
<tr>
<td>Functions</td>
<td>Input and edit position data, Movement functions (move to specified position, jog, inch), Test input and output signals, Edit parameters</td>
</tr>
<tr>
<td>Display</td>
<td>3-color LED with backlight</td>
</tr>
<tr>
<td>Operating ambient temp./Humidity</td>
<td>0<del>50°C 20</del>85% RH (non-condensing)</td>
</tr>
<tr>
<td>Environmental resistance</td>
<td>IP40</td>
</tr>
<tr>
<td>Weight (incl. 5m cable)</td>
<td>Approx. 750g, Approx. 780g, Approx. 780g</td>
</tr>
</tbody>
</table>

(*) If an ERC2 type controller does not have "4904" on the serial number label, it cannot be connected.

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If you have a "CON" type controller (i.e. PCON, RCON, ACON, RACON, SCON, ERC2) and an "SEP" type controller (PSEP or ASEP) linked together, you cannot connect the teaching pendant to it.
Absolute battery unit for SEP controllers

Names of Parts/Exterior Dimensions

Option
- Strap  Model STR-1

CON-PG-M-S-ENG Wiring Drawing
PC Software (Windows Only)

Features
A startup support software for inputting positions, performing test runs, and monitoring. With enhancements for adjustment functions, the startup time is shortened.

Model
RCM-101-MW-ENG
(External device communication cable + RS232 conversion unit)

Configuration
Program
Position
Move
ACC
ECL
Push
Rate
Zone
Mode
Comment
0 0.00 500.00 0.00 0.00 0.00 0.00 0.00 0.00
1 0.00 500.00 0.00 0.00 0.00 0.00 0.00 0.00
2 0.00 500.00 0.00 0.00 0.00 0.00 0.00 0.00

Input range: -0.15 to 300.15

Model
RCM-101-USB-ENG
(External device communication cable + USB adapter + USB cable)

Configuration
Program
Position
Move
ACC
ECL
Push
Rate
Zone
Mode
Comment
0 0.00 500.00 0.00 0.00 0.00 0.00 0.00 0.00
1 0.00 500.00 0.00 0.00 0.00 0.00 0.00 0.00
2 0.00 500.00 0.00 0.00 0.00 0.00 0.00 0.00

Input range: -0.15 to 300.15
**Absolute battery unit for SEP controllers**

**Description**
Supplied with the PSEP and ASEP simple absolute controllers. This is a battery unit used for backing up the current position data.

**Model**
- **SEP-ABUM** (standard type)
- **SEP-ABUM-W** (dustproof type)

**Specifications**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient operating temp./Humidity</td>
<td>0~40°C (around 20°C preferred), 95% RH or below (non-condensing)</td>
</tr>
<tr>
<td>Ambient operating environment</td>
<td>No corrosive gases</td>
</tr>
<tr>
<td>Absolute battery (*1)</td>
<td>Model: AB-7 (Ni-MH battery/Approx. 3-year life)</td>
</tr>
<tr>
<td>Controller-absolute battery unit cable (*1)</td>
<td>Model: CB-APSEP-ABM005 (0.5m long)</td>
</tr>
<tr>
<td>Weight</td>
<td>Standard type: Approx. 230g; Dustproof type: Approx. 260g</td>
</tr>
<tr>
<td>Allowable encoder RPM during data retention(*2)</td>
<td>800rpm 120h, 400rpm 240h, 200rpm 360h, 100rpm 480h</td>
</tr>
<tr>
<td>Position data retention duration (*2)</td>
<td>120h 240h 360h 480h</td>
</tr>
</tbody>
</table>

(*1) The absolute battery unit comes with a cable to connect the controller and the absolute battery unit.
(*2) Position data retention time changes with the allowable encoder RPMs during data retention.

(800rpm → 120h, 400rpm → 240h, 200rpm → 360h, 100rpm → 480h)

**Cautions on Controllers and Options**

- When mounting the controller to a DIN rail, use the supplied spacer between the controllers to prevent them from contacting each other, to deal with heat dissipation. (See Fig. 1)
- When mounting the absolute battery units and controllers, place the absolute battery units below the controllers. (See Fig. 2) If there is not enough space below the controllers, mount the absolute battery units in such a way that the temperature around the absolute battery unit stays below 40°C or below.
When you need spare parts after purchasing the product, such as when replacing a cable, refer to the list of models below.

**Motor/P3-A3-encoder integrated cable for connecting [RCP3/RCP2 (for specific models*)/RCA2/RCL] and [PSEP/ASEP]**

* Enter the cable length (L) into [ ] . Compatible to a maximum of 20 meters.
  
  Ex. 080 = 8m

**Motor/P3-encoder cable for connecting [RCP2] and [PSEP]**

* Enter the cable length (L) into [ ] . Compatible to a maximum of 20 meters.
  
  Ex. 080 = 8m

**Motor/A3-encoder cable for connecting [RCA] and [ASEP]**

* Enter the cable length (L) into [ ] . Compatible to a maximum of 20 meters.
  
  Ex. 080 = 8m

Min. bend radius r = 68 mm or larger (when movable type is used)
Motor/P3-encoder cable for connecting [RCP2 mini rotary] and [PSEP]

Model CB-RPSEP-MPA

*I Enter the cable length (L) into □□□□. Compatible to a maximum of 20 meters. Ex. 080 = 8m*

Min. bend radius r = 68 mm or larger (when movable type is used)

I/O cable for PSEP-C/ASEP-C

Model CB-APSEP-PIO

*I Enter the cable length (L) into □□□□. Compatible to a maximum of 10 meters. Ex. 080 = 8m*

I/O cable for PSEP-CW/ASEP-CW

Model CB-APSEPW-PIO

*I Enter the cable length (L) into □□□□. Compatible to a maximum of 10 meters. Ex. 080 = 8m*