RCP2 Quick Start Guide

INTELLIGENT SOLUTIONS

1. Parts Confirmation

Please contact your sales representative if any of these parts are missing or incorrect:
- Controller: RCP2-C or RCP2-CG
- Actuator: Slider type or Rod type
- I/O Flat Cable: CB-RCA-PIO020
- Motor Cable: RB-RCP2-MA***
- Encoder Cable: CB-RCP2-PA***
- CD with Manuals (PDF format)

Optional:- Teaching Pendant   - PC Software Kit   - Controller Link Cable   - SIO Converter
                RCA-T/E   RCB-101-MW   CB-RCB-CTL002   RCB-TU-SIO-A/B

2. Installation

a. Install the Actuator.

Screw diameter	M4	M5	M6	M8
Standard torque for bolting	2.3Nm (0.23Kgf.m)	4.3Nm (0.44Kgf.m)	6.7Nm (0.68Kgf.m)	14.0Nm (1.43Kgf.m)

NOTE: The slider type actuator has tapped holes in its back for installation purpose. The size and depth of tapped holes are as follows. Please be sure to use the proper screw length to avoid penetration.

Model	Tap size	Depth of thread
SA5	M4	4mm ~ 7mm
SA6	M5	5mm ~ 9mm
SA7	M5	5mm ~ 9mm
SS	M5	5mm ~ 8mm
SM	M8	8mm ~ 10mm

b. Mount to the Actuator.
- Slider Type: Use the 4 tapped holes located on the top of the slider.
   Max torque required for mounting:
      SA5/SA6/SA7/SS/SSR   7.5Nm (0.77Kgf.m)
      SM/SMR   19.6Nm (2.0Kgf.m)
- Rod Type: Be sure to use a wrench to prevent adding rotational moment to the rod (see picture to the right). Use a 14mm wrench for RXA/RSA models and a 19mm wrench for the RMA model.

c. Mount the Controller.

3. Wiring

- Connect to DC24V (Min. 2A) power supply
- Ground the FG wire
- Connect the emergency stop and motor power supply wires
- Connect the I/O flat cable
   Because the HOLD signal is a normally closed contact, it is ON during operation and OFF during pause. If there is no PLC software at the time of adjustment, change parameter #15 (refer to the last page of this Quick Start Guide). You can also temporarily short it to 0V in case of NPN or 24V in case of PNP. (It becomes necessary to use the teaching pendant or PC for operation). Afterwards, you must remove this short if you plan to automatically operate it with a PLC.
- Connect the motor cable & encoder cable
   When combining multiple axes, be sure to verify that the configurations for your actuators and controller are correct. Otherwise, they will not operate properly.

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4. LED Indicator for Power Supply

Before supplying 24V power, confirm that the PORT switch on the controller is turned OFF and that the emergency stop circuit is not operating.

Also check to make sure that the green [RDY] and [RUN] LED indicators in front of the controller are both lit, and that the red [ALM] indicator is not lit.

A lit [ALM] indicates that the emergency stop circuit is open, or that an alarm is occurring. At this point, you should refer to the "Troubleshooting" section of your Operating Manual to resolve this problem.

5. Input Data & Operate with PC or Teaching Pendant

Connect the SIO connector at the front of the controller to a teaching pendant or PC. Then turn ON the PORT switch. (If you are using a teaching pendant, first turn OFF the EMG switch. Otherwise, the emergency stop condition will occur).

Input desired data such as position, speed, acceleration/deleceration, position range.

Note that during operation the Start Signal Input and Home Return are OFF, and Pause is ON.

🟡 System Configuration Diagram

Refer to following pages for operating instructions

PLC

I/O Signal

Flat Cable
<CB-RCA-PIO020>

Emergency stop circuit & 24VDC

Controller
<RCP2-C>
<RCP2-CG>

Teaching Pendant, Standard <RCA-T>

PC

PC Software
<RCB-101-MW>

Encoder Cable
<CB-RCP2-PA***>

Motor Cable
<CB-RCP2-MA***>

Actuator
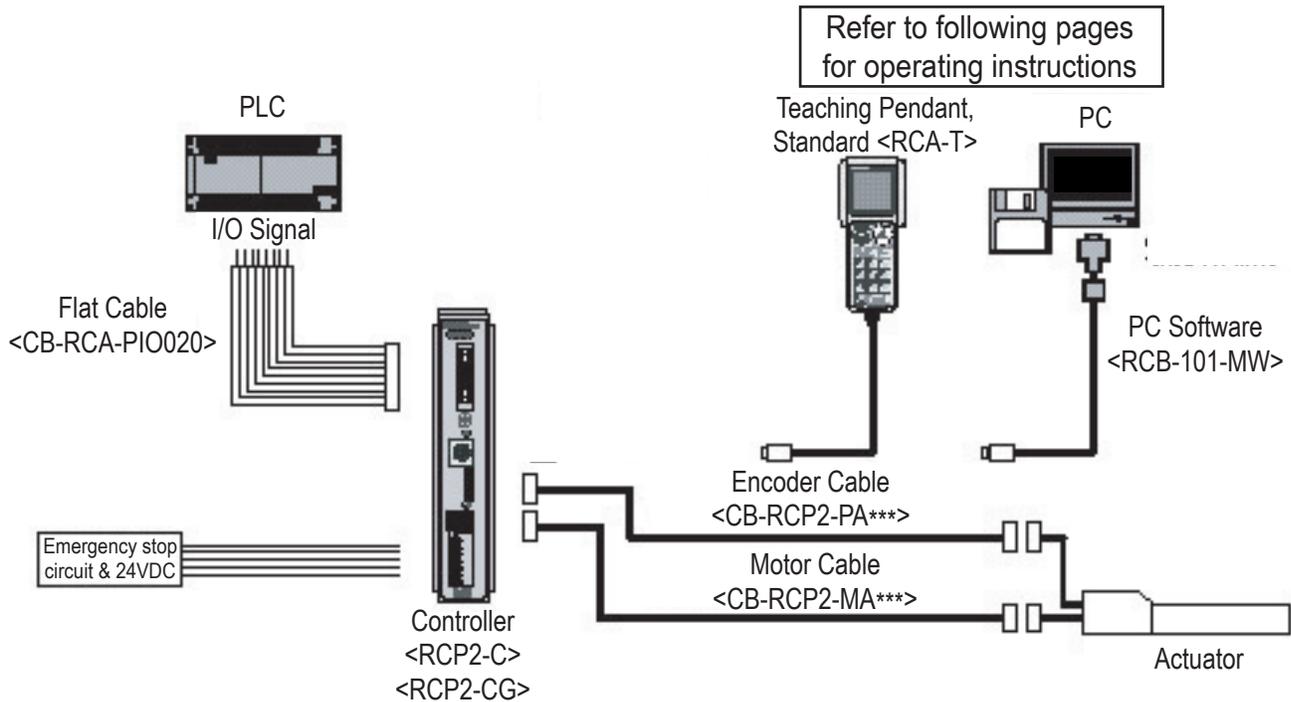
🟡 Power and Emergency Stop Connections

- Internal Drive-Power Cutoff Relay Type <RCP2-C>

External EMG Circuit

Jumper

Jumper

24V
0V

S1
S2
MPI
MPO
24V
N
EMG

- External Drive-Power Cutoff Relay Type <RCP2-CG>

External EMG Switch

Safety Relay Unit

Contactor

24V
0V
FG

S1
S2
MPI
MPO
24V
N
FG
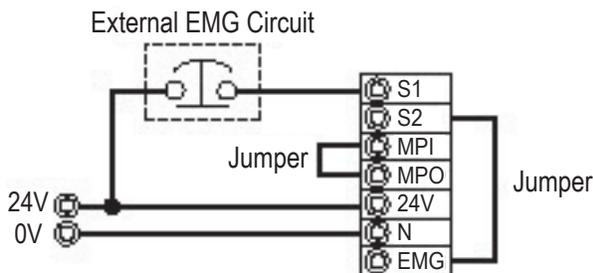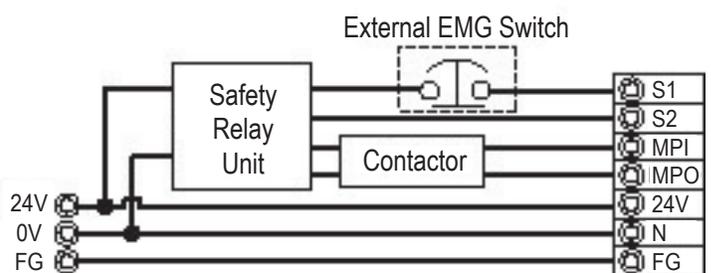
Note: The S1 and S2 connections correspond to the emergency stop of the Teaching Pendant.

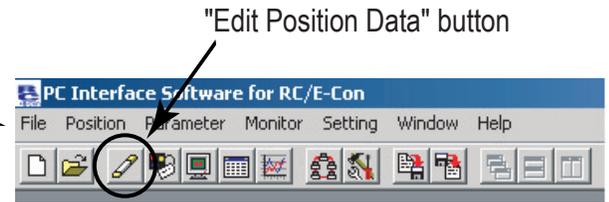# ● Operation with the PC Software or Teaching Pendant

As an example, we will set **50mm** as Position No. 1 and move the actuator to this position.
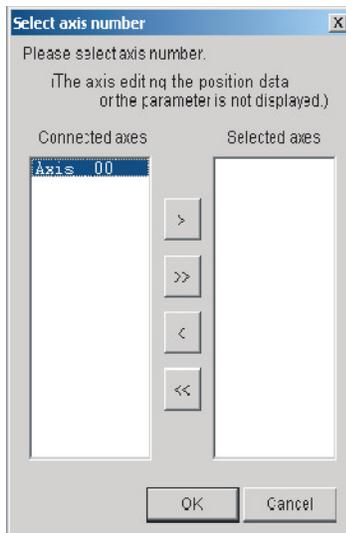
1. Using the PC Software

① **Action** Run the software
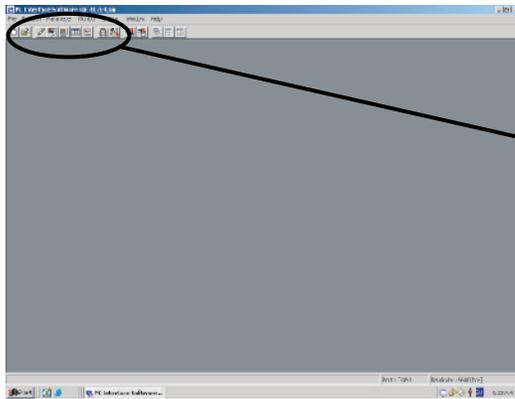
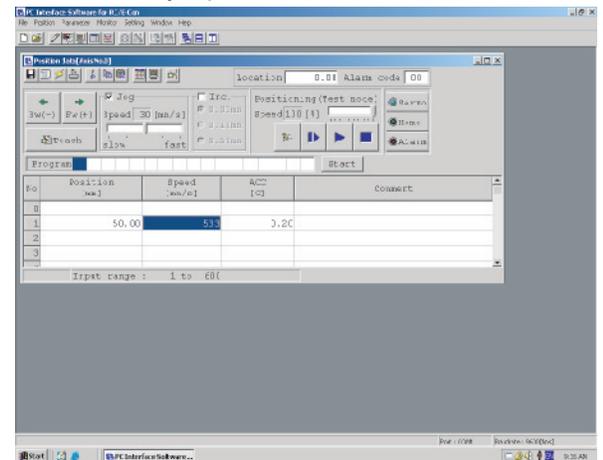② **Action** Click "Edit Position Data" button

"Edit Position Data" button

③ **Action** Click $>$, then OK buttons

④ **Action1** Move the cursor to Position No. 1

Action2 Input 50.00 and hit the "Enter" key

Other data, such as speed and acceleration are automatically input with their default values.

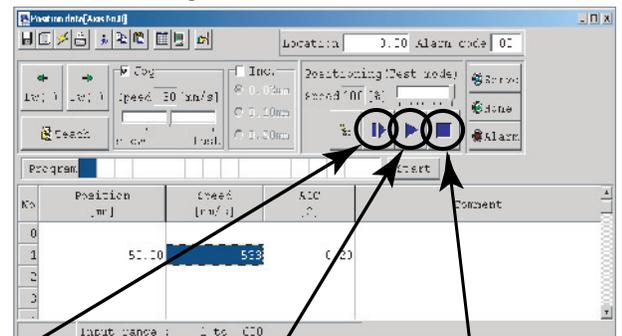⑤ **Action** Click "Send to Controller" button

All data in the Position Table is sent to the controller.
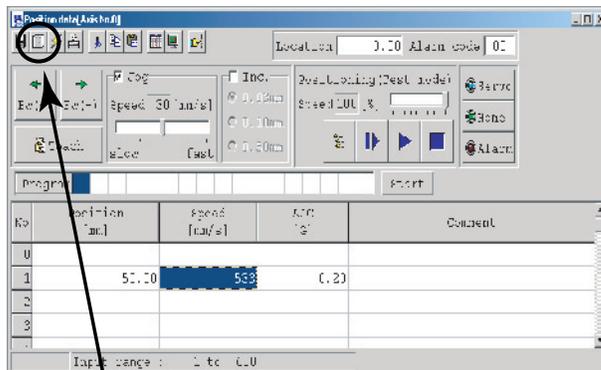
"Send to Controller" button

⑥ **Action** Click "Move" button

The actuator will move 50mm to Position No. 1. Use the "Stop" button to stop movement. During power start-up, the actuator will return to its Home before moving 50mm to Position No. 1.

"Move" button

"Continuous Move" button

"Stop" button

2. Using the Teaching Pendant (Standard RCA-T model)

① Action Select "Edit/Teach" & hit enter

```
Select Mode      Axis1
*Edit/Teach (Position)
*Monitor
*Error List
*User Parameter
*User Adjustment



_____

Select Mode--> Return
(You may select with
    the minus key)
```

② Action Move the cursor to Position No. 1 & press the ▼ key

```
Edit/Teach        Axis1
No  Position  Vel   ACC
        mm    mm/s   G
 0         *     *    *
 1         *     *    *
 2         *     *    *
 3         *     *    *
 4         *     *    *
 5         *     *    *
 6         *     *    *
 7         *     *    *
Add/Del: No -->Return
Teach/Play:
   Position --> Return
[Srv ON  Pos    0.00]
```

③ Action Input "50.00" for Position No. 1 & hit enter

Other data, such as speed & acceleration are automatically inputted with their default values.

```
Edit/Teach        Axis1
No  Position  Vel   ACC
        mm    mm/s   G
 0         *     *    *
 1     50.00  300  0.20
 2         *     *    *
 3         *     *    *
 4         *     *    *
 5         *     *    *
 6         *     *    *
 7         *     *    *
Add/Del: No -->Return
Teach/Play:
   Position --> Return
[Srv ON  Pos    0.00]
```

④ Action Press the ◀ key & hit enter

```
Edit/Teach        Axis1
No  Position  Vel   ACC
        mm    mm/s   G
 0         *     *    *
 1     50.00  300  0.20
 2         *     *    *
 3         *     *    *
 4         *     *    *
 5         *     *    *
 6         *     *    *
 7         *     *    *
Add/Del: No -->Return
Teach/Play:
   Position --> Return
[Srv ON  Pos    0.00]
```

⑤ Action Press the ▣ key, select "* Move", & hit enter

```
Edit/Teach        Axis1
No  Position  Vel   ACC
        mm    mm/s   G
 0         *     *    *
 1     50.00  300  0.20
 2         *     *    *
 3         *     *    *
 4         *     *    *
 5         *     *    *
 6         *     *    *
 7         *     *    *
*Direct Teach: SrvOFF
*Job *Increment *Home
*Move *Continuous
[Srv ON  Pos     0.00]
```

⑥ Action Select "Vel" with the ▣ key & hit enter

The actuator will move 50mm to Position 1. Use the ESC key to pause movement.

```
Edit/Teach        Axis1
No  Position  Vel   ACC
        mm    mm/s   G
 0         *     *    *
 1     50.00  300  0.20
 2         *     *    *
 3         *     *    *
 4         *     *    *
 5         *     *    *
 6         *     *    *
 7         *     *    *
Move (1 Position)
 Vel  10% 50% 100%
 Return --> Move
[Srv ON  Pos     0.00]
```

Parameter Change Procedure for Standalone Testing

Purpose

To show the procedure for connecting and testing a RoboCylinder unit without using an I/O (no connection to a PLC). This procedure will disable the HOLD input and disable the SERVO ON input. This will also allow the actuator to be run on a benchtop for testing purposes.

Where Used

When getting a '20D' error when running the system without an I/O connection to a PLC or similar device. Instructions apply to RCP2 products.

1. Connect the actuator to the controller with the supplied IAI cables.
2. Connect the PC cable from serial port on PC to PORT IN on controller (looks like mouse input port).
3. Supply power to the controller and turn ON.
4. Turn PORT ON.
5. Start IAI RoboCylinder Software and connect to controller (auto).
6. Back up the parameters to a local file on the PC by choosing PARAMETERS → Edit → Select Axis. Click the DISK button to save a copy locally.
7. Go to PARAMETERS → Edit → Select Axis.
   Change Parameter #15 PIO INPUT state from '0' to '1'.
8. Click the SEND TO CTL button or select it from the FILE pull-down menu.
9. Click OK and cycle the power to the controller.
10. Reconnect the software to the controller and the system should be ready to move under local PC control from the POSITION menu.

For additional questions please contact IAI Technical Support or see www.intelligentactuator.com for more info.
US Headquarters (CA): 1-800-736-1712
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