Before start, carefully read this User Guide and retain it for future reference.

Philo Junior has been designed carefully for safety purposes. However, any electrical device, if used improperly, has the potential for causing fire, electrical shock or personal injury. To help ensure safe operation, follow these guidelines:

- **WARNING** 警告
  - Choking Hazard - Small Parts
    - Not for children under 3 years.
    - Children can choke or suffocate if small parts are swallowed.
  - This product must be assembled by adults or under the supervision of adults.
  - The packaging contains important information and must be retained for future reference.

**Items required to assemble and operate Philo Junior.**
- 2 pcs AAA battery for RF remote controller
- PC (Microsoft Windows XP or Vista, RS232 port) for motion editing.

If your Philo Junior is the assembled version, you may follow the procedures below for quick startup check.

- Observe all warnings, precautions, and instructions.
- Regularly inspect the battery pack for damage.
- Stop using, disconnect the battery pack immediately if Philo Junior functions in an abnormal manner, produces unusual sounds or smells or becomes too hot to touch.
- Stop use, unplug the charger and disconnect the battery pack immediately if Philo Junior functions in an abnormal manner, produces unusual sounds or smells or becomes too hot to touch.

**Follow these procedures for quick startup check**

- Make sure the power switch is "OFF".
- Press the sides of battery cover to remove it.
- Connect the battery pack to the power lead inside battery compartment.
- Put the battery cover back.
- Assemble the stand as shown in above.
- Securely hang Philo Junior on the stand by slightly pressing the hooks to pass through the shoulder rings.

---

Philo Junior is not a toy.
- Remember that safety is the most important thing. Always keep the User Guide at hand for quick reference.
- Should there be any inconsistencies between the English and Chinese versions, the English version shall prevail.

⚠️ This model is suitable for people of 15 or above. Keep Philo Junior and its parts away from children. Supervision is required for inexperienced user.
Follow these procedures for quick startup check

⚠️ To charge the battery:
1. The battery should be isolated with Philo Junior, please turn off the power of Philo junior. Then connect battery, external charger adaptor and charger as the diagram shown. Then plug in the charger to wall socket.
2. In any case, don’t charge the battery over 2 hours; even if the red light doesn’t change to green, don’t leave the charger connected overnight. Problem in the charge, please unplugging the charger each time before charging will reset the proper peak detection function.

Plug in the charger to wall socket and connect the charger plug to the external charger adaptor. The red charging light should be on while charging, and will turn to green when the battery is fully charged. (It takes about 1.5 hours to fully charge the battery, don’t leave the charger connected overnight, as will cause overloading of the charger.)

- External charger include a charger and an external charger adaptor.
- Each charging, please check whether the the battery wires are damaged or loosen after disconnected from Philo Junior.
- Make sure that the battery, external charger adaptor, charger to be connected securely. Avoid bad connection occurs.
- If the battery wires are damaged or loosen, don’t charge the battery.

- Insert two AAA (1.5V) batteries into the RF remote controller. The battery compartment is at the back of the controller.
- Hold the hook of the stand to prevent the robot from swinging, then switch the power on.
- Wait for a few seconds until all servos are moving to places.

蓇 It will take a few seconds for Philo Junior to activate.
- Release Philo Junior from the hook.
- Put Philo junior on a rigid, flat and level surface.

⚠️ When losing balance, it will fall down and may cause damage or injury.
If you are operating Philo Junior on a table, make sure it will not fall from the table to the ground below. While Philo Junior can survive most falls on level surface as a result of unbalanced movements, dropping from an altitude will definitely damage some servos.

Philo Junior performs better on wooden floor. Avoid operate it on rough surfaces such as carpet and avoid operate it on slippery surfaces such as glass.
Follow these procedures for quick startup check.

- Both the RF remote controller and Philo Junior have the same Robot ID default setting. You do not need to pair them up for quick startup check.
- Effective control distance is about 20 feet.

The factory tuned settings are already uploaded into your Philo Junior (Ready to Walk version only). You need to update the default juniorPS2-motion file with the factory settings before you can use the GUI Motion Creator software. Follow the steps listed in ‘Save the factory tuned settings to the default motion file’ before the ‘Fine Tuning’ section in this User Guide.

Functions of setting the jumper

The jumper have to be plugged on three different positions of 2-pin slot on the PCB board in order to provide correct functioning, tuning, RF remote normal function situation and Infra Red Remote normal function situation.

So pay attention for the position where the jumper is being located.

After changing the jumper position, switch on the power again to activate the new setting.

Plug the jumper on slot 1 for tuning

Plug the jumper on slot 2 for normal functioning of RF remote

Plug the jumper on slot 5 for normal functioning of Infra Red remote
Features:
1. 10 servos for 10 degree of freedom including arms, legs and feet.
2. Each motion routine can have up to 30 sequences, and each sequence can have up to 15 poses.
3. Sequence and pose can be reused for other motions to save flash memories.
4. One motion routine can have up to 450 pose transitions.
5. RS232 serial connection to PC for motion programming and execution.
6. RF Hand held remote to execute the user created program motions.

Hardware Features
- Controller: ATmega32 - 16PU
- Interrupt Driven kernel for RF remote and Servos handling
- 12 servo channels
- 20 I/O interface for add on hardware
- 8KB flash for more than 300 user motions

Power:
- Charger can be used for motion programming while charging the battery to extend the time of play
- Provide regulated 5V DC and unregulated 6V - 7.2V DC for add on hardware

Software Features
- Graphical User Interface
  - Fine tune the servo setting
  - Create motion routines
  - Pose can be reused by other sequence to save storage
  - Sequence can be reused by other routine to save storage
  - User can use the PC to run the motion step by step to create the motion
  - Download the motion and setting to Philo Junior
  - Once download, motion can be run through the RF remote controller
  - Motion routines can be shared among user by exporting the routines to a motion file
  - User can run other’s motion by importing the motion file

Package Information
Name: Philo Junior
Height: 10.5" (267mm)
Weight: 1Kg (1000g) with battery
Included: PCB unit
RF controller
RF receiver
6V Ni-MH battery
7.2V 1000mA charger
Graphical motion editor software
Hanger Stand

Contents
- Quick Startup Check: 1 - 3
- Features and Index: 4
- Build the left arm: 5 - 6
- Build the right arm: 7 - 8
- Build the left leg: 9 - 13
- Build the right leg: 14 - 18
- Build the body: 19 - 23
- Final assembly: 24 - 27
- Fine Tuning: 28 - 34
- Motion Creator Philo Junior: 35 - 42
- Hand Held Remote: 43
- Motion File details: 44 - 47
- Sample Motion Routine Exercise: 48 - 55
- LoadPhilo Utility: 56 - 60
- Safety Instructions: 61
- Decal Pasting: 62

Designed by RoboBrothers, Inc. USA  www.robobrothers.com
Manufactured by The World Models  www.twmrc.com
Build the right arm of Philo Junior

Parts to assemble left arm of Philo Junior

Before assembling, please check the right amount of each part is included.

For SV4032-D, please remove taps by cutter.

Assemble left arm

Step 1

Step 2

It will damage the parts if you tighten too much the screws. Properly turns 1/16 turn after screwed the parts together. Do not twist too hard.

Step 3

Remove the bottom plate of SV4032-D

Keep all the screws PM2x27 for next steps.
Assemble the left arm

Step 4

These parts are reserved for assembling the left arm to the body.

Servo Horn screw of SV4032-D

PA2.5x8
1 pc

PA2x5
5 pcs

RB004

RB010

RB002

Tuning the left arm with PCB

After building up the left arm, reserve the arm for later assembling. You can take reference from this wiring direction to make the coarse adjustment.

Please see as page 24

Plug the jumper to slot 1 for tuning

There are 15 slots on left hand side of the PCB, each slot has 3-pin, the slot for the right arm is located at the 9th slot.
Build the right arm of Philo Junior

Parts to assemble right arm of Philo Junior

For SV4032-D, please remove taps by cutter.

Before assembling, please check the right amount of each part is included.

Assemble right arm

Step 1

Step 2

It will damage the parts if you tighten too much the screws. Properly turns 1/16 turn after screwed the parts together. Do not twist too hard.

Step 3  Remove the bottom plate of SV4032-D

Keep all the screws PM2x27 for next steps.
Assemble the right arm.

**Step 4**

These parts are reserved for assembling the right arm to the body.

Servo Horn screw of SV4032-D

<table>
<thead>
<tr>
<th>Part</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA2.5x8</td>
<td>1 pc</td>
</tr>
<tr>
<td>PA2x5</td>
<td>5 pcs</td>
</tr>
<tr>
<td>RB004</td>
<td></td>
</tr>
<tr>
<td>RB010</td>
<td></td>
</tr>
<tr>
<td>RB002</td>
<td></td>
</tr>
</tbody>
</table>

Tuning the right arm with PCB

After built up the right arm, reserve the arm for later assembling. You can take reference from this wiring direction to make the coarse adjustment. (Please see as page 24)

Plug the jumper to slot 1 for tuning

There are 15 slots on left hand side of the PCB, each slot has 3-pin, the slot for the right arm is located at the 12th slot.
Build the left leg of Philo Junior

Before assembling, please check the right amount of each part is included.

For SV4032-D, please remove taps by cutter.

Assemble Left leg

Step 1  Move the jumper on PCB from 2-pin slot 2 to slot 1. Make sure the power switch is 'OFF'. Plug in the left foot servo to slot 15, then connect the battery.

Step 2  Switch on the power. The red light will be on and all servos will rotate to 90° automatically then stop. It will take a few seconds to complete the process.

Step 3  Try to assemble SV4032-D and RB005 that make it to be parallel to each other. If not, repair it later at the fine tuning stage.

Connect the battery with extension cable to this 3-pin slot. Black wire at outer edge of PCB.
Assemble left foot and left leg

Step 4

Step 5

Step 6

Step 7  Remove the bottom plate of SV4032-D

- Keep all the screws PM2x27 for next steps.

Step 8
Step 10

KA2x6
4 pcs
RB003-A

RB002

Step 11

PM2x37
4 pcs

SV4032-D

Step 12

Carefully Slide the top and then the bottom of SV4043-D into RB002.

⚠️ Do not press too hard.

Step 13

Do not tighten this screw too much.

Step 14

Similarly, carefully slide the top and then the bottom of SV4043-D into RB002.

⚠️ Do not press too hard.
Step 1  Move the jumper on PCB from 2-pin slot 2 to slot 1. Make sure the power switch is ‘OFF’. Plug in the right foot servo to slot 15, the right knee servo to slot 14, the right leg servo to slot 13, then connect the battery.

Step 2  Switch on the power. The red light will be on and all servos will rotate to their default positions. It will take a few seconds to complete the process.

Although the foot servo has been tuned at the beginning of assembling, it is recommended to check each servo assembled can turns from $0^\circ$ to $180^\circ$. But make sure that the foot moves angle from $60^\circ$ to $120^\circ$, When all the servos are lie between the angles, that mean the left leg has been tuned. If the angle is outside this range, please repair it at the fine tuning stage.

Step 3  Align the cross marks at ①, ② and ③ as show.

Step 4  Insert RB010 to the servo, and try to align the 4 larger holes to the holes on the servo. Check again the ‘+’ sign whether it is aligned. Then you can tighten the screws.

You may find it may not align ‘+’ sign at once. Please turns RB010 until it can be aligned holes with the best position. The larger holes of the RB010 must also be aligned. So it needs time to adjust that but can help a lots at fine tuning.
Build the Left leg of Philo Junior

Tuning left leg

**Step 5** Apply screws to fix RB010. It is normal that the bottom marks are not in perfect alignment at this stage, it will be adjusted at fine tuning.

**Step 6** Repeat step 3 to 5 for servos of knee and leg.

**Step 7** Switch off the power and remove the battery and all servos from the PCB.

**Step 8** Check the travel of each sevo at 1, 2, 3 such that they can bend form 0° to 90° and from 90° to 180°. If not, repeat the whole process for the servo.

**Step 9** Add 2 pcs PA2x5 on each RB010 and tighten all the screws on both sides of the leg.
Build the right leg of Philo Junior

Parts to assemble right leg of Philo Junior

For SV4032-D, please remove taps by cutter.

Before assembling, please check the right amount of each part is included.

Assemble right leg

Step 1  Move the jumper on PCB from 2-pin slot 2 to slot 1. Make sure the power switch is 'OFF'. Plug in the right foot servo to slot 15, then connect the battery.

Step 2  Switch on the power. The red light will be on and all servos will rotate to 90° automatically then stop. It will take a few seconds to complete the process.

Step 3  Try to assemble SV4032-D and RB005 that make it to be parallel to each other. If not, repair it later at the fine tuning stage.

Connect the battery with extension cable to this 3-pin slot. Black wire at outer edge of PCB.
Assemble right foot and right leg

**Step 4**

- RB009

**Step 5**

- PWA2x8
  - 4 pcs
- RB007
- KA2x6
  - 4 pcs
- PA2x5

**Step 6**

- RB003A

**Step 7** Remove the bottom plate of SV4032-D

- Keep all the screws PM2x27 for next steps.

**Step 8**

- SV4032-D
- RB003-A
- PM2x27
  - 4 pcs
Step 10

KA2x6  
4 pes  

RB003-A

RB002

Step 11

1/16  

PM2x37  
4 pes  

SV4032-D

Step 12

Carefully Slide the top and then the bottom of SV4043-D into RB002.

Do not press too hard.

Step 13

Do not tighten this screw too much.

Step 14

Similarly, carefully slide the top and then the bottom of SV4043-D into RB002.

Do not press too hard.
**Step 1** Move the jumper on PCB from 2-pin slot 2 to slot 1. Make sure the power switch is 'OFF'. Plug in the right foot servo to slot 15, the right knee servo to slot 14, the right leg servo to slot 13, then connect the battery.

**Step 2** Switch on the power. The red light will be on and all servos will rotate to their default positions. It will take a few seconds to complete the process.

Although the foot servo has been tuned at the beginning of assembling, it is recommended to check each servo assembled can turn from $0^\circ$ to $180^\circ$. But make sure that the foot moves angle from $60^\circ$ to $120^\circ$. When all the servos are lie between the angles, that mean the right leg has been tuned. If the angle is outside this range, please repair it at the fine tuning stage.

**Step 3** Align the cross marks at ①, ② and ③ as show.

**Step 4** Insert RB010 to the servo, and try to align the 4 larger holes to the holes on the servo. Check again the ‘+’ sign whether it is aligned. Then you can tighten the screws.

You may find it may not align ‘+’ sign at once. Please turns RB010 until it can be aligned holes with the best position. The larger holes of the RB010 must also be aligned. So it needs time to adjust that but can help a lots at fine tuning.
Build the right leg of Philo Junior

**Step 5** Apply screws to fix RB010. It is normal that the bottom marks are not in perfect alignment at this stage, it will be adjusted at fine tuning.

**Step 6** Repeat step 3 to 5 for servos of knee and leg.

**Step 7** Switch off the power and remove the battery and all servos from the PCB.

**Step 8** Check the travel of each sevo at 1, 2, 3 such that they can bend form 0° to 90° and from 90° to 180°. If not, repeat the whole process for the servo.

**Step 9** Add 2 pcs PA2x5 on each RB010 and tighten all the screws on both sides of the leg.
Build the upper body of Philo Junior

Parts to assemble the body of Philo Junior

Before assembling, please check the right amount of each part is included.

Assemble the upper body.

Step 1

RF Connecting wire
RF Receiver

Double side sticker
Assemble the body

Step 2  Please put the M4 nut into the screw trough of part RB019.

Step 3

Step 4
Step 5  Shoulder servo

Please add SV4032-A servo’s seats RB008 on the servos’ holes.

Step 6  When assembling the two shoulder servos to the part RB018-A, pay attention that do not let the servo’s wire to pass through the two holes of RB019-A. Must pass through under the it.

Step 1  Plug the jumper from slot 2 to slot 1. Make sure that the power switch is in shutting down condition, connect the right shoulder servo to the slot 11 and left shoulder servo to the slot 8, then connect the battery. Servo’s wire may not pass through the two holes of RB018-A.

Connect the battery extension cable to this with 3-pin slot. Black wire at the outer edge of PCB.

Step 2  After the connection completes, The LED lighten and the shoulders servos will rotate to its default position, 180° automatically and stop movement.

Although the entire shoulders servos are already tuned. We still suggested that to tune them manually. Check each servo whether can move from 0°-180°. If all of them do, it’s showing that the coarse adjustment completed. If one’s not reach the standard, that mean it needs readjust again.
Step 3  Insert RB010 to the shoulder servo SV4032-A such that the large holes of RB010 are as perpendicular as possible to the shoulder servo. The holes may not align properly. Remove the RB010 and rotated it by 90°, re-insert and check again if the holes align better. You may need to repeat this step a few times to achieve the best match.

When coarse adjusting the left and right shoulder’s servos, Observe the servos whether to change to the horizontal angle after it have moved automatically. It is normal to have a little deviation. You may repair it in the fine tuning later.

Step 1

Assemble the neck

Step 2
Assemble the head and RF connecting wire

RF Connecting wire

Let RF connecting wire passing through between the servo and part RB019, six wires place forward for connecting with the receiver later.

Assemble the back plate

KA2x10 4pcs
RB021 1 pc
Assemble and tuning arms

Plug the jumper on slot 1 for tuning

⚠️ Do Not push too hard.

Left arm's position in the 9th line of slot, right arm's position in the 12th line of slot. Please make sure that the arm servos when insert to the slots, the power switch is in the shutting down condition, please pay attention on plug's black power source alignment at the outside of PCB.

connection complete, opens the power source, on the red shine and all servos moves automatically to the pre-installed angle position and the stop movement within several seconds later.

After the arms are assembled, tune the arms and screw the parts as shown.

When coarse adjustment arms' servos, after the arms automatic migration, observes the servos whether to change the scale division. It is normal if a little deviation occurs. You may repair it in fine tuning later.

Left arm

Right Arm

PA2.5x8 4 pc
PA2x5 4 pc
RB004
PA2x5
RB010
Installing RF Remote Receiver

🌞 Fix the Receiver with a double side sticker.

⚠️ Plug the six different color wires to the RF remote receiver according to the order.

Ensuring the cover can be put on, make sure that 4mm is left when sticking the receiver on the double side sticker.

Connecting the battery

 nghiêmוק המוסך המוסך עם מ האש(TimeSpan)
Assemble the PCB board & connecting wire

Attention: Assemble the PCB board and connect the RF connecting wire to 8 pin jumper of the PCB as shown.

Assemble the front and back covers

RB037

RB038

PWA2x5
4 pcs
4 pcs
Assemble the feet covers

Plug the servos to PCB board

Plug the servo wire connectors to the PCB board according to the servo positions listed in this picture.
Coordinate system for each joint.

Right Upper Arm

Left Upper Arm

Right Shoulder

Left Shoulder

Right Leg

Left Leg

Right Knee

Left Knee

Right Feet

Left Feet
Generic Step to run Fine Tuning.

1. Put the Robot on the hanger.
   - The jumper on upper right hand corner of the PCB should be placed to 2-pin slot 5 for normal operation and fine tuning.
   - Securely put PHILO on the stand by slightly press the hooks to pass through the shoulder rings.

2. Install the Motion Creator in your PC. (Windows XP or Vista Operation System)
   1. Put in the PHILO CD and open the folder for Installation. Copy the CD and establish a folder as "Philo Junior". Then use it to process installation.
   2. Open the saved folder "Philo Junior" in the computer. Double click the file dotnetfx and follow the instruction to install the .net 2.0 redistributable from Microsoft.
   3. Open the saved folder "Philo Junior" in the computer again. Double click the file vcredist_x86 and follow the instruction to install the Visual C++ 2005 SP1 redistributable from Microsoft.
   4. Installation done.
   5. Connect the serial cable between the PC and Philo Junior.
   6. If your Philo Junior is Ready to Walk version, you need to save the factory tuned settings in your PC by following the steps in 'Save the factory tuned settings'.
   7. After the factory tuned setting has been saved, double click the file philo to start the Philo Motion Creator. Open the factory tuned motion file (output motion file name you just saved) to try out some motions.

3. Connect the Philo Junior to the computer by using the Serial cable provided.

4. Run Philo Junior
   (JuniorPS2 Motion Creator).

5. Select Configuration tab.

6. Select Port # to setup serial COM port.

7. Enter motion file name: JuniorPS2-motion, click 'Open'
7. Select Fine tuning tab.

8. Enter different position value for a servo.
   e.g. right arm -- the arm should move. If not, change the COM port # in configuration tab and retry.

9. There are 3 values to tune for each joint.
   - **Position** – change the servo position.
   - **Offset** – define the servo position at 0 degree.
   - **ATV** – adjust the physical travel angle for the input position degree.

10. Common Fine Tuning step for joints allow 0 degree.
    a. Enter 0 to position to move the joint at 0 degree.
    b. Increase or decrease the offset value to line up the marker.
    c. Enter position 180° degree.
    d. If the angle from 0 to 180° is less than 180° degree, increase ATV by clicking the up arrow of ATV. Otherwise, click the down arrow of ATV until the marks align.

11. Click “Save” button to save the tuning setting for this servo.

12. You need to use “Save Motion” in configuration tab to save the tunings to a file, otherwise, the tunings will be lost after the program exits.
13. You can click ‘Save Motion’ to save to the same file after each joint tuning.
14. Save to a different motion file name to keep the original default motion file.
15. Open the new file philo-motion2 for subsequent motion work.

**Fine Tune Right Arm.**

1. Enter 0 to right arm position. Adjust offset to align marker.
2. Enter 180 to right arm position. Adjust ATV to align marker.
3. Repeat step 1 & 2 until the offset lined up markers.
   - $\theta < 0^\circ$, increase Offset value
   - $\theta > 0^\circ$, decrease Offset value
   - $\theta < 180^\circ$, increase ATV value
   - $\theta > 180^\circ$, decrease ATV value

**Fine Tune Right Shoulder**

1. Keep the arm straight by entering 90 to right arm position.
2. Enter 0 to right shoulder position. Adjust offset to make the two lines parallel.
3. Enter 180 to right shoulder position. Adjust ATV to make the two lines parallel.

   Make the two lines parallel.
   - $\theta < 180^\circ$, increase ATV value
   - $\theta > 180^\circ$, decrease ATV value
   - $\theta < 0^\circ$, increase Offset value
   - $\theta > 0^\circ$, decrease Offset value

Similarly, fine tune the left arm, left shoulder by repeating all the steps.
1. If the Philo Junior's shoe cover is on, take it off.

2. Enter 90 to right foot position. Adjust offset until the two lines are parallel (a).

3. Enter 60 to right foot position. Adjust ATV until it line up with 60° (b).

4. Repeat steps 2 and 3 until it lines up 60° without more ATV adjustment (b).

5. Enter 120 to right foot position. Adjust ATV until it lines up with 120° (c).

6. Repeat steps 2 to 5 until 120.
Fine Tuning.

1. Enter 90 to right foot position.
2. Enter 0 to right knee position.
3. Enter 180 to right knee position.
   Adjust ATV to line up markers.
   \[\theta < 0^\circ, \text{ increase Offset value}\]
   \[\theta > 0^\circ, \text{ decrease Offset value}\]
4. Enter 90 to right knee position.
   Check whether the markers are aligned.
   Otherwise, repeat step 1 & 2 again
   until the offset lined up markers.

Fine Tune Right Knee.

1. Enter 0 to right leg position.
   Adjust offset to line up markers.
2. Enter 180 to right leg position.
   Adjust ATV to line up markers.
3. Enter 90 to right leg position.
   Check whether the markers are aligned.
   Otherwise, repeat step 1 & 2 again
   until the offset lined up markers.
   \[\theta < 0^\circ, \text{ increase Offset value}\]
   \[\theta > 0^\circ, \text{ decrease Offset value}\]
Final Fine Tuning.

1. Select Pose tab.
2. Select 'init' in Pose Name.
   Click 'Get' button.
   Click 'Play'.
3. Check and adjust the two legs line up, and the bottom of the feet are level.
4. Select 'J_SIT_DOWN' in Pose Name.
   Click 'Get' button.
   Click 'Play'.
5. Check and adjust the bottom of the feet are level.
6. Do the Fine Tuning again to line them up if necessary.
7. Click 'Save Motion' in Configuration tab to save the settings and click 'Open' to open the file. Power off the Philo Junior.
   Click 'Connect' within 10 seconds.
   Click 'Load Motion'.
   Click 'Download Tuning/Setting'.
   Click 'Disconnect'.
   Power off the Philo Junior.
9. You have completed the Fine Tuning of the Philo Junior.
   You can power on the Philo Junior to play.

Wrap the servo wires.

Wrap the servo wires by using the supplied wire wrapping tubes.

Hold the wrapped wires by RB046.

RB046
4 pcs
and
PA1.7x7
8 pcs

Cut the wire spiral down so that it only spiral the wire up to the hip cover, such that the hips have more freedom to turn.
1. PHILO Installation
   a. dotnetfx
   b. vcredist_x86
   c. Philo Junior
   d. Junior PS2
   e. load Junior

2. PHILO Operations
   a. Configuration Operations
   b. Pose Operations
   c. Sequence Operations
   d. Routine Operations
   e. PS2 Operations
   f. Fine Tuning Operations

3. Hand Held Remote
4. Motion File details
5. Sample Motion Routine exercise
Motion Creator Installation

System Requirement: Windows XP or Vista Operating System with 512MB

1. Put in the PHILO CD and open the folder for Installation. Copy the CD and establish a folder as “Philo Junior”. Then use it to process installation.

2. Open the saved folder “Philo Junior” in the computer. Double click the file “dotnetfx” and follow the instruction to install the .net 2.0 redistributable from Microsoft.

3. Open the saved folder “Philo Junior” in the computer. Double click the file “vcredist_x86” and follow the instruction to install the Visual c++ 2005 SP1 redistributable from Microsoft.

4. Double click the file “juniorps2” to start the Philo Motion Creator.

5. Connect the Philo Junior to computer through Serial Port cable.

6. Input the “Save the factory tuned settings” in your computer and try out some motions.
**Configuration Tab**

Use the configuration tab to open the motion file to make modification or to download the latest motions to the Philo Junior. After you open the motion file, you can use the other tabs to modify the motion or fine tune the Philo Junior. You can connect to the Philo Junior and download the current opened motions to the Philo Junior.

1. **Global Serial COM Port Setting**
   Port # - select the COM port from the available list of serial port to connect the PC and Philo Junior.

2. **Global Setting**
   - Default setting for moving Philo Junior.
   - **Speed** - 0 to 15
   - **Mode** - C = continuous mode, E = equal steps mode, W = wait mode.
   - **Steps** - 0 to 127
   - **Position increment** - 0 to 100

   Need to set up the remote to send command at the same ID.
   0 is the fastest.
   All servos will arrive at the final position at the same time.
   Each step unit is 20 ms wait.
   Move faster with larger step value for the 'Continuous Mode' with non zero speed.
   Define the number of steps to reach the final position for the 'Equal Steps mode'.
   Define the number of 20ms intervals to wait for the 'Wait mode'.
   Defines the increments for each click of the up down button for position.

3. **File**
   - Motion file name - file to open or save. (don't type in the extension * .txt *)
   - Open - to read in the motion file.
   - Save Motion - to save the latest motions and fine tune settings to the motion file.

4. **Program Robot**
   - Download motion to Philo Junior

   After the Philo Junior is connected to the PC, it will show the Serial Number and the Firmware version of Philo Junior.
   **Serial #** - Serial Number for Philo Junior
   **Version #** - Firmware version for Philo Junior

   **Connect** – (1) Connect the serial cable from the PC to Philo Junior, (2) Select the com port, (3) Power up the Philo Junior, (4) Click “connect” within 10 seconds.

   **Disconnect** – switch to command mode for Philo Junior motion after download.
   **Load Motion** – download the imported motion to Philo Junior after the connection is successful.
   **Load Tuning/Setting** – download the fine tuning and other settings to Philo Junior.
Pose Operations.

Pose Tab

Use the Pose tab to design the Philo Junior pose by entering the Servo Joint positions in degrees. After you open the motion file, you can retrieve the existing Pose name positions for modifications. You can save the new or modified Pose to the same name or another unique name. Each Pose can be used in more than one sequence. You can connect the Philo Junior to a PC and play the motions interactively.

1. Current Philo Junior position
   - Click the up down arrow or enter the degree value for the servo joint position, Philo Junior will move to the position.

2. Pose
   - Pose Name – The position name assigned to the current positions.
   - Get – Retrieve the positions for the Pose Name from the opened motion file.
   - Save – Save the current positions to the Pose Name. You need to save the motions to a motion file, otherwise, the motion settings will be lost after you exit the program.
   - Delete – Delete the Pose name.

3. Play – Play motion to Philo Junior
   - After the Philo Junior is connected to the PC in command mode, you can press play to move Philo Junior to the current positions.
   - Speed – 0 – 15  
     0 is the fastest
   - Mode – C = continuous mode. E = equal steps mode. All servo will arrive at the final position at the same time. W = wait mode. Each step unit is 20 ms wait.
   - Steps – Move faster with larger step value for the ‘Continuous Mode’ with non-zero speed.
   - Position Increment – defines the increments for each click of the up down button for position.
   - Auto Play – If checked Philo Junior will move on any change in the positions, otherwise, Philo Junior will move after you click “Play” button.
   - Play – Move Philo Junior to the current specified positions.
Sequence Tab

Use the Sequence tab to design a series of movement states by assigning the speed and mode to move the specific Pose name one after the other.

Each State Name defines the speed and mode to move to the Pose name. State Name are unique per Sequence and cannot be shared with another Sequence.

After you open the motion file, you can retrieve the existing Sequence name’s state for modifications.

You can save the new or modified Sequence to the same name or another unique name.

Each Sequence can be used in more than one Routine assignments.

You can connect the Philo Junior to a PC and play the Sequence interactively.

1. Sequence

Sequence definition

Seq - Click the up down arrow to reorder the states to move

Speed – 0 – 15 (0 is the fastest)

Mode – C = continuous mode
          E = equal steps mode.
          All servo will arrive at
          the final position at
          the same time.
          W = wait mode. Each steps
          unit is 20 ms

Steps – 0 – 127
          Move faster with larger step
          value for the ‘Continuous Mode’
          with non zero speed.
          Define the number of steps to
          reach the final position for the
          ‘Equal Steps mode’.
          Define the number of 20ms
          intervals to wait for the ‘Wait
          mode’.

Select - Mark State assignments
          for deletion or Play

Reset - Reset assignments to
          previously saved version

Apply Changes - Update all the new
          sequence changes

Delete - Delete the selected state
          assignments

2. Sequence Name – The name assigned to the current Sequence States.

Get – Retrieve the positions for the Pose Name from the
          opened motion file.

Save – Save current Sequences to the Sequence Name.
          You need to save the Sequence to a motion file, otherwise, the
          Sequence settings will be lost after you exit the program.

Delete - Delete the Sequence name.

3. Play – Play Sequence to Philo Junior

After the Philo Junior is connected to the PC in command mode, you can press play buttons to move Philo Junior through the current Sequence states.

Select All - Mark all the states in this page for deletion
Clear All - Uncheck all the states for deletion or Play
Play All - Move Philo Junior through the current specified order
          of states one after the other.

Play Prev – Move Philo Junior to the previous specified state
Play       – Move Philo Junior through the current specified state
Play Next – Move Philo Junior to the next specified state
Routine Tab

Use the Routine tab to design a series of movement states by assigning the Sequence to move one after the other.

Each Routine Name defines a list of Sequence to move one after the other. Routine Name are unique per Motion File and can be used with another Key command assignments.

After you open the motion file, you can retrieve the existing Routine name's state for modifications.

You can save the new or modified Routine to the same name or another unique name.

Each Routine can be used in more than one Key command assignments.

You can connect the Philo Junior to a PC and play the Routine interactively.

1. Routine – Sequence definition

Seq - Click the up down arrow to reorder the Sequence

Sequence Name - Select the sequence name to add to the Routine.

Select - Mark Sequence assignments for deletion or Play

Reset - Reset assignments to the previously saved version

Apply Changes - update all the new Routine changes

Delete - Delete the selected Sequence assignments

2. Routine Name – The name assigned to the current Sequences

Get - Retrieve the sequence states for the Sequence Name from the opened motion file

Save - Save current Sequences to the Routine Name. You need to save the Routine to a motion file, otherwise, the Routine settings will be lost after you exit the program.

Delete - Delete the Routine nameSequence Name - The name assigned to the current Sequence States.

3. Play – Play Routine to Philo Junior

After the Philo Junior is connected to the PC in command mode, you can press play buttons to move Philo Junior through the current Routine sequences.

Select All - Mark all the Sequence in this page for deletion
Clear All - Uncheck all the Sequences for deletion or Play
Play All - Move Philo Junior through the current specified order of Sequences one after the other.

Play Prev - Move Philo Junior to previous specified Sequence
Play - Move Philo Junior to current specified Sequence
Play Next - Move Philo Junior to next specified Sequence
PS2 Tab

1. Routine assignment for selected mode of operation

Routine Name:
- Select the Routine for the corresponding PS2 controller button pressed.

Select:
- Mark Routine assignments for deletion or Play.

Mode init routine:
- High mode = L1; L1+R1 or R1 is pressed.
- Mid mode = L1+L2, L1+L2+R1+R2 or R1+R2 is pressed.
- Low mode = L2, L2+R2 or R2 is pressed.

The pictures show the current mode and how the opponent is facing your robot.

LEFT = opponent's left side is facing your robot.

CENTER = opponent's face is facing your robot.

RIGHT = opponent's right side is facing your robot.

2. Walking Routines

(NE, North, North-East, East, South-East, South, South-West, West, North-West)

Routine Name:
- Select the Routine for the movement direction.

Select Key:
- Mark Routine assignments for deletion or Play.

3. Play

Run PHILO Junior with the selected Routine.

Select All:
- Mark all the routine assignment in this page for deletion and Play.

Clear All:
- Uncheck all the Routines for deletion or Play.

Delete:
- Delete the selected Routine assignments by setting it to no_op.

Update Changes:
- Update all the new Key assignment changes.

Play:
- Run PHILO Junior with the selected Routine.

Reset:
- Reset assignments to previously saved version.

Save Keys:
- Save the current settings. You need to export the Key setting to a motion file, otherwise, the Key settings will be lost after you exit the program.

4. Mode Select

Click the button to select different mode of operation. You can set different button routines for each mode. Each mode has its own 12 routines. With 8 modes, you can set 96 routines.

defines the front mode where the opponent is in front of your robot.

defines the right side mode where the opponent is on your robot's right hand side.

defines the back mode where the opponent is behind your robot.

defines the left side mode where the opponent is on your robot’s left hand side.

defines the turbo mode where you can define the fastest move motions.

defines the Wake up mode when you start the robot or re-connect the robot.

Press the start button to confirm the PS2 connection after power up.
Fine Tuning Tab

Philo Junior requires fine tuning to move the motion position more accurately. You can follow the steps for each servo to adjust the offset and ATV value.

Position - Move the servo to the specified degree
Offset - Define the position of the servo at 0 degree
ATV - Adjust the servo travel angle for 180 degree
Set Init Position - Save the current position as the power on position. You need to follow by 'save' to save this setting, and then 'save motion' in Configuration Tab to save it to the motion file before downloading the setting.

Open the factory motion file. Follow the manual to fine tune the Philo Junior.

Once you have finished the settings, you need to save the settings to the motion file in the Configuration tab.
Save to a new motion file name. Save a copy of the motion file as back up.
Use the new motion file to create your own motion routines.

Up/ Down arrow
- Click the up down arrow or enter the value for the position, offset or ATV.
Once you enter the value, Philo Junior will move the corresponding servo.

Reset button
- Reset the current settings to a previously saved check point.

Save button
- Save the current settings to a check point that you can reset back to.
Once you have finished the settings, you need to save the settings to the motion file in the Configuration tab.
Hand Held Remote

The simple operation way enhances manoeuvring

1. L 1 Button
2. R 1 Button
3. ▲ Button
4. ▼ Button
5. △ Button
6. □ Button
7. Joy Stick
8. SELECT Button
9. START Button
10. MODE Button
11. SWITCH Button
12. Joy stick
13. Button
14. Button
15. Button
16. Button
17. L 2 Button
18. R 2 Button

Remote control buttons
Press the button and control the joy sticks to execute the assigned motion.

Simultaneously presses the multi-keys
Some motion require pressing multiple keys to start the movement. Pay attention to press then release those keys at the same time to start the command effectively.
For example L1+L2 or L1+L2+R1+R2
Motion File

The motion file contains the configuration parameters and the motion with remote control key assignments.

The file contain 5 sections with the section name taken as the first parameter:
1. config — defines the general configuration parameters.
2. servo — defines the configuration parameters for each servo joint.
3. pose — defines the position for each servo.
4. sequence — defines the list of states to move.
5. states — defines the speed and mode to move to the specified pose.
6. routine — defines the list of sequence to move.
7. key — defines the routine assignments to 99 two digits key command and 12 remote key command for the handheld remote controller.

Setup Philo junior

Philo Junior comes with the factory default motion file. It contains the factory settings and the predefined motion with remote key assignments. You need to run the Motion Creator program and open the motion file to download to Philo Junior.

Create new motion

Make a copy of the factory default motion file before creating your own motion. Since the configuration and servo settings are necessary for Philo Junior to function, you need to open the factory default motion file first. You can then modify the motions or add your new motions with new remote key assignments. After you complete the motion changes, you need to save all the changes and save the motions to another motion file.

Download the new motion to PHILO

You need to open the new motion file and connect the PC to Philo Junior for download. Download the motion and the tuning/setting to Philo Junior.
## General Configuration Parameters

<table>
<thead>
<tr>
<th>Pulse1</th>
<th>Pulse2</th>
<th>Pulse3</th>
<th>RemoteID</th>
<th>LowPower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse parameter (not changeable)</td>
<td>Pulse parameter for 1 deg (not changeable)</td>
<td>Pulse parameter for servo (not changeable)</td>
<td>Robot ID. After open this motion file and download the tuning/setting to Philo Junior, Philo Junior will use this Robot ID.</td>
<td>Value used to blink the LED once the battery voltage drops before this value. The value can be 0 – 100. The higher the number, the earlier the LED will blink.</td>
</tr>
</tbody>
</table>

### Servo Configuration Parameters

<table>
<thead>
<tr>
<th>NAME</th>
<th>Servo name for the joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHAND</td>
<td>Left hand servo (Not used)</td>
</tr>
<tr>
<td>HEAD</td>
<td>Head servo (Not used)</td>
</tr>
<tr>
<td>LLT</td>
<td>Left leg turn servo (Not used)</td>
</tr>
<tr>
<td>LHIP</td>
<td>Left hip servo (Not used)</td>
</tr>
<tr>
<td>LLEG</td>
<td>Left leg servo</td>
</tr>
<tr>
<td>LKNEE</td>
<td>Left knee servo</td>
</tr>
<tr>
<td>LANKLE</td>
<td>Left ankle servo (Not used)</td>
</tr>
<tr>
<td>LFOOT</td>
<td>Left foot servo</td>
</tr>
<tr>
<td>RSHOULDER</td>
<td>Right shoulder servo</td>
</tr>
<tr>
<td>RARM</td>
<td>Right upper arm servo</td>
</tr>
<tr>
<td>RELBOW</td>
<td>Right elbow servo (Not used)</td>
</tr>
<tr>
<td>RWWRIST</td>
<td>Right wrist servo (Not used)</td>
</tr>
<tr>
<td>RHAND</td>
<td>Right hand servo (Not used)</td>
</tr>
<tr>
<td>WAIST</td>
<td>Waist servo (Not used)</td>
</tr>
<tr>
<td>RLT</td>
<td>Right leg turn servo (Not used)</td>
</tr>
<tr>
<td>RHIP</td>
<td>Right hip servo (Not used)</td>
</tr>
<tr>
<td>LSHOULDER</td>
<td>Left shoulder servo</td>
</tr>
<tr>
<td>LARM</td>
<td>Left upper arm servo</td>
</tr>
<tr>
<td>LELBOW</td>
<td>Left elbow servo (Not used)</td>
</tr>
<tr>
<td>LWWRIST</td>
<td>Left wrist servo (Not used)</td>
</tr>
<tr>
<td>RFOOT</td>
<td>Right foot servo</td>
</tr>
<tr>
<td>RANKLE</td>
<td>Right ankle servo (Not used)</td>
</tr>
<tr>
<td>RKNEE</td>
<td>Right knee servo</td>
</tr>
<tr>
<td>RLEG</td>
<td>Right leg servo</td>
</tr>
</tbody>
</table>

Init pos - Initial position in degrees after power on  
Offset - Define the position of the servo at 0 degree  
ATV adjustment - Define the servo travel parameter for 180 degree degrees  
Upper Limit - The upper limit of angle for the servo to turn  
Lower Limit - The lower limit of angle for the servo to turn
**Pose Configuration Parameters**

name – Pose name for the joints positions

- LS – Left shoulder servo
- RS – Right shoulder servo
- LUA – Left upper arm servo
- RUA – Right upper arm servo
- LE – Left elbow servo (Not used)
- RE – Right elbow servo (Not used)
- LW – Left wrist servo (Not used)
- RW – Right wrist servo (Not used)
- LHD – Left hand servo (Not used)
- RHD – Right hand servo (Not used)
- HEAD – Head servo (Not used)
- W – Waist servo (Not used)
- LLT – Left leg turn servo (Not used)
- LHT – Left leg servo
- LL – Left hip servo (Not used)
- RH – Right hip servo (Not used)
- RR – Right knee servo
- LA – Left ankle servo (Not used)
- RA – Right ankle servo (Not used)
- LF – Left foot servo
- RF – Right foot servo

**Sequence Configuration Parameters**

NAME – defines the name for this sequence containing a list of the states.

**State Configuration Parameters**

NAME – defines the name for states.

- Speed = 0 – 7
  - 0 is the fastest.
  - Mode = C = continuous mode.  
    - E = equal steps mode.
    - W = wait mode.

Steps = 0 – 127

- Move faster with larger step value for the 'Continuous Mode' with non zero speed.
- Define the number of steps to reach the final position for the 'Equal Steps mode'.
- Define the number of 20ms intervals to wait for the 'Wait mode'.

Pos name – defines the pose name for this state to move at the speed and mode defined.
Routine Configuration Parameters

1. Routine definition
   - Name
     - defines the Routine name that contains a list of sequences in one line.
   - Sequence name
     - defines the sequence name for the motion.

2. Key Configuration Parameters
   - NAME - defines the key name assigned to the Routine.
   - Routine name - defines the routine name assigned to the key command.
   - KEY_1 .. KEY_99 - defines the routine run when the corresponding PS2 controller button is pressed.
   - KEY_NW - routine to run when NW is pressed.
   - KEY_N - routine to run when N is pressed.
   - KEY_NE - routine to run when NE is pressed.
   - KEY_W - routine to run when W is pressed.
   - KEY_E - routine to run when E is pressed.
   - KEY_S - routine to run when S is pressed.
   - REMOTE_KEY_1 .. 12 - defines the routine for the wake mode.

Do not change the order of the parameters token order.
Do not change the order of the Key section for 2 digits key, predefined key and the remote key.
Sample Motion Routine Exercise.

1. **System Requirement:**
   Windows XP or Vista Operating System.

2. **Put in the PHILO CD and open the folder for Installation. Copy the CD and establish a folder as “Philo Junior”. Then use it to process installation.**

3. **Open the saved folder “Philo Junior” in the computer. Double click the file “dotnetfx” and follow the instruction to install the .net 2.0 redistributable from Microsoft.**

4. **Open the saved folder “Philo Junior” in the computer. Double click the file “vcredist_x86” and follow the instruction to install the Visual c++ 2005 SP1 redistributable from Microsoft.**

5. **Open the saved folder “Philo Junior” in the computer. Double click the file “juniorps2” to start the Philo Motion Creator.**

6. **Select “Configuration Tab” to continue.”**
Configuration Tab

Connect the serial cable from the computer to the Philo Junior.

Power on Philo Junior

Select the COM port from the list. For multiple COM ports computer, you need to choose validated port which is available for connecting Philo Junior in the next steps.

Import the factory default motion file to try out a sample motion sequence.

Wait for the “Initialization is done” message, click ok.

① Select the COM port from the list of available serial port to connect the PC and Philo Junior.
   For multiple COM ports computer, you need to do some motion to validate the port is the one connected to Philo Junior in the next steps.

② Enter the motion file “juniorps2-motion”.
   Click “open” to open the motion file to try out the sample routine sequence.

③ Select “Pose Tab” to continue.
Pose Tab

Use the Pose tab to design the Philo Junior pose by entering the Servo Joint positions in degrees. After you open the motion file, you can retrieve the existing Pose name positions for modifications.

If the Philo Junior does not move, try plug the serial cable to another port until it moves.

Play motion to Philo Junior.
Select “J SIT DOWN” from the Pose Name.
Click “Get” to retrieve the pose positions.
Click “Play” to move Philo Junior to the pose.
If Philo Junior does not move, try plug the serial cable to another COM port.
Click “Auto Play” to turn on auto play mode.
Click the up/down or enter new position angle to the Right Arm Joint, the arm should move.
Select “init” from the Pose Name.
Click “Get” to retrieve the pose positions.
Click “Play” to move Philo Junior to init position.
Select “Sequence Tab” to continue.
Sequence Tab

Use the Sequence tab to design a series of movement states by assigning the speed and mode to move the specific Pose name one after the other.

Select a sequence from the list of sequence name.

Try Play All, Play, Play Next, Play Prev.

---

Play Sequence to Philo Junior.
Select "J-sitdown" from the Sequence Name.
Click "Get" to retrieve the list of states for the sequence.
Click "Play" to move RoboPhilo to the "J_INIT" state.
Click "Play Next" to move RoboPhilo to the next state.
Click "Play Prev" to move RoboPhilo to the previous state.
Click "Play Next" again until "J_SITDOWN" state is played.
Click "Apply changes" to update the new changes..
Click "Save" to save the name of new sequence processed.
Select "Routine Tab" to continue.
Routine Tab

Use the Routine tab to design a series of movement states by assigning the sequence to move one after the other.

Create a routine from existing sequence.
Try Play All, Play, Play Next, Play Prev.

Play Routine to Philo Junior.
Select “J-SITDOWN” from Seq 1 Sequence Name.
Click “Apply Changes” to update the new changes.
Enter “J_SITDOWN” to the Routine Name.
Click “Save” to save the two sequences to the routine name “J_SITDOWN”.
Click “Play All” to move Philo Junior flip forward and then stand up again.
Click “Save” to save the new Routine.
Congratulations!
You have created a new Routine from the list of sequence.
Select “PS2 Tab” to continue.
PS2 Tab

Use the PS2 tab to assign the Routine to the 2 digit key command or remote key command.
Assign the new Routine to a remote key.
Try "Play" to run the Routine for the specified key.

Run Philo Junior with the selected Routine.
Select "J_SITDOWN" from the HIGH L1 Routine Name to assign "J_SITDOWN" to HIGH L1.
Click "Apply Changes" to update the new changes for this page.
Click the check box for HIGH L1
Click "Play" to move Philo Junior sit down.
Click "Save" to save the changes.
Congratulations !
You have successfully assign a routine to the Philo Junior.
Select "Configuration Tab" to continue.
Configuration Tab

Save the newly created motion.

Save the newly created motion to a new motion file using "Save Motion".

You can play the new motions with the newly created motion file through the computer.

Save the newly created motion.
Enter the motion file "my_motion".

Click "Save Motion" to save all the motions to the new motion file.

Click "OK" to save the file.

You can play the motions connecting to the computer.
Configuration Tab

Connect the serial cable from the computer to the Philo Junior.

Download new motion sequence to Philo Junior.

Use RF remote to play new motion.

Play new motions by using RF remote.

Power off the Philo Junior.

Power On the Phiulo Junior.

Must click “Connect” to connect the link within 10 seconds after powered on the Philo Junior.

You can see the serial number and version after the connection is established.

Enter motion file name “juniorps2-motion”.

Click “Load Motion” to download new motion file to Philo Junior.

Click “Disconnect” to end the connection.

Power off the Philo Junior.

Power on the Philo Junior.

Congratulations!

You have learnt editing and play new created motions procedure.
Load PHILO program, motions and tuning settings to the Philo Junior

Setup the COM port to connect PC to Philo Junior

Use Verify option to check the motion file syntax error

Use Download menu to reload the PHILO program, motion and tuning setting
You may need to reload the PHILO program, motion and tuning setting if the Philo Junior flash memory is corrupted after running in a very low power voltage.
If the Philo Junior does not stand up after power on for 20 seconds, you may need to reload the program, motion and tuning setting again.

----------

Setup COM port
Power on Philo Junior
Enter “C” to select COM port setting
Enter the COM port number you have connected to the Philo Junior
If successful, you can continue to reloading the program, motion and tuning setting.
(lower case input is ok)
Reload PHILO Program

Power on Philo Junior

Enter “D” within 10 seconds to start the download connection

If the connection is successful, you can see the Serial No.

If it fails, double check the COM port connection. Do COM port setting again.

Enter “I” to load the PHILO program

Enter “juniorps2” to the file name

Enter “00000009” as the default serial no.

Enter “W” and then “P” to reload the PHILO program to Philo Junior

If successful, you need to power off and power on the Philo Junior to use the new program before reloading the motion and tuning setting.

(lower case input is ok)
Reload PHILO motion and tuning setting

Power on Philo Junior
Enter "D" within 10 seconds to start the download connection
If the connection is successful, you can see the Serial No.
If it fails, double check the COM port connection. Do COM port setting again.
Enter "L" to load the PHILO motion
Enter "juniorps2-motion" to the file name
Enter "W" and then "M" to reload the PHILO motion to Philo Junior
Enter "C" to load the PHILO tuning setting
Enter "W" and then "C" to reload the PHILO tuning setting to Philo Junior
If successful, you need to power off and power on the Philo Junior to use the new motion and tuning setting.
The motion and tuning setting need to be set together. (lower case input is ok)
Verify motion file

Enter "V" to select the verification

Enter the motion file name to check the syntax correctness

If the motion file is loaded ok, the check is successful. You can use the motion file in the Motion Creator GUI 'Philo'

If there is syntax error, it will print out which pose, sequence or routine names are missing. It will stop at the first error. You may need to run the check again after the fix until the whole file is good.

Use this check if you copy motion routines from other files or you have manually edited the motion file.

It will also show how much flash memory is used for the motions in this file. It will show error if the motion is larger than 8K. (lower case input is ok)
Retrieve Fine Tune Setting

Enter "G" to select the generate new motion file option
Enter the existing motion file name to be updated with new fine tune setting from the robot
Enter the output file name

If the motion file is loaded ok, it will generate a new motion file with the new fine tune setting retrieved from the robot.

You may get invalid large numbers if the robot is just power on, wait for a minute and do it again. You may also get invalid large numbers if the robot has low power, plug in the charger and do it again.
(lower case input is ok)
Technical Data

Name: Philo Junior  Height: 10.5 in (267mm)  Weight: 35oz. (1kg.) with battery

Included:
- PCB unit
- RF controller
- RF receiver
- 6V Ni-MH battery (RBKB05051)
- 7.2V 1000mA charger (RBCGSAW08)
- Graphical motion editor software
- Hanger Stand

For kit assembly, connection to computer and software operation of Philo Junior, please refer to the file as contained in the CD enclosed.

PHILO Junior User Manual(En).pdf /
PHILO Junior User Manual(Sn).pdf /
PHILO Junior User Manual(Tn).pdf

Safety precautions on the use and handling of battery

- Batteries should be charged prior to use.
- When using a new battery for the first time or after long term storage, please fully charge the battery before use.
- For charging methods please refer to our technical handbook.
- Non-rechargeable batteries are not to be recharged.
- Rechargeable batteries are only to be charged under adult supervision.
- Rechargeable batteries are to be removed from the toy before being charged.
- Different types of batteries or new and used batteries are not to be mixed.
- Batteries are to be inserted with the correct polarity.
- Exhausted batteries are to be removed from the toys.
- The supply terminals are not to be short-circuited.
- Only batteries of the same or equivalent type as recommended are to be used.
- Do not reverse charge batteries.
- Do not short circuit batteries, permanent damage to batteries may result.
- Do not incinerate or mutilate batteries, may cause explosion or release of toxic material.
- Store batteries in a cool dry place.
- In case there is, excessive temperature or leakage from a battery, please stop using immediately.
- When the battery is hot, please do not touch it and handle it, until it has cooled down.
- Do not remove the outer sleeve from a battery pack nor cut into its housing.
- When not using a battery, disconnect it from the device.
- Unplug a battery by holding the connector itself and not by pulling at its cord.
- After use, if the battery is still hot, allow it to cool down before recharging it.
- Never put a battery into water.
- During long term storage, battery should be charged and discharged once every 3 months.
- Do not attempt to take batteries apart or subject them to pressure or impact. Heat may be generated or fire may result. The alkaline electrolyte is harmful to eyes and skin, and it may damage clothing upon contact.
- Keep away from children. If swallowed, contact a physician at once.
- Use the supplied charger (RBCGSAW08) for batteries.
- Transformers or battery chargers used with the toy are to be regularly examined for damage to the cord, plug, enclosure and other parts, and that, in the event of such damage, the toy must not be used with this transformer or battery charger until the damage has been repaired.
- The toy is not intended for children either 3 or under 3 years old.
- The toy must only be used with the recommended transformer.
- The transformer is not a toy.

* Please always visit our website for the latest information, firmware and software update.

Manufactured by: The World Models Manufacturing Co., Ltd.
Address: Radar Industrial Estate, HuangYang Avenue,
Bajla Village Doumen District, Zhuhai city, China
Decal Pasting

Pasting the body decals on the arms.

- Crop and paste the decals to Philo Junior.

Pasting the decals on the front and back.