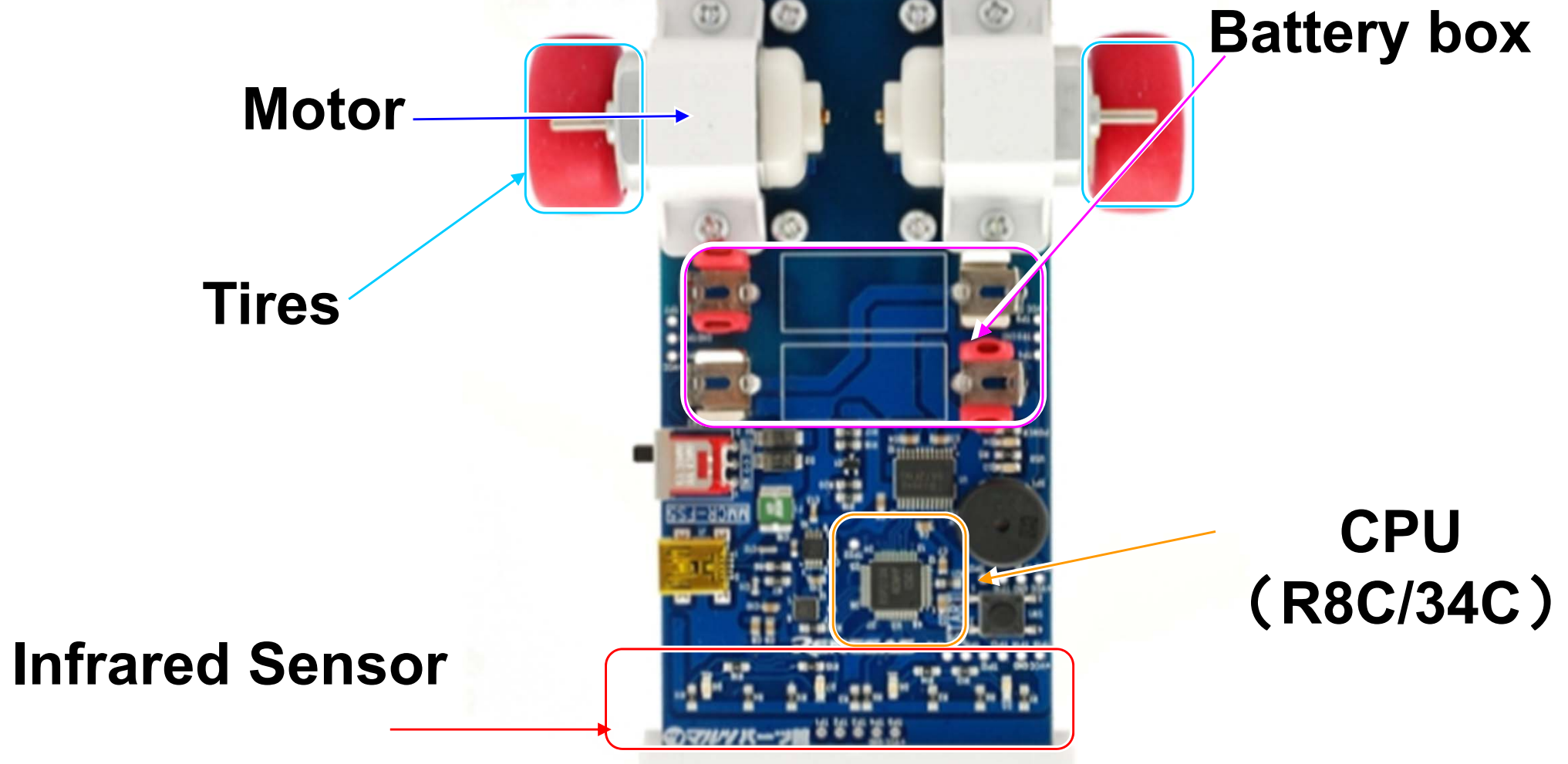


Mechanism of Micon Racer2

Configuration of Micon Racer



Mechanism of Control

1

Sensor

It judges white or black, and send it to MCU.

2

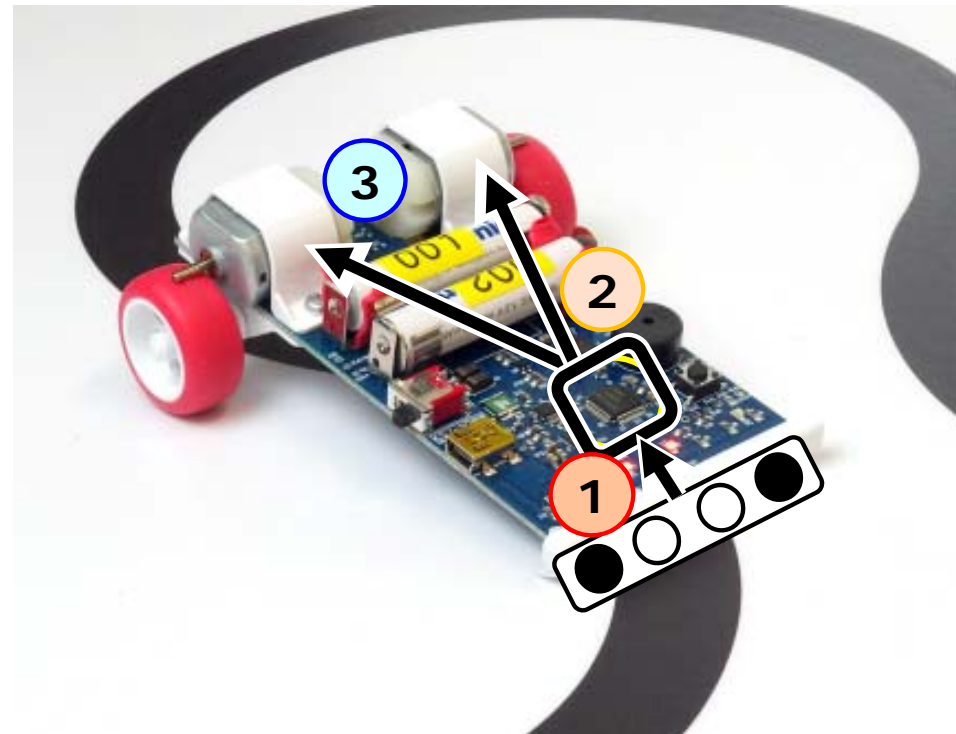
MCU

MCU send signals of the direction of rotation for right and left motor and speed to the motor based on sensor information.

3

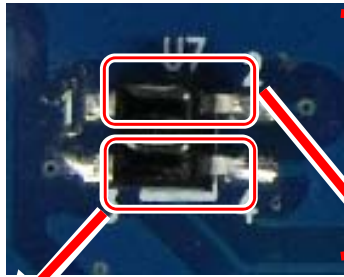
Motor

Motor spins and tires start moving after it receives signals from the MCU.



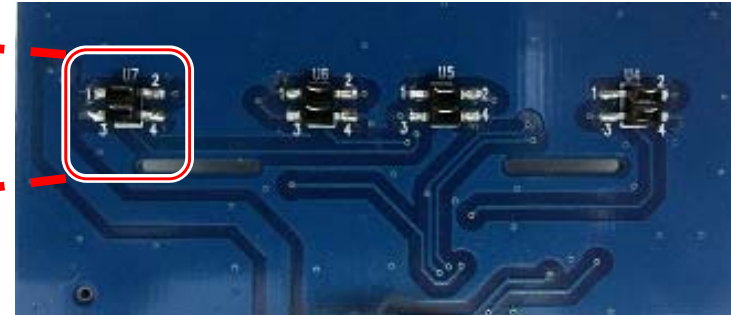
Mechanism of Sensor

Photo interrupter



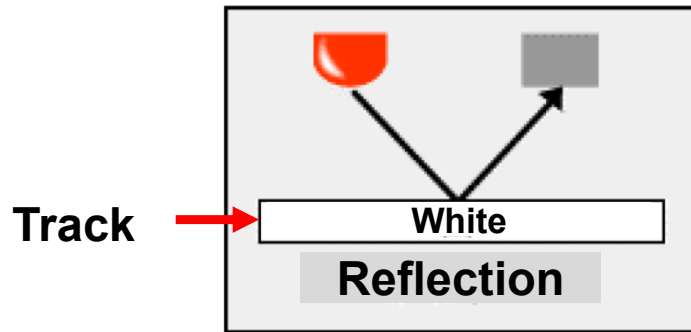
Infrared LED

Photo detector

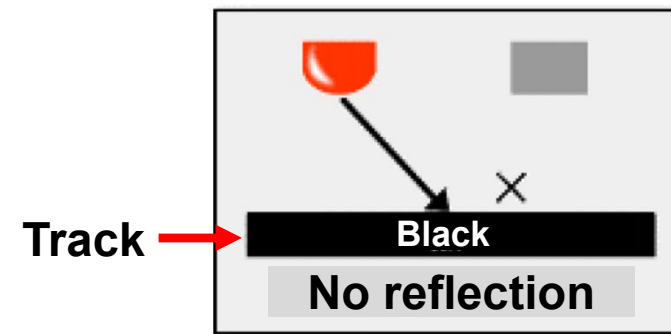


Infrared LED

Photo detector



Track judges **White**

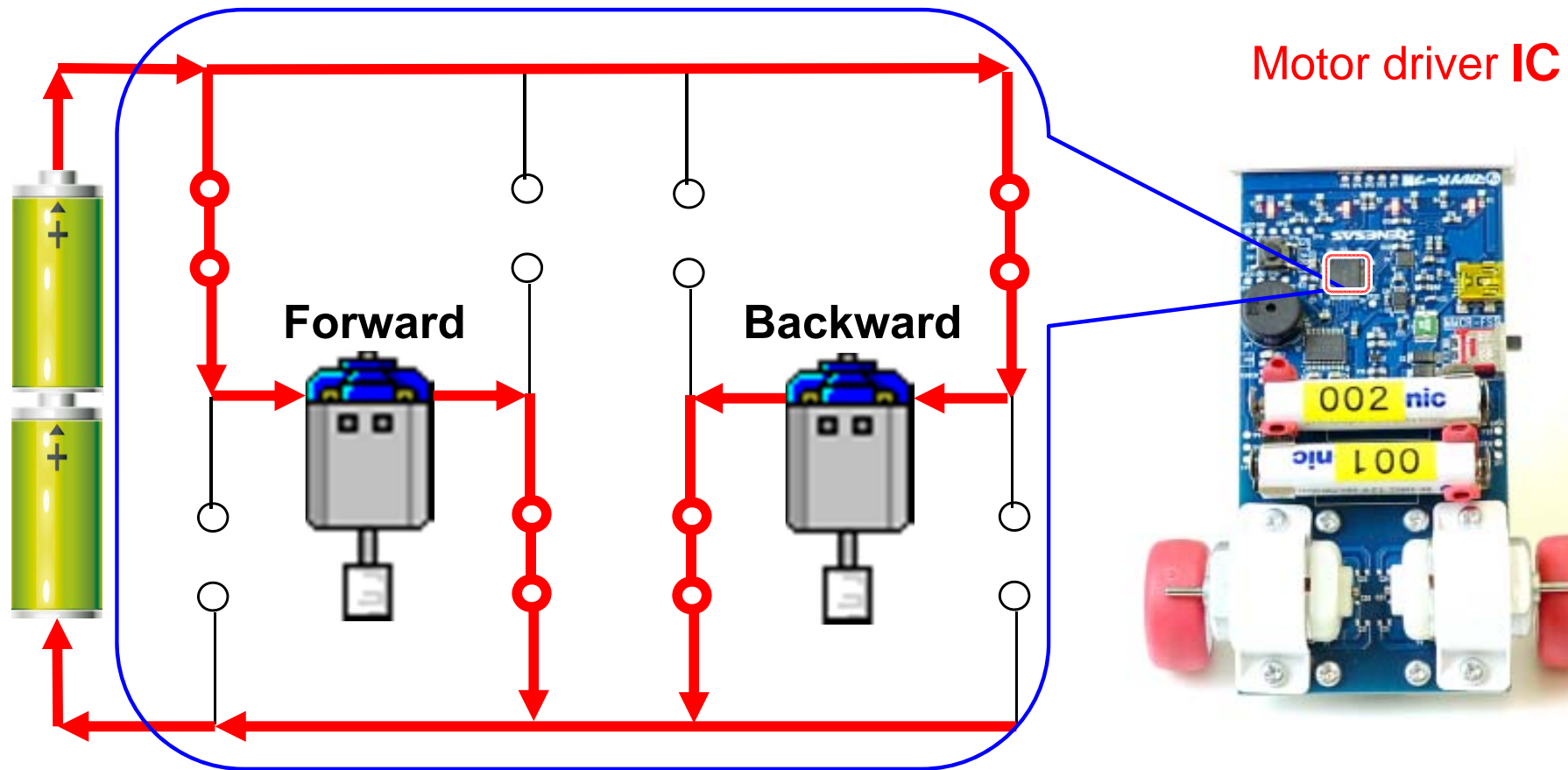


Track judges **Black**

White reflects light and Black absorbs light.

It can judge as「**White**」when light reflection is high, and as「**Black**」when it is low.

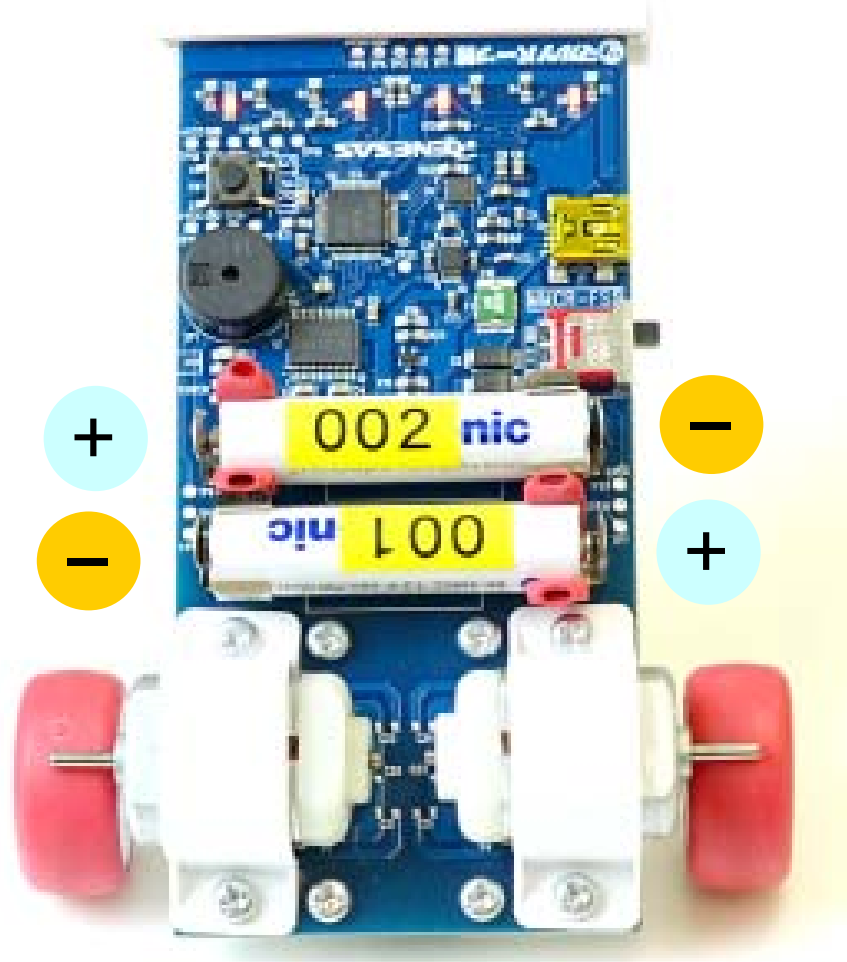
Mechanism of Motor to rotate Forward and Backward



- The motor rotates forward or reverse depending on the direction of the current flow.
- With 4 switches lined up around the motor, we can change the direction of current flow depending on the on-off of the switches.

Set cells to Micon Racer2

Battery

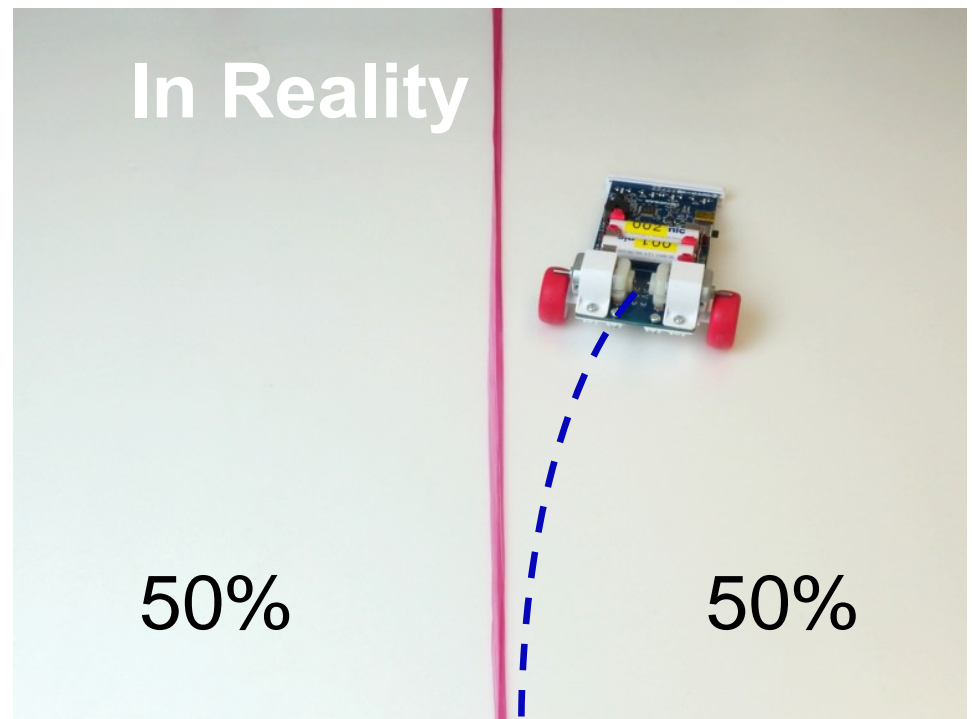
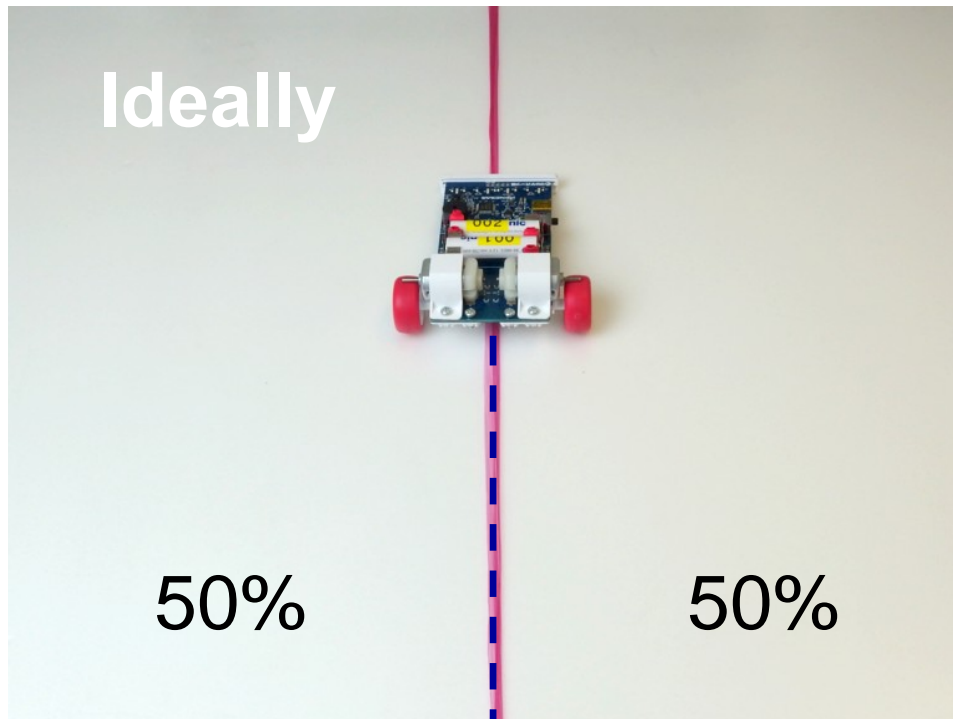


Insert batteries.

Let's run it straight!

Adjust Micon Racer2 to Run Straight

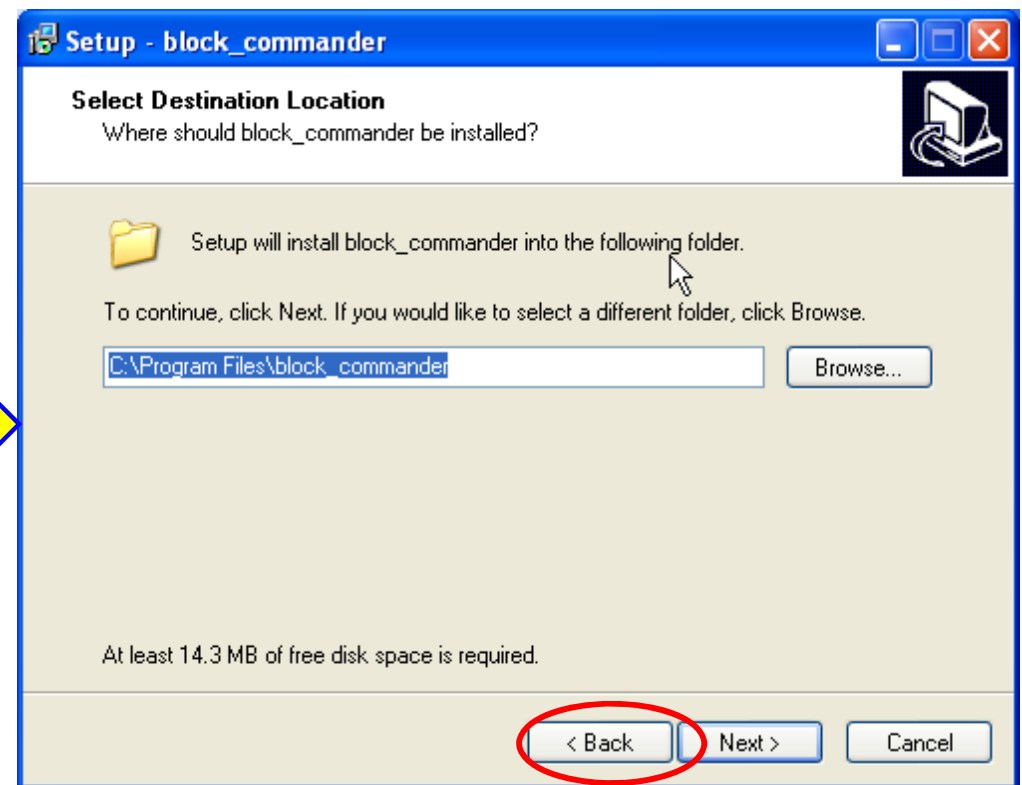
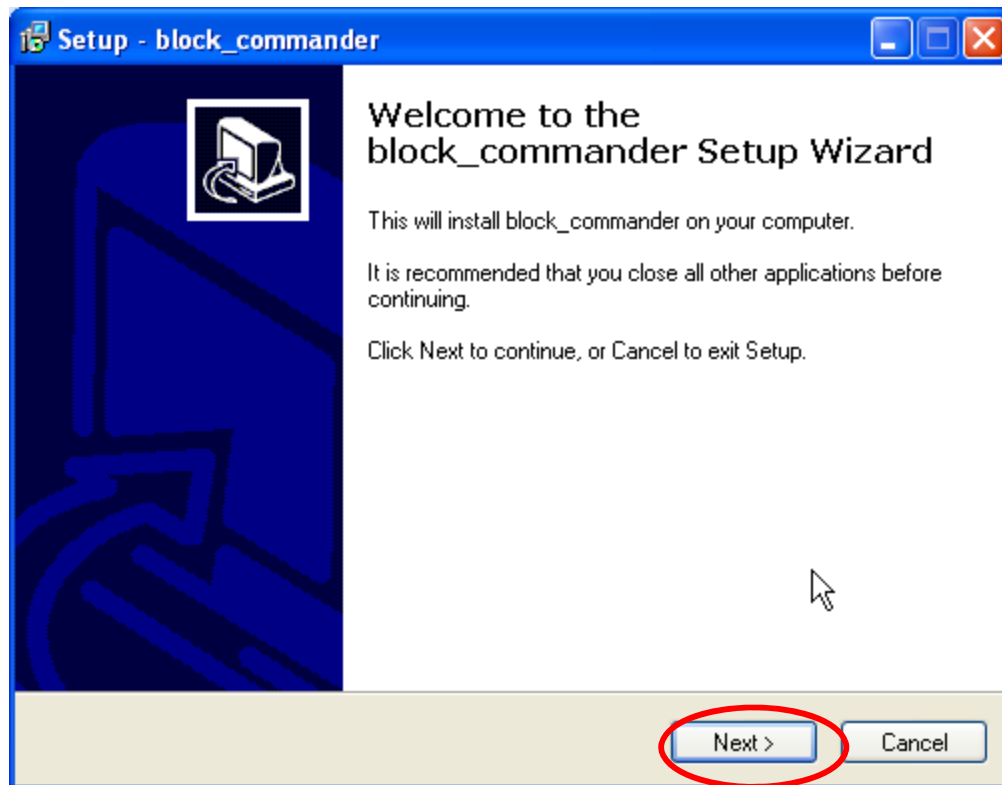
- Even if the same current is conducted to the 2 motors, rotation of the right and left motors cannot be the same in most cases.
- This is because there is individual differences in individual motors. Others considerations are tires and the road surface condition.



1st, set the value of the right and left motor to be the same in the program, then adjust a little by little when you run it.

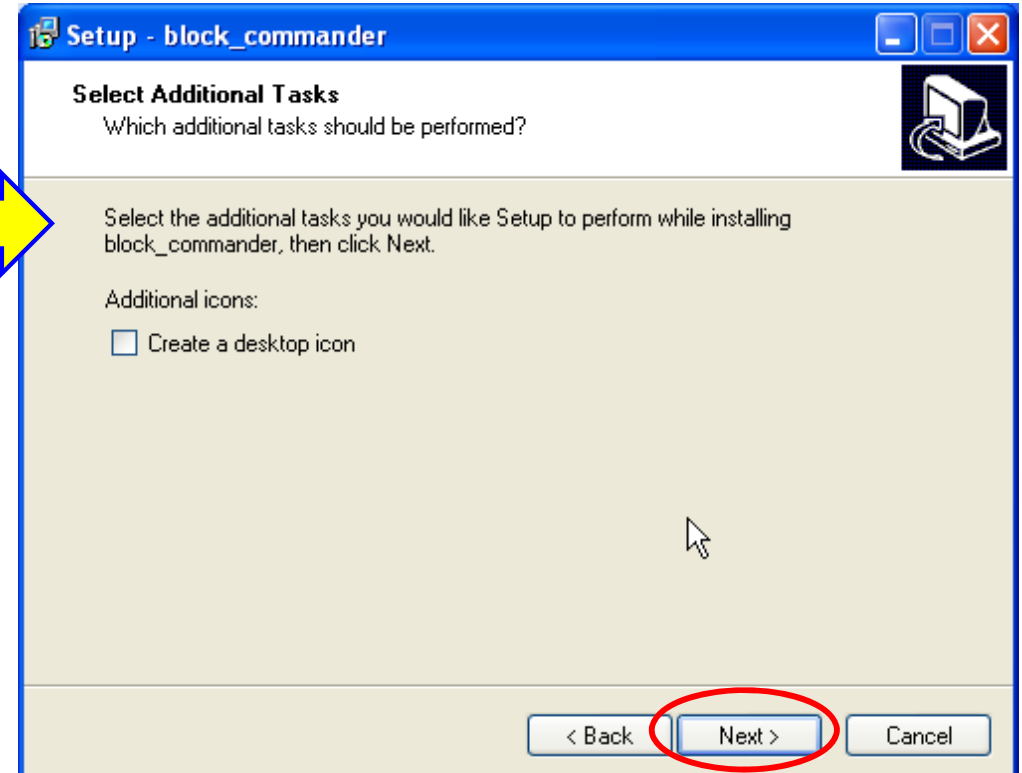
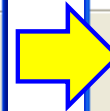
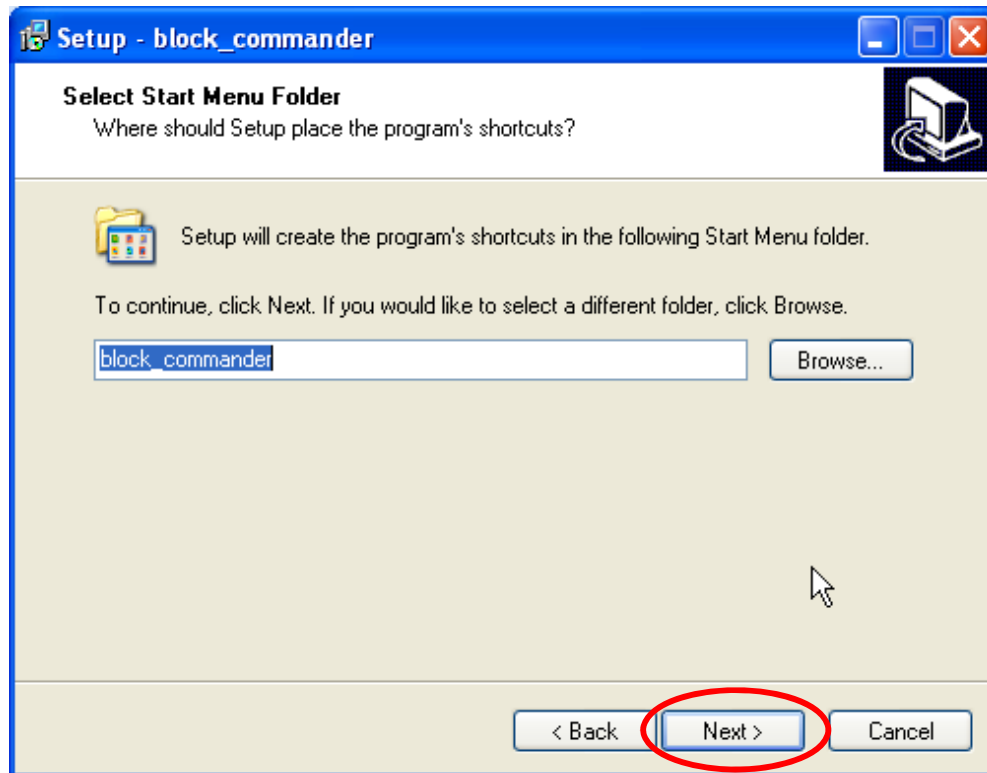
Installing Block Commander

Double click bcv***r***.exe

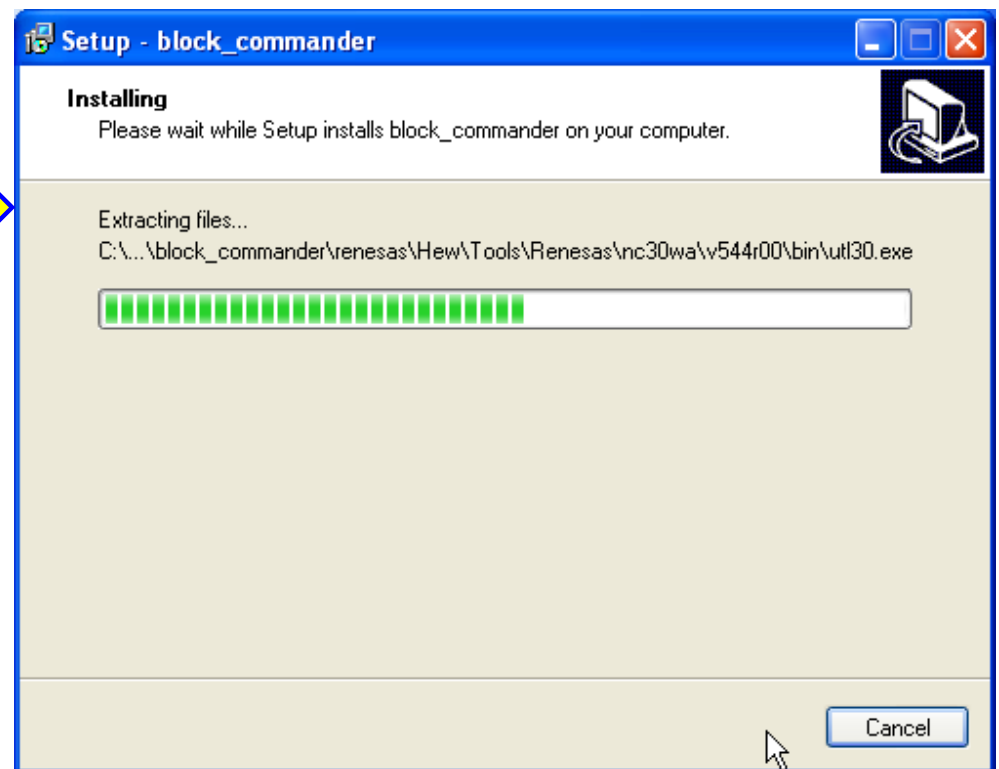
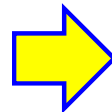
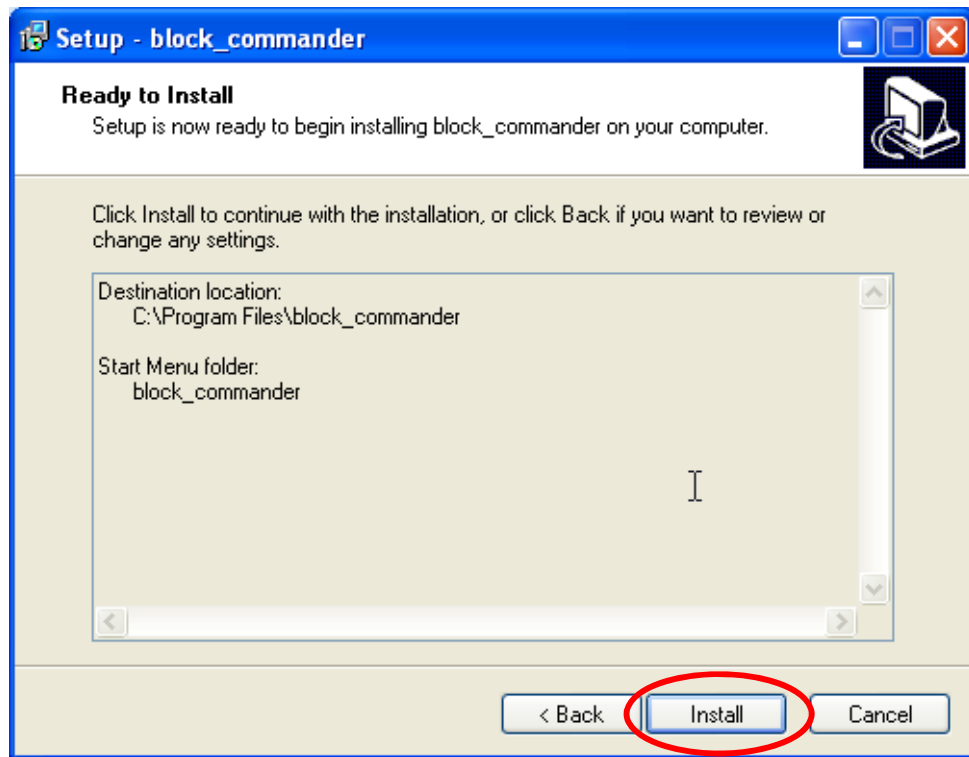


Confirm "C:¥Program Files¥block_commander"
as the destination

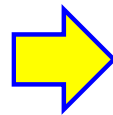
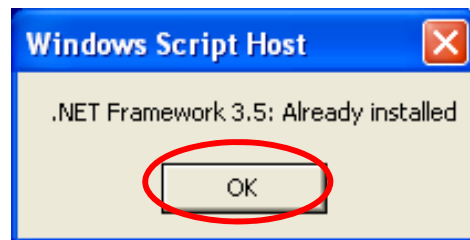
Double click bcv***r***.exe



Confirm "block_commander" as the destination

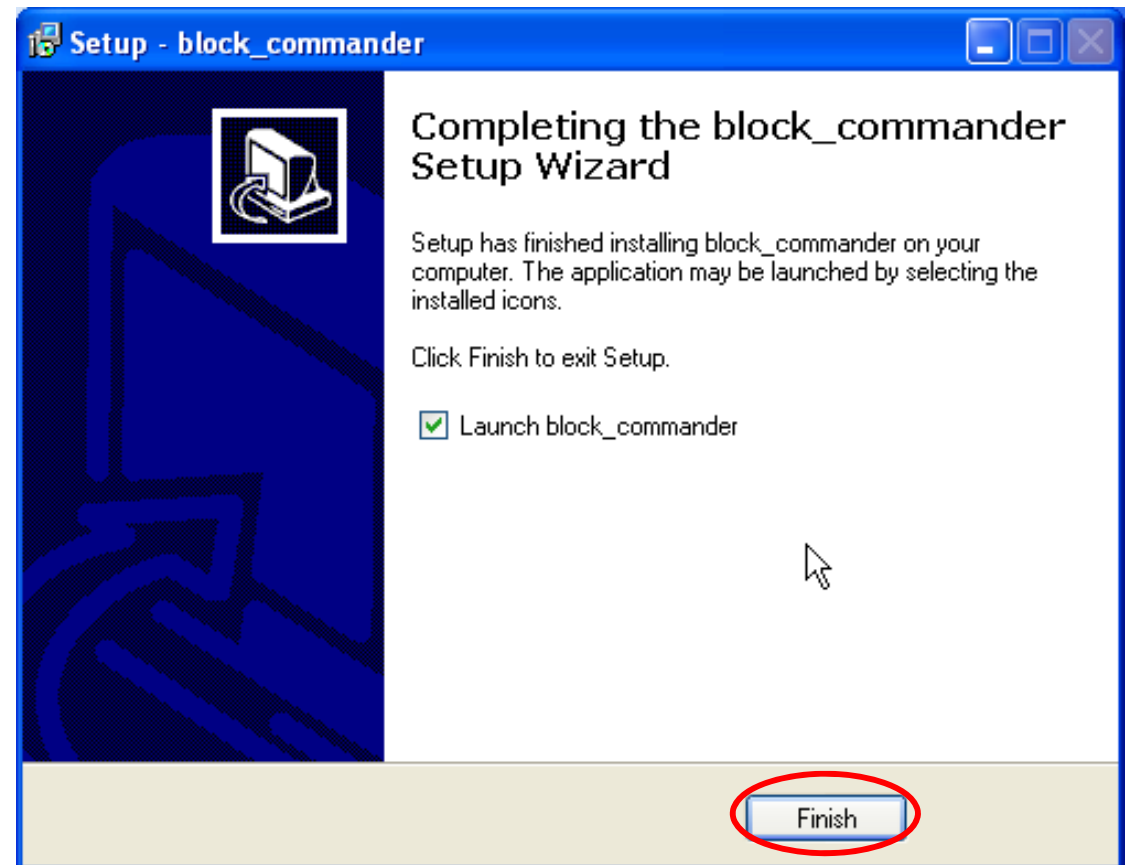
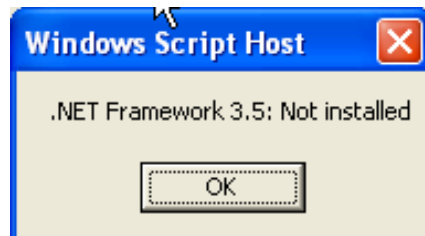


End of the installation



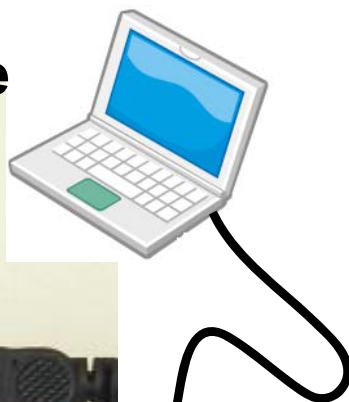
Click OK if you get above message

Let us know if you get message below
You need additional installing



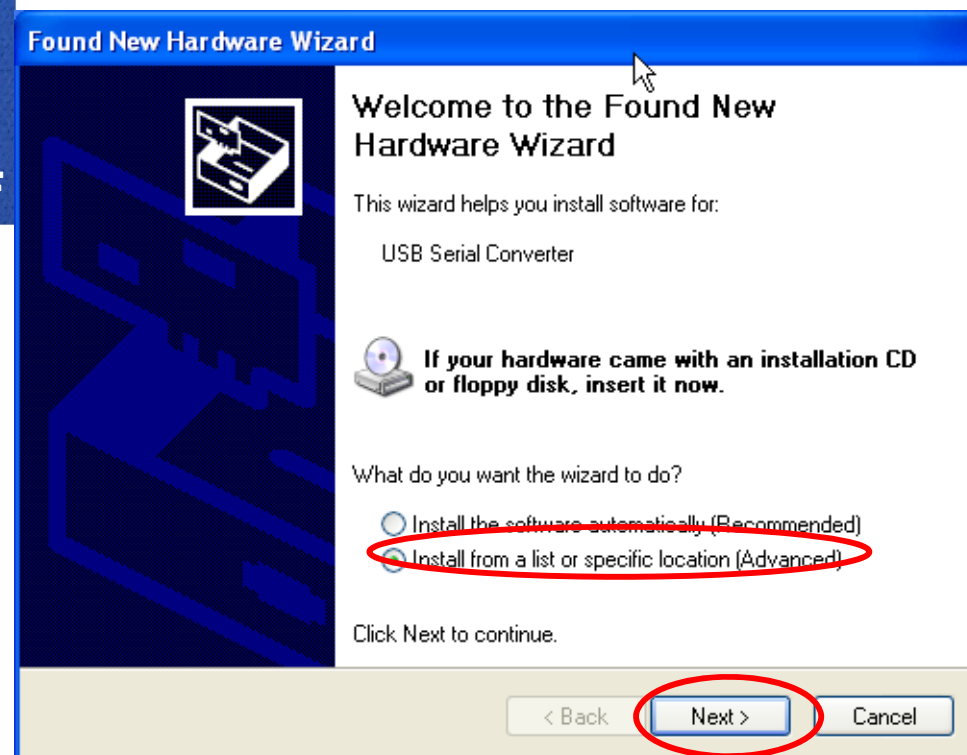
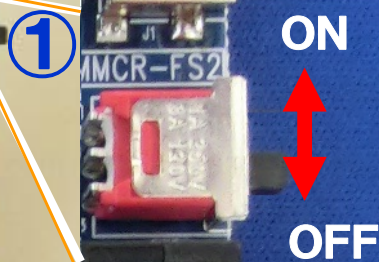
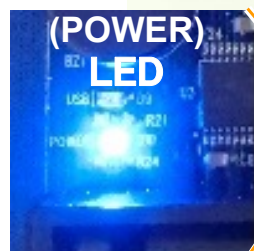
Installing drivers

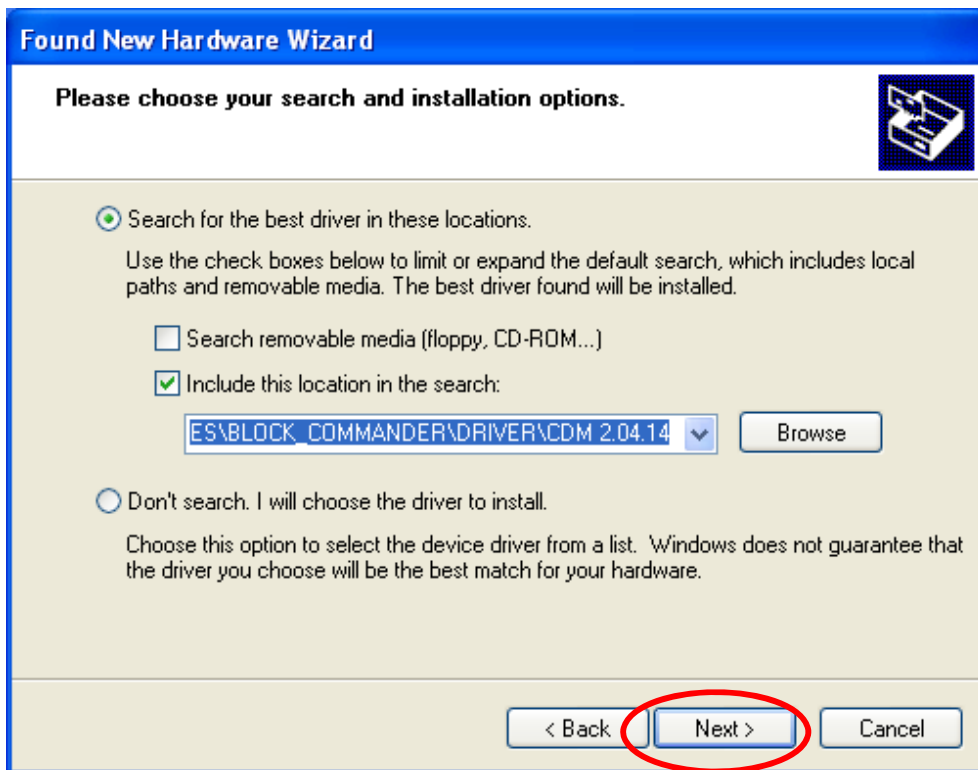
② USB cable

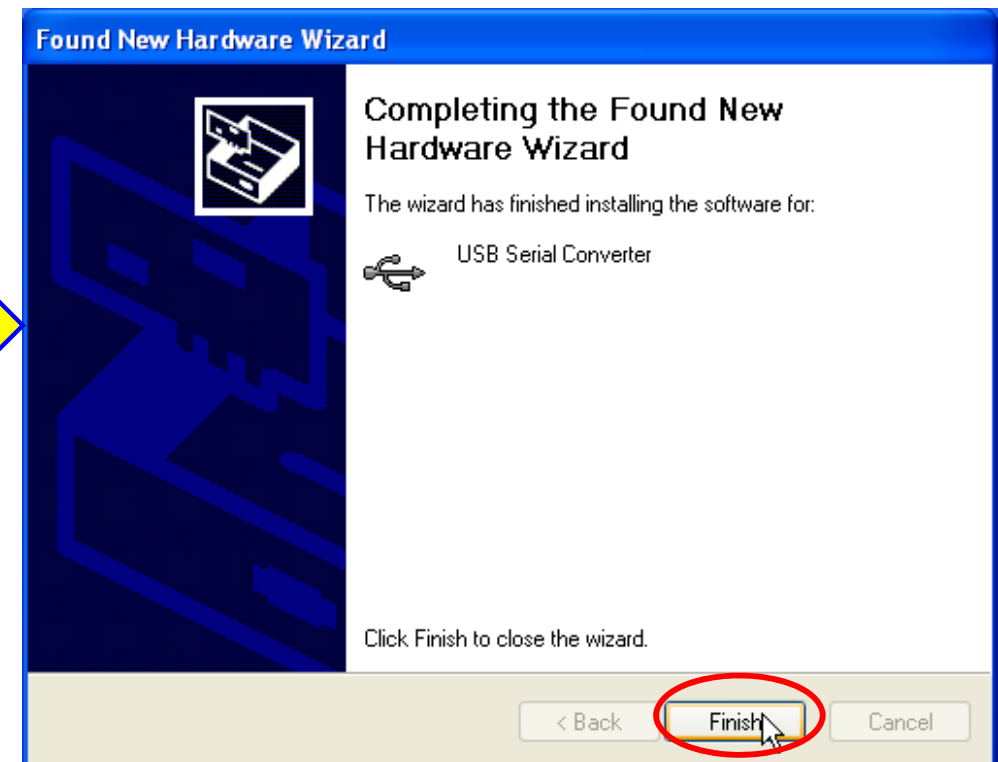
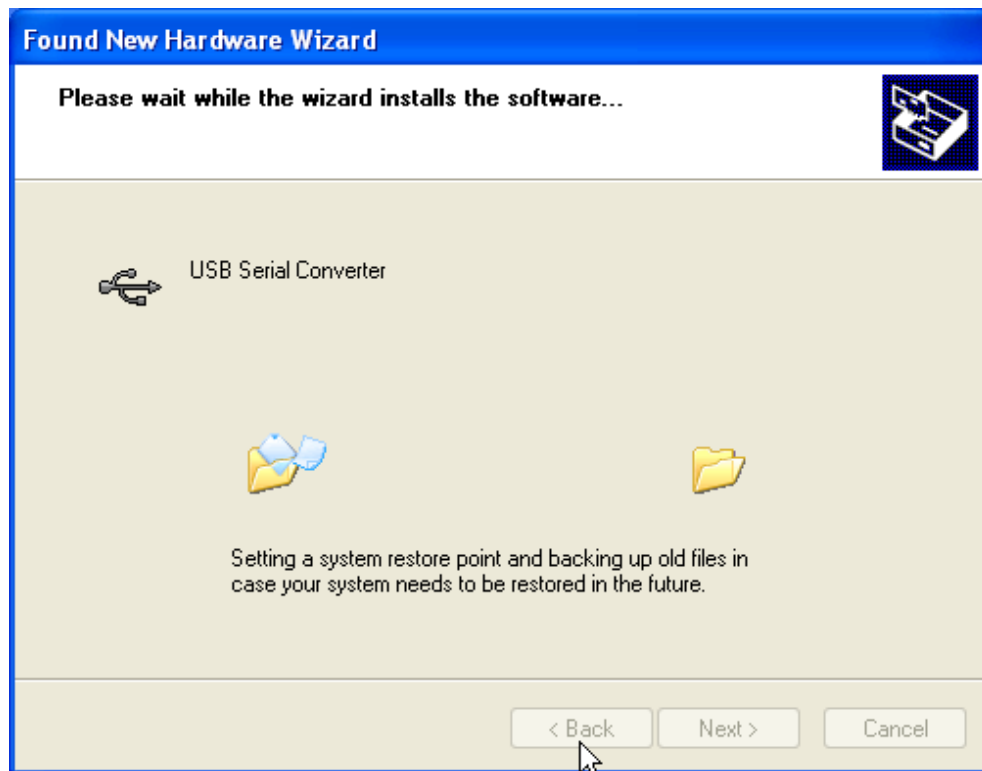


① Turn 「OFF」 the Micon Racer.

② Connect PC and Micon Racer with USB cable.







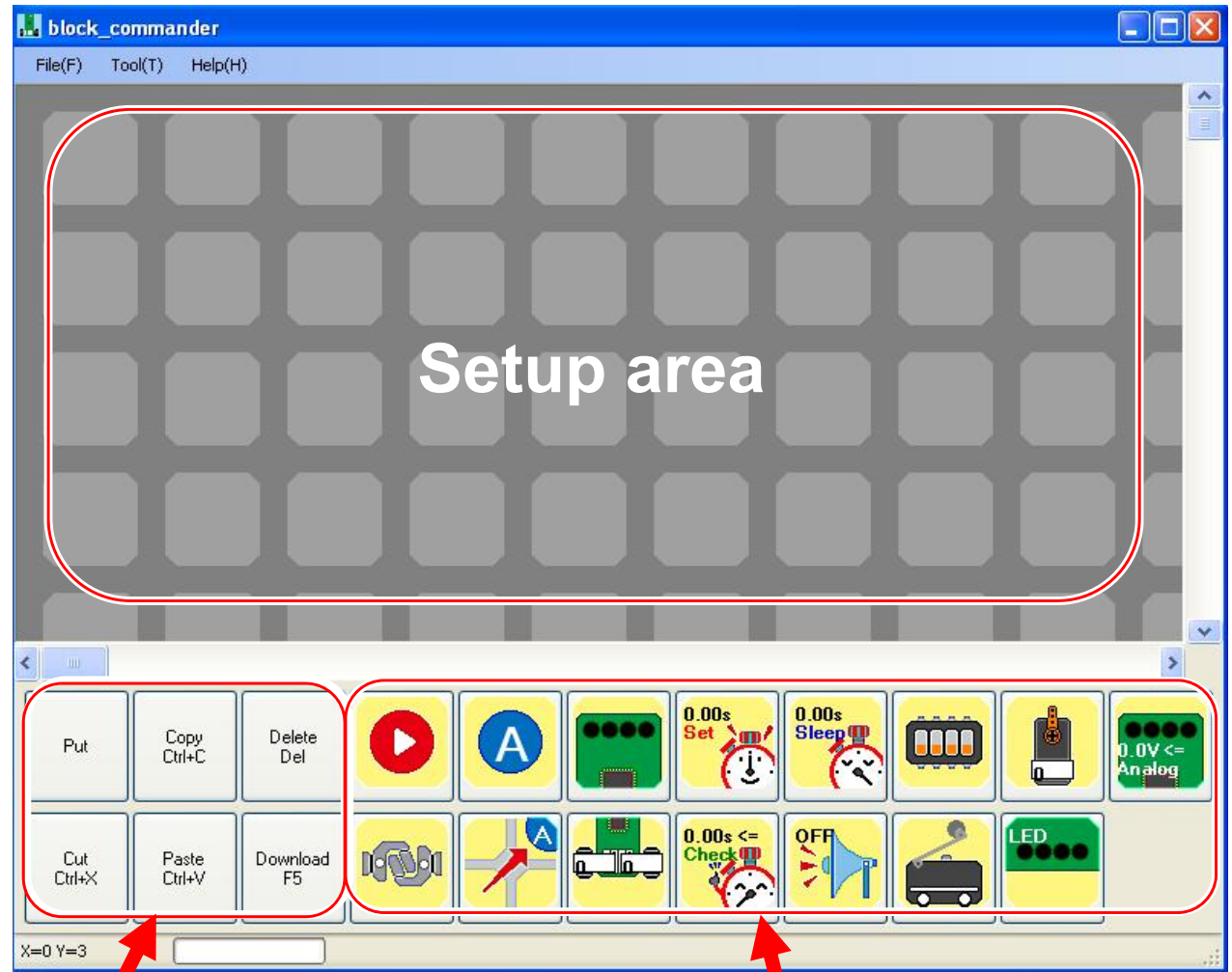
Launch Block Commander

Screen Structure of Block•Commander



Start

Block•commander
(GUI/Program Development Environment)



Mode button

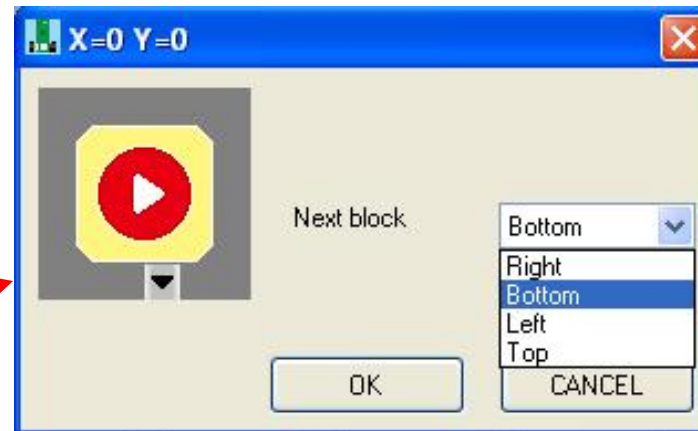
Block button

You can put Block button by「Drag」&「Drop」onto the Set up area.

Programming

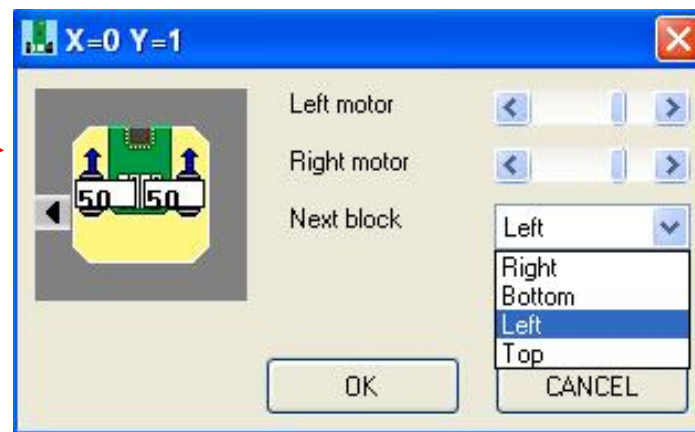


Set blocks



Start/Play block

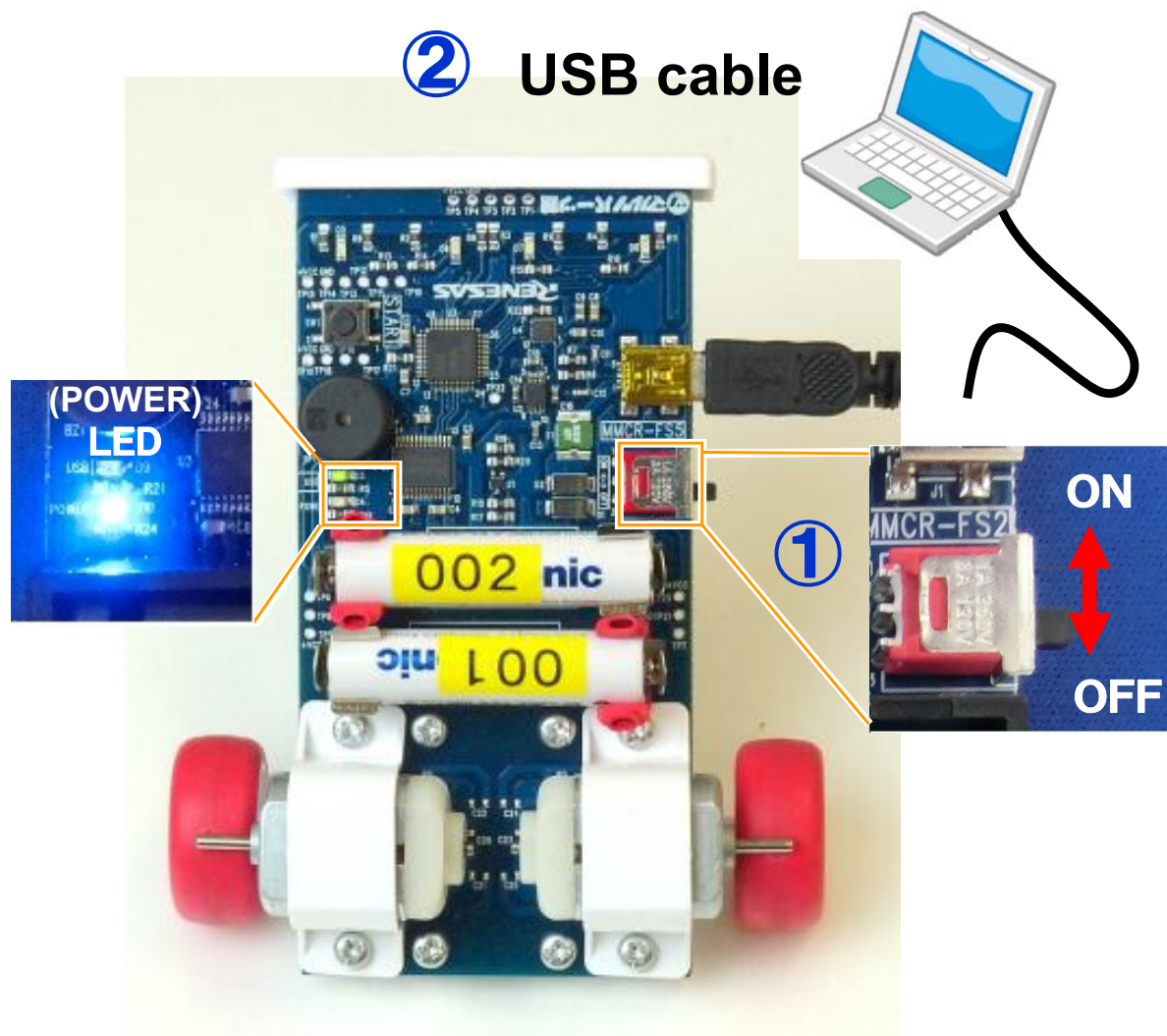
Set the “Next Block” to 「Bottom」.



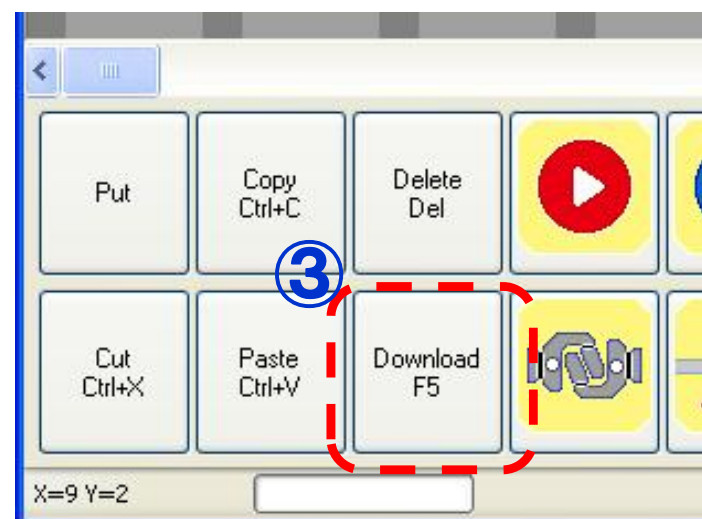
Motor block

Set the right and left motor to 「50%」.
Choose the outside of Setup area because there is no block to connect to. This time, set to 「left」.

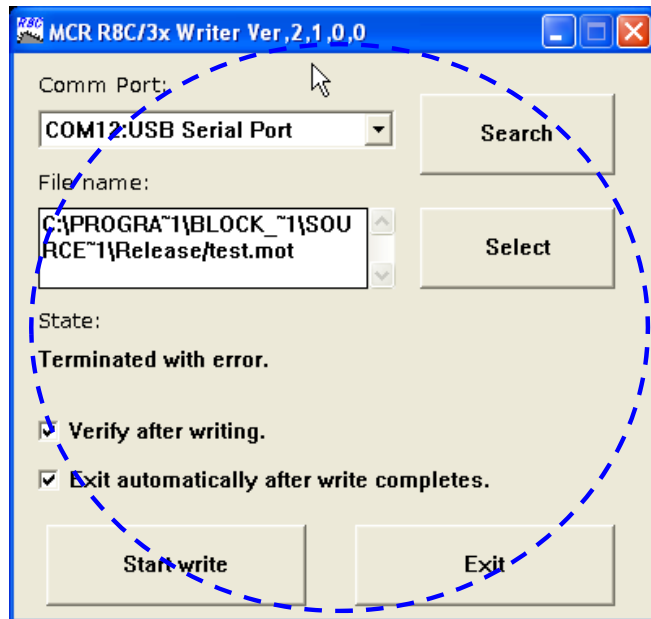
Transfer the Program



- ① Turn 「OFF」 the Micon Racer.
- ② Connect PC and Micon Racer with USB cable.
- ③ Click 「Download」 on Block•commander

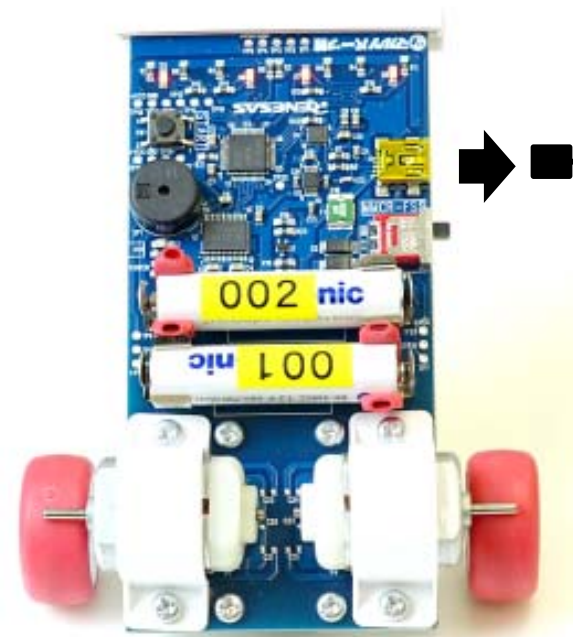


After the Program is Transferred



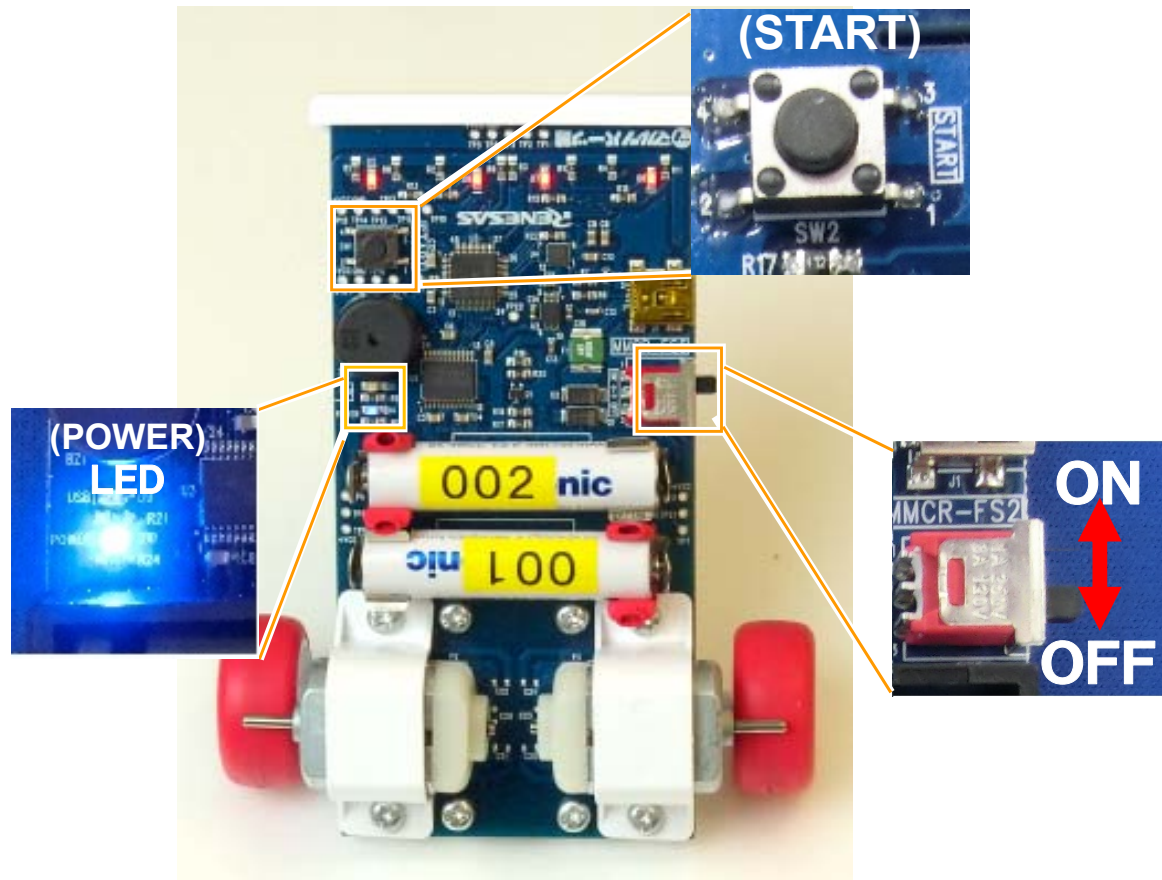
「Writer」soft

**Unplug a USB cable
after transfer.**



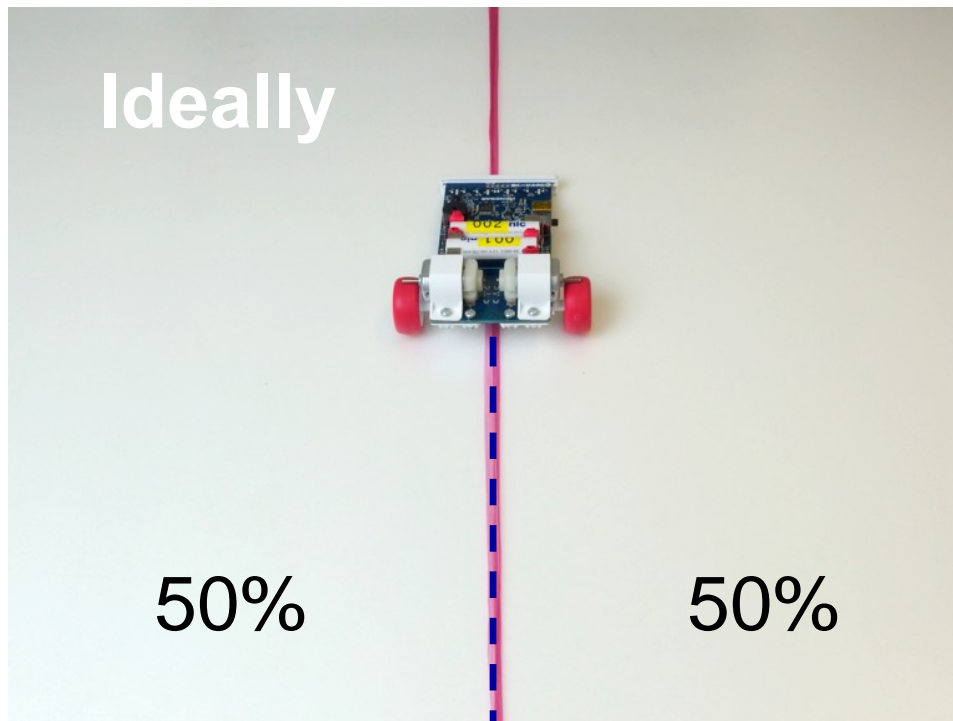
- ①「Writer」soft turns off automatically after writing.
- ②Unplug a USB cable from Micon Racer.

Run the Micon Racer

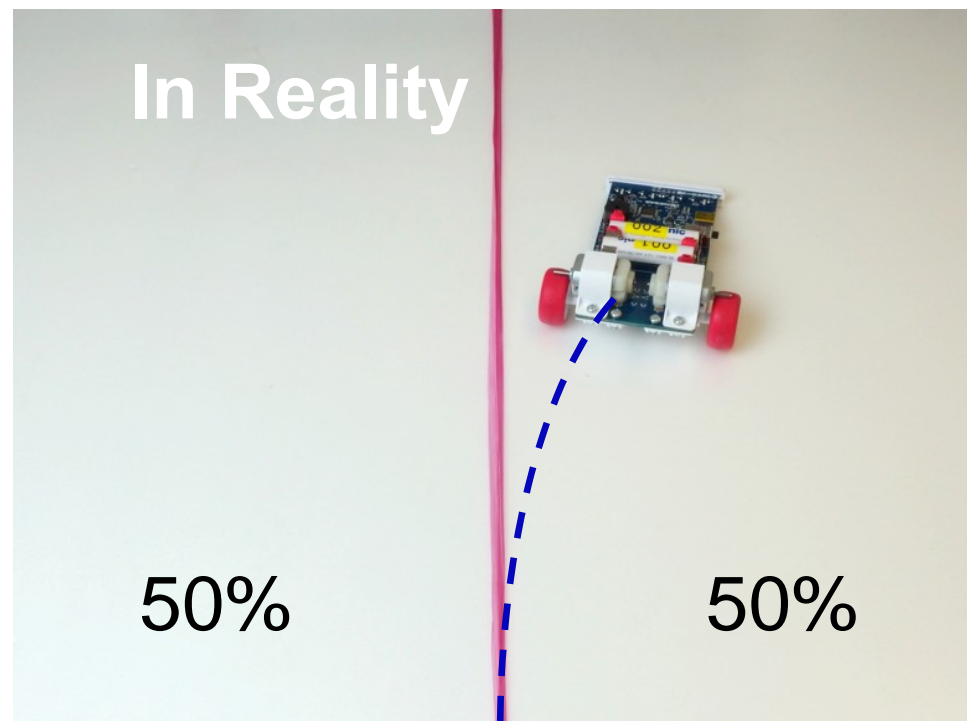


- ① Turn 「ON」 on Micon Racer.
- ② Press 「START」 switch.
- ③ After 「Pi•Pi•Pi•Pi」 sound, tire begins to move.

Adjust to Run Straight



Running Straight (Ideally)



Turn a little to the right (Reality)

How to adjust? Adjust the value (one by one) of the motor of the outer wheel to run straight.

✂It is all right if it can run straight for about 1metre.

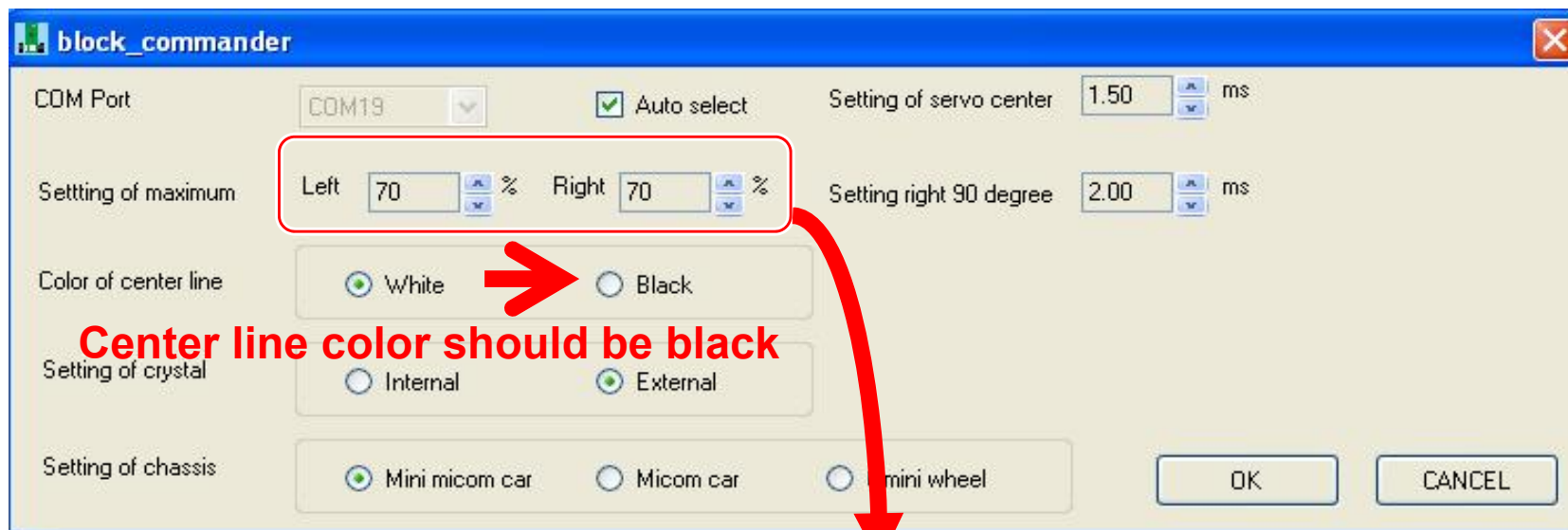
Adjustment

①

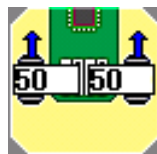


① Click 「Tool」→「Option」

②



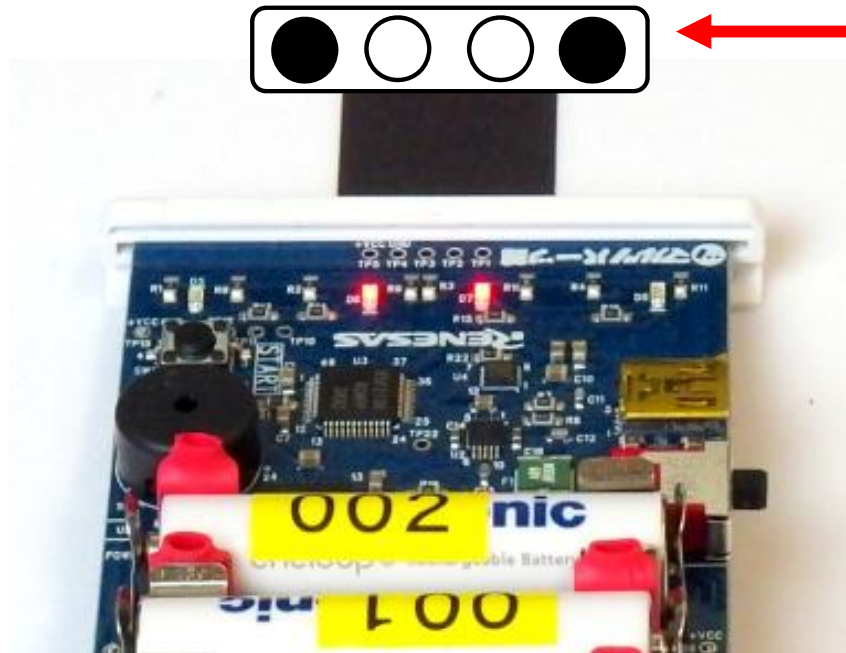
Ex) parameter of the block
(50%)



maximum rotational speed setting $\div 100$ = actual parameter
(70%) (35%)

Programming to Run on the Track

Running Straight

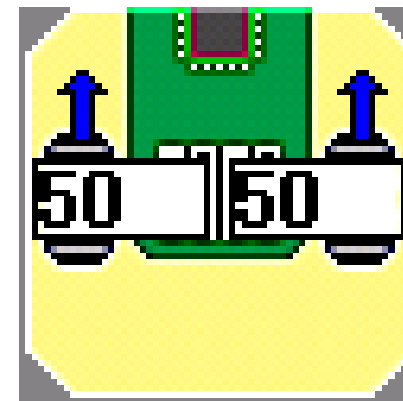


2 sensors at the center reacts.

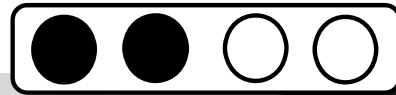
In the case of running straight, set the rotation of the right motor to be the same as the left.

50%

50%



Right Turn(Small Angle)

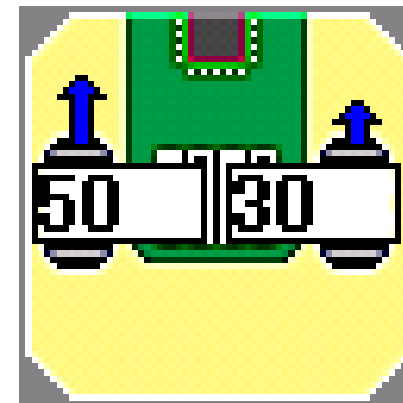


2 sensors at the right reacts

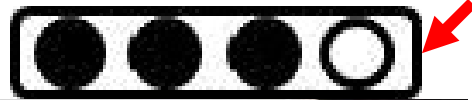
In case of right turn, set the right motor rotation to a smaller %.

50%

30%



Right Turn(Big Angle)



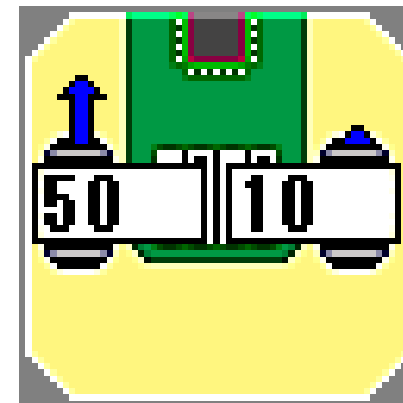
Rightmost sensor react



In case of right turn, set rotation of the right motor to an even smaller %.

50%

10%



Left Turn(Small Angle)



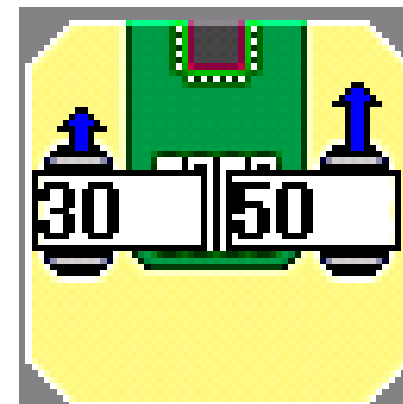
2 sensors on the left reacts



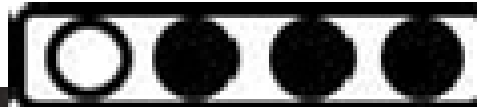
In case of left turn, set left motor rotation to a smaller %.

30%

50%



Left Turn(Big Angle)

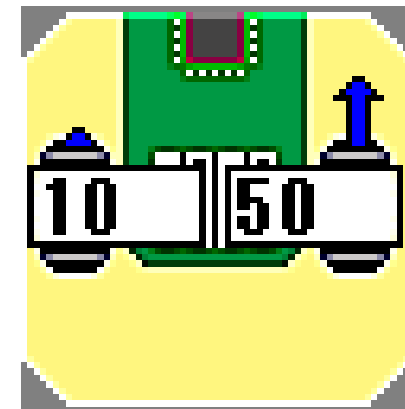


Leftmost sensor react

In case of left turn, set rotation of the left motor to an even smaller %.

10%

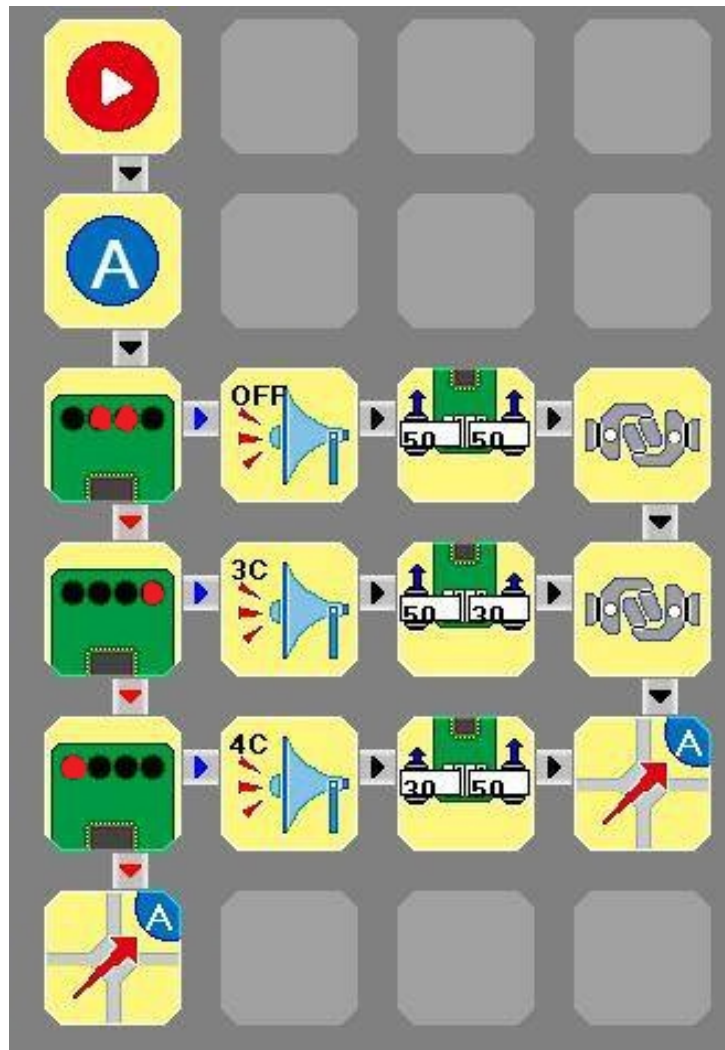
50%



Explanation of the Blocks

Programming

■ Example of block program



Start block

Label A

When 2 sensors at the center reacts

Beep : **OFF**

Motor : Left = **50%**, Right = **50%**

When rightmost sensor reacts

Beep : **C of 3 octaves**

Motor : Left = **50%**, Right = **30%**

When leftmost sensor reacts

Beep : **C of 4 octaves**

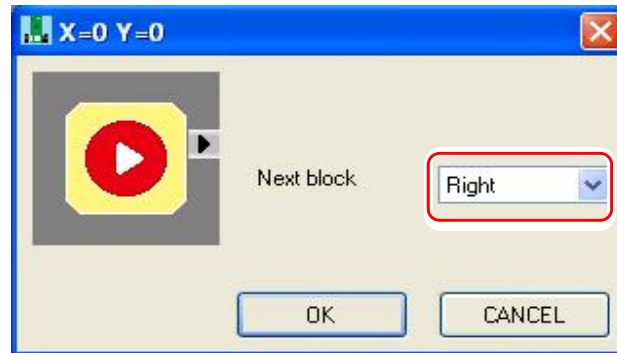
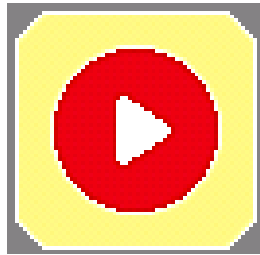
Motor : Left = **30%**, Right = **50%**

Jump to label A

※When it turns to the left, [**3C**] sounds and when it turns to the right, [**4C**] sounds.

Explanation of the Blocks

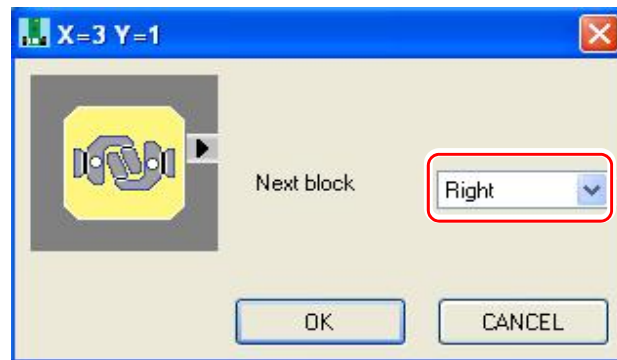
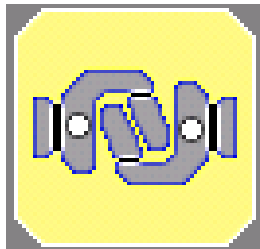
① Start block



Set the direction to go ahead next.

Block program certainly begins from this block.

② Connecting block

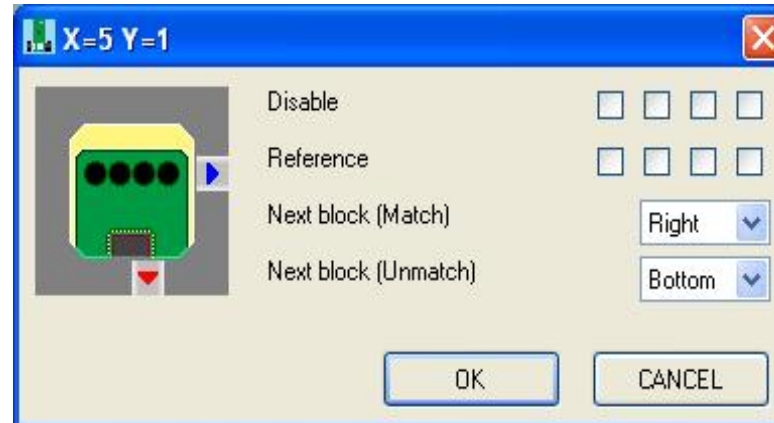
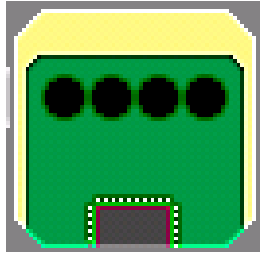


Set the direction to go ahead next.

Make connection between blocks.

Explanation of the Blocks

③ Sensor block

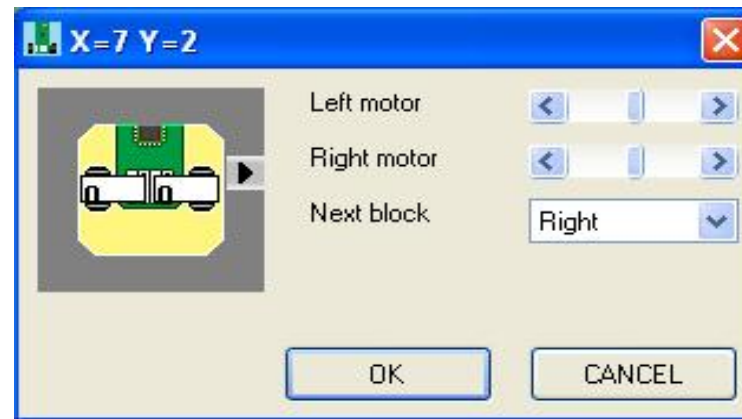
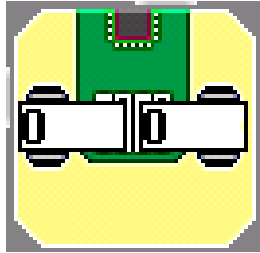


It gets the sensor information, and judges 「Match」 or 「Mismatch」.

Disable	Set the sensor that is not in use.
Reference	Set the sensor value. Check the sensor which you want to confirm.
Next block (Match)	Set the next block to go to when the status of the sensor matches the set sensor value.
Next block (Mismatch)	Set the next block to go when the status of the sensor does not match the set sensor value.

Explanation of the Blocks

④ Motor block

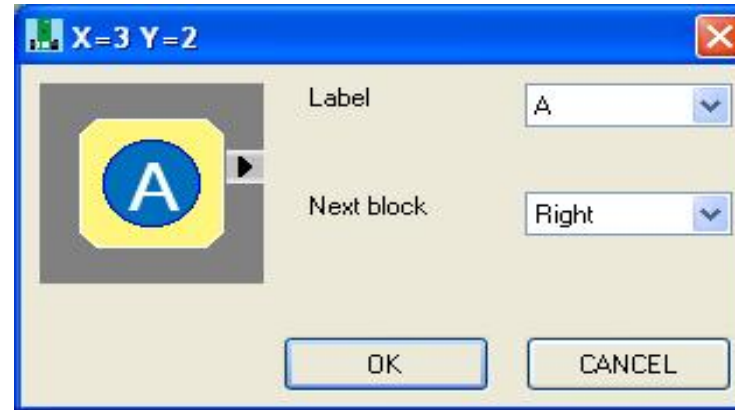
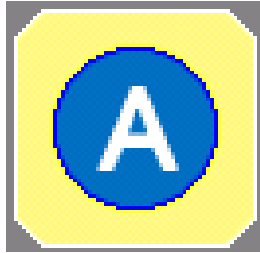


Set the speed of right and left motors.

Left motor	-1 ~ -100 : Reverse 0 : Stop 1 ~ 100 : Forward
Right motor	-1 ~ -100 : Reverse 0 : Stop 1 ~ 100 : Forward
Next block	Set the next block to go to.

Explanation of the Blocks

⑤ Label block

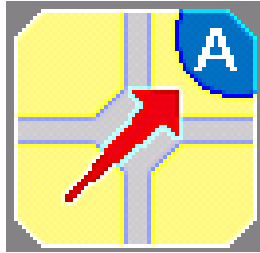


It is jump from the Jump block.

Label	You can set labels from A to P.
Next block	Set the next block to go to.

Explanation of the Blocks

⑥ Jump block

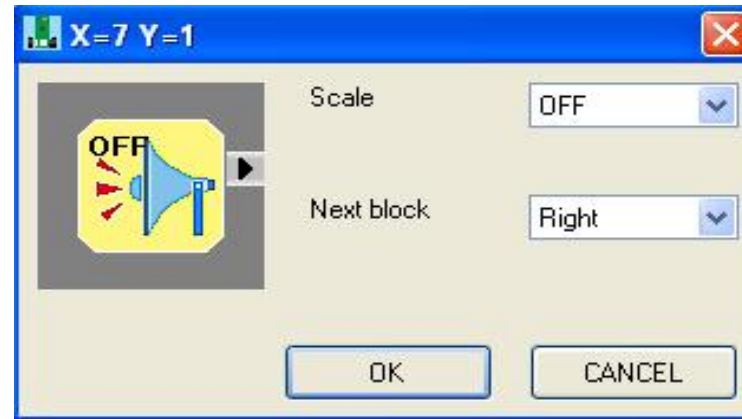
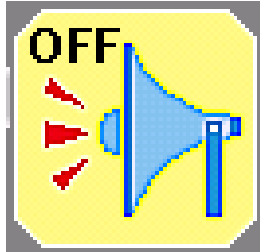


It jumps to the destination which you set.

Jump destination	You can set Jump destination from A to P.
-------------------------	--

Explanation of the Blocks

⑦ Beep block

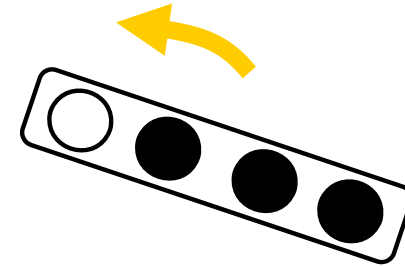
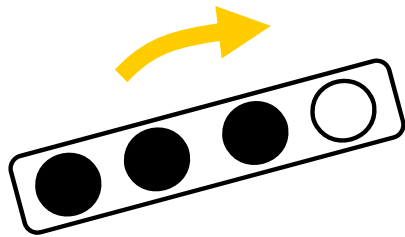


Piezoelectric sounder produces a sound.

Scale	Set it from musical scale of 2 octaves.
Next block	Set the next block to go to.

Point of Programming① (for smooth running!)

- Example program will not run smoothly as expected.



50%

10% 10%

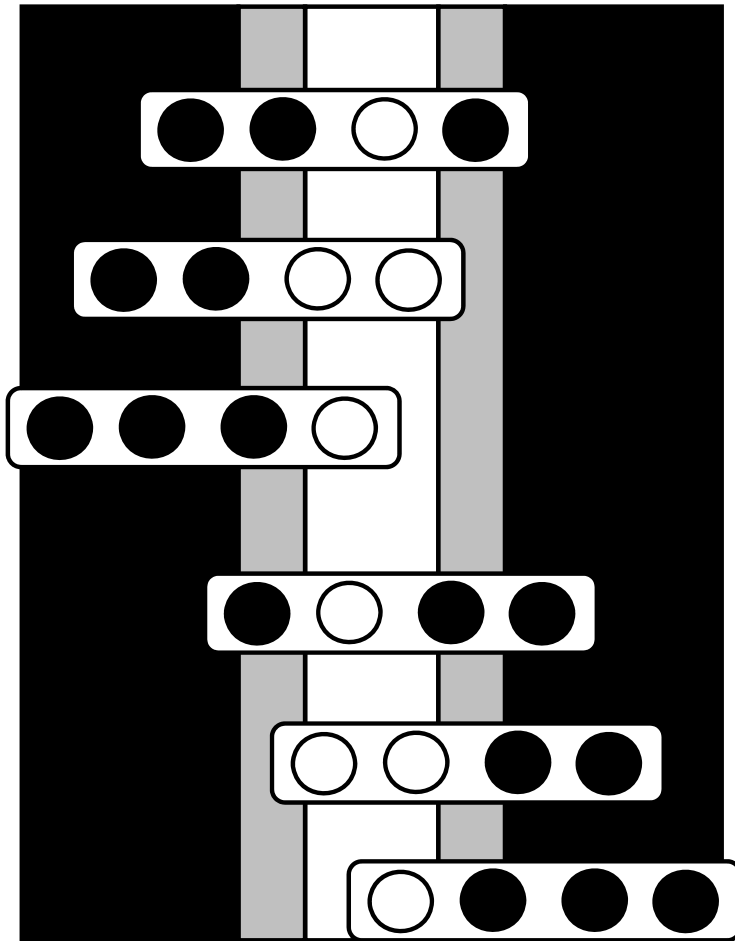
50%

When it runs in a straight line, it turns to right and left like the picture above (when the sensor of the edge of right and left is reacted).

If the speed difference is huge, it will turn right or left when moving forward.

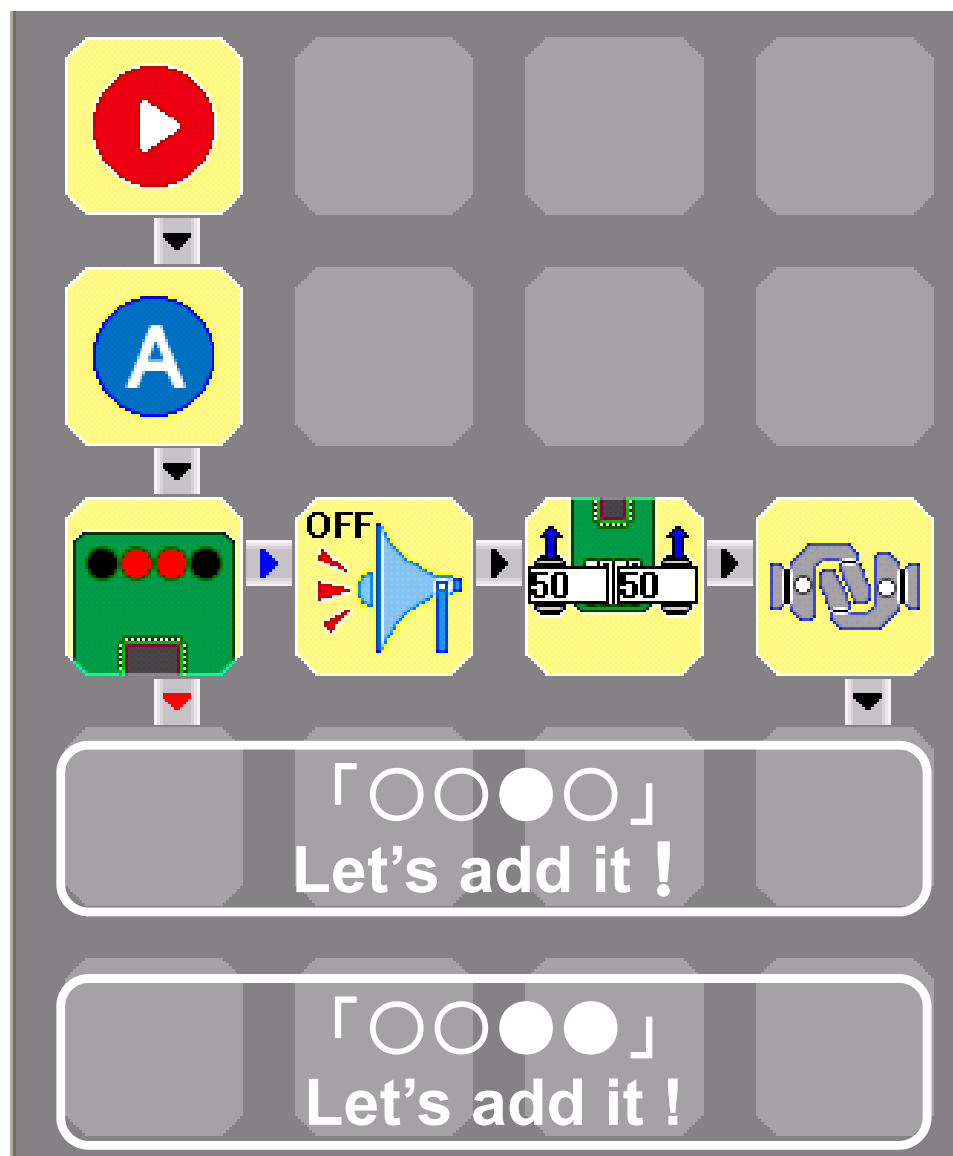
Improvement of Program (for smooth running!)

■ Fine tune the sensor set pattern



- The example of program detects the sensor of the edge and judges right and left.
- The state of the sensor when Micon Racer deviates to the left side or right side, it can be in case such as the left picture.
- Let's add the state of the sensor of the left picture in reference from sample program!

Improvement of program (for smoothly running!)



※ 「●」 detect white, 「○」 detect black



Renesas Micon Car Rally Secretariat

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