# Conveyor Belt User Guide

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# Preface

## Purpose

This document describes that how to install Conveyor Belt kit and help user to use it.

## Intended Audience

This document is intended for:

- Customer Engineer
- Sales Engineer
- Installation and Commissioning Engineer
- Technical Support Engineer

## Change History

| Date | Change Description |
|---|---|
| 2019/03/26 | Update picking and sorting demos |
| 2017/7/3 | The first release |

## Symbol Conventions

The symbols that may be founded in this document are defined as follows.

| Symbol | Description |
|---|---|
| ⚠DANGER | Indicates a hazard with a high level of risk which, if not avoided, could result in death or serious injury |
| ⚠WARNING | Indicates a hazard with a medium level or low level of risk which, if not avoided, could result in minor or moderate injury, robotic arm damage |
| ⚠NOTICE | Indicates a potentially hazardous situation which, if not avoided, can result in robotic arm damage, data loss, or unanticipated result |
| 🕮NOTE | Provides additional information to emphasize or supplement important points in the main text |

# Contents



# 1. Conveyor Belt Kit Overview

Conveyor belt kit contains conveyor belt, color sensor and photoelectric sensor as shown in Figure 1.1.


Figure 1.1 Conveyor Belt Kit

⚠NOTICE

Please turn off the Dobot Magician completely before plugging or unplugging external modules, such as Infrared sensor, Color sensor and so on, otherwise, it will damage your Dobot. Magician. Only the status LED indicator turns off, the Dobot Magician has powered down completely after you turn off the power of the Dobot Magician.

The operational steps are shown below:

- Install the photoelectric sensor and color sensor.
- Turn on the Dobot Magician power, the buzzer beeps three times, indicating that the module has finished initializing.
- For the Dobot Magician details, please refer to *Dobot Magician User Guide*.

# 2. Hardware Connection

This topic describes how to connect Conveyor Belt Kit. The connection shown in this topic is available for Dobot Magician V1 and Dobot Magician V2, and we will use Dobot Magician V1 to give a connection example as shown in Figure 2.1.

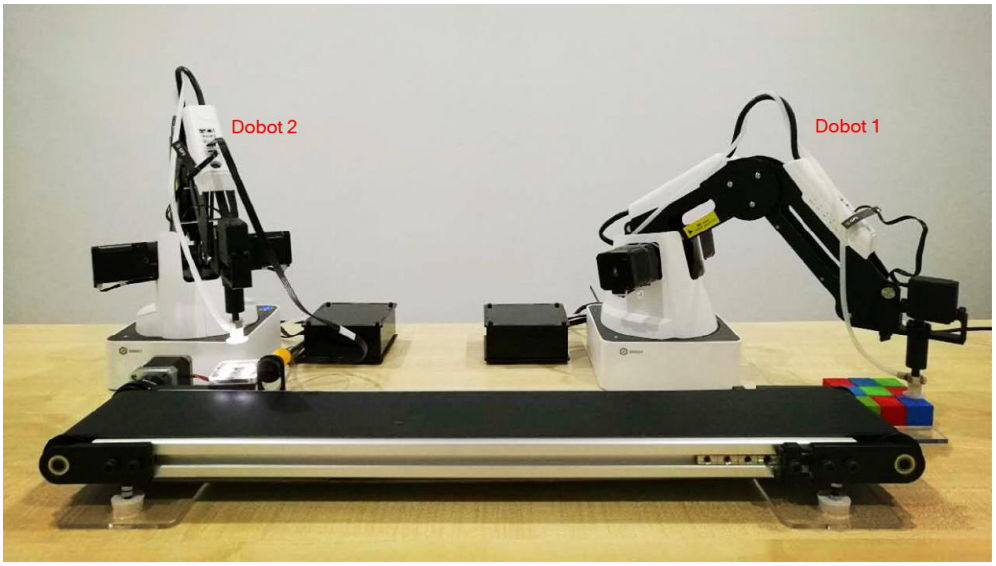



Figure 2.1 The whole connection example

NOTE

The Dobot 1 is used to pick block and the Dobot 2 is used to sort block.

## 2.1 Conveyor Belt Connection

Connect the motor wire of the conveyor belt to the interface **Stepper1** on the base of the Dobot 1.


Figure 2.2 Conveyor Belt connection

## 2.2 Color Sensor Connection

Connect the power wire of the Color Sensor to the interface GP1, GP2, GP4 or GP5 on the Dobot 2 (This document takes interface GP2 as an example).

Figure 2.3 Color Sensor connection

## 2.3 Photoelectric Sensor Connection

Connect the power wire of the photoelectric sensor to the interface GP1, GP4 or GP5 on the Dobot 2 (This document takes interface GP4 as an example).

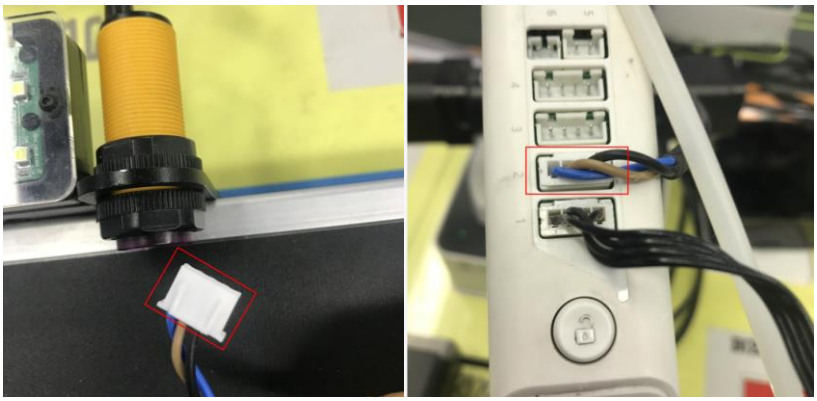


Figure 2.4 Photoelectric Sensor connection

The final connection is shown in Figure 2.5 and Figure 2.6.

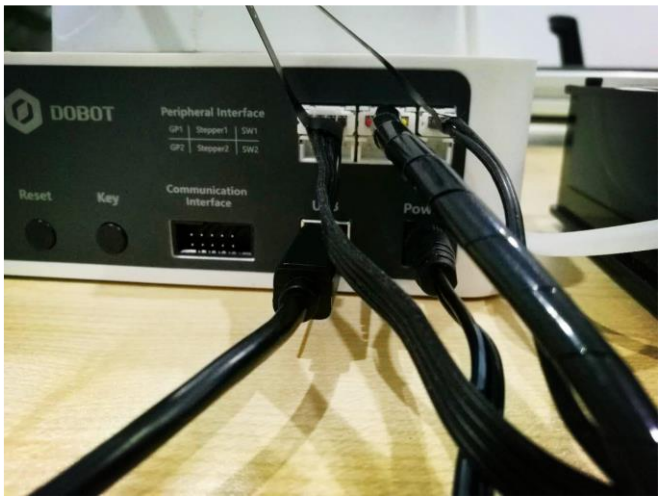



Figure 2.5 Dobot 1 connection


Figure 2.6 Dobot 2 connection

# 3. Conveyor Belt Picking and Sorting Demo

**Preparation**

- The DobotStudio has been installed.
- The Dobot Magician has been connected to your computer.
- The demos have been downloaded from our official website.

The download path of DobotStudio is https://www.dobot.cc/downloadcenter.html. As shown in Figure 3.1.

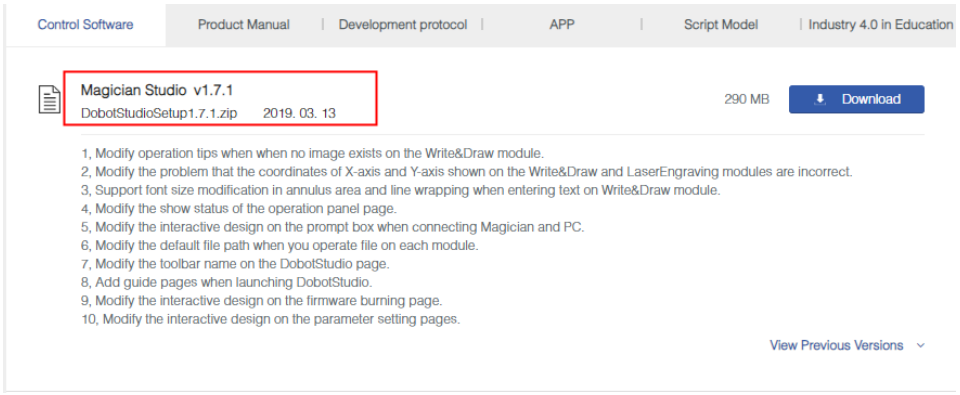



Figure 3.1 Get DobotStudio

The download path of the demos is https://www.dobot.cc/downloadcenter/conveyor-belt-kit.html?sub_cat=103#sub-download. As shown in Figure 3.2.

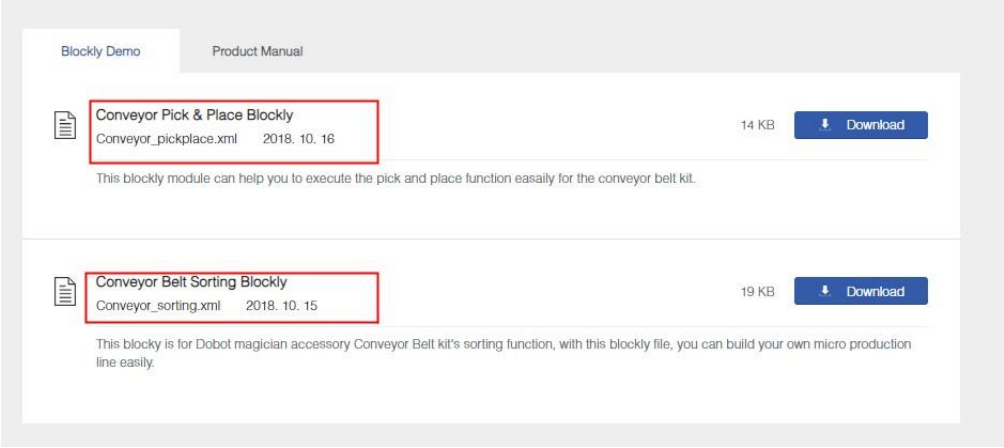



Figure 3.2 Get the demos

**Step 1.** Put the two demos for picking and sorting into the path *Installation path*/**DobotSutido/config/bystore** or other folders. As shown in Figure 3.3.

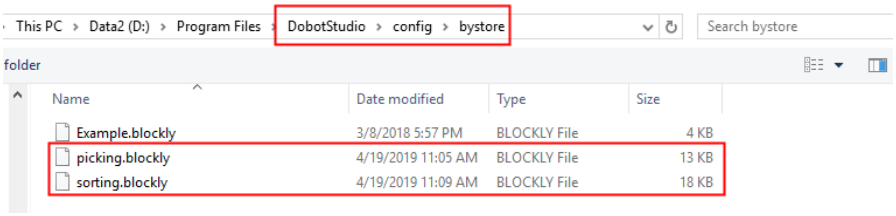



Figure 3.3 Save demos

**Step 2.** Launch two DobotStudio clients, and open **Blockly** module and import the picking demo and the sorting demo respectively. As shown in Figure 3.4 and Figure 3.5.

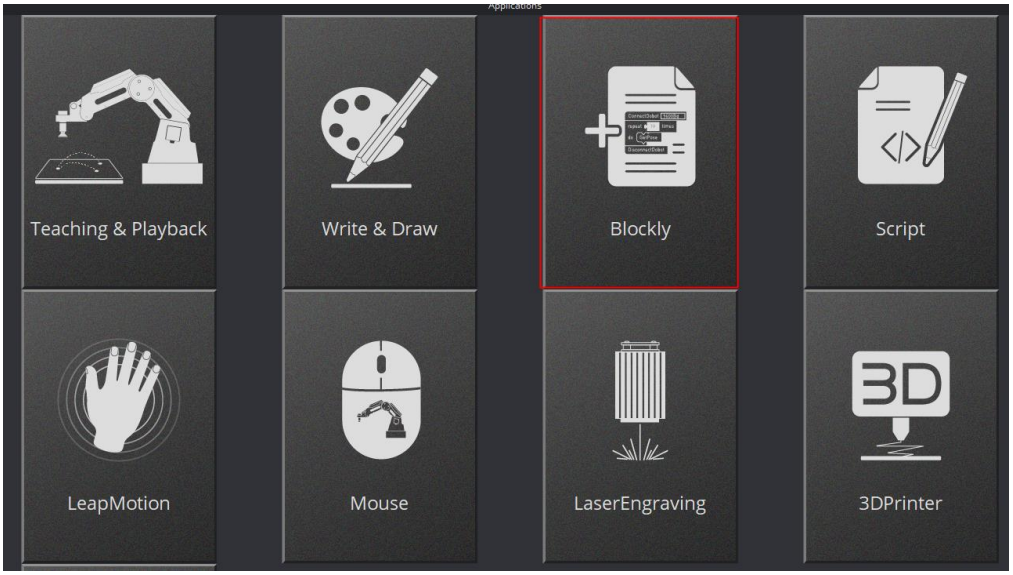



Figure 3.4 Open Blockly module

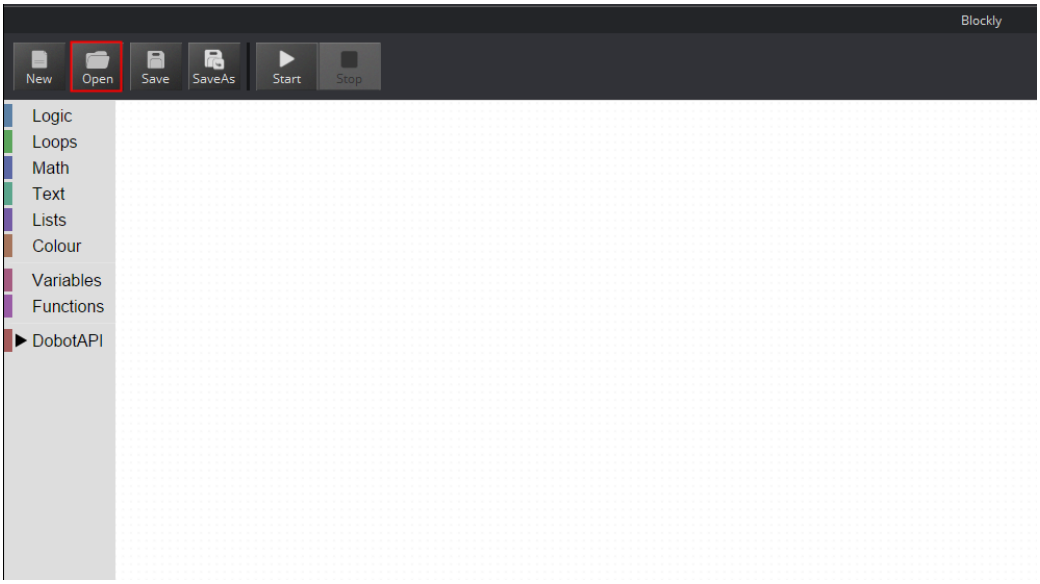



Figure 3.5 Import demo

**Step 3.** If the Dobot Studio client imports the picking demo, connect it to the Dobot 1, otherwise,

connect it to the Dobot 2. As shown in Figure 3.6 and Figure 3.7.

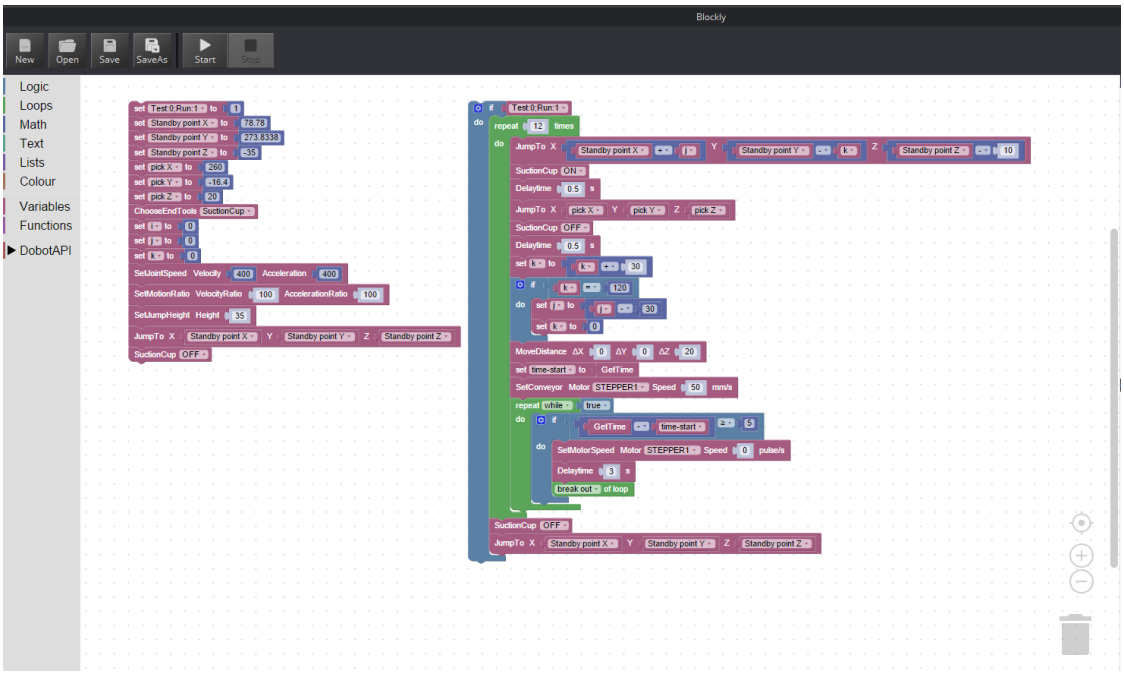



Figure 3.6 Import the picking demo

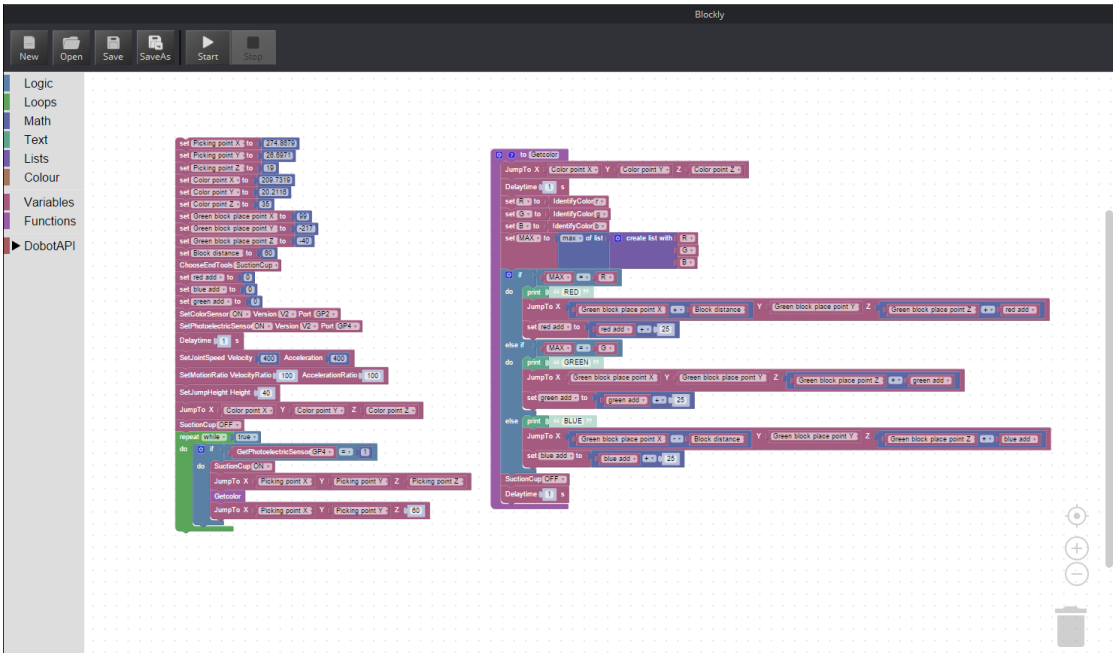



Figure 3.7 Import the sorting demo

# 4. Position Adjustment

## 4.1 Adjusting Picking and Placing Positions of Dobot 1

- Adjusting picking position

1. Press and hold down the **Unlock** button on the forearm to move the Dobot 1 to make suction cup on the block. As shown in Figure 4.1.

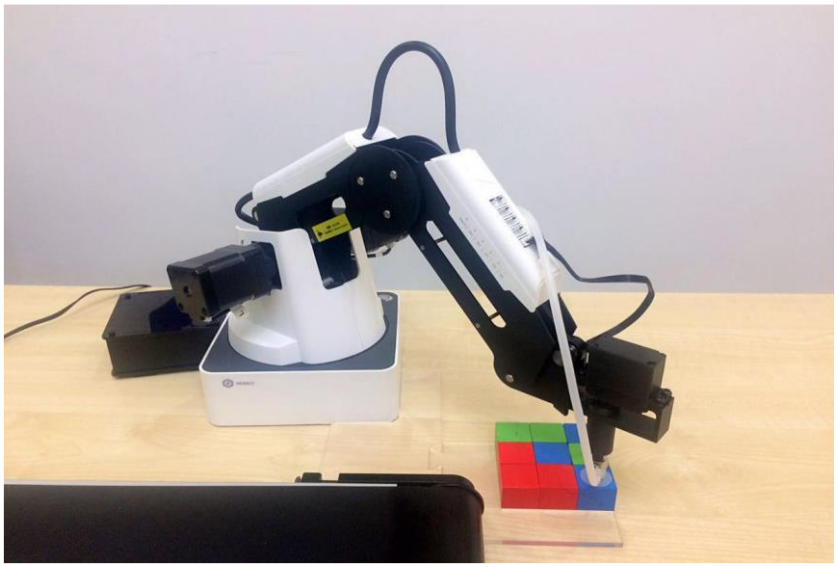


Figure 4.1 Picking position

📖NOTE

You can move the Dobot 1 by the DobotStudio to make the suction cup on the center of the block.

2. The operation panel on the DobotStudio will record the values of X, Y, Z axes automatically, and write the values of the X, Y, Z axes in the picking demo as shown in Figure 4.2.

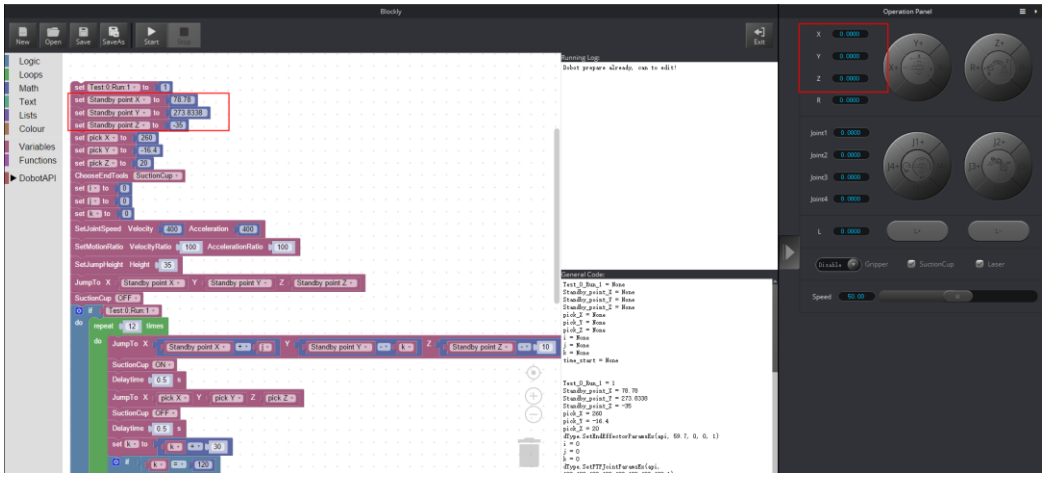


Figure 4.2 Modify the picking position

- Adjusting the Placing Position

1. Select **SuctionCup** to pick up the blocks, and then press and hold down the **Unlock** button to move the Dobot 1 to make the blocks on the conveyor belt. As shown in Figure 4.3.

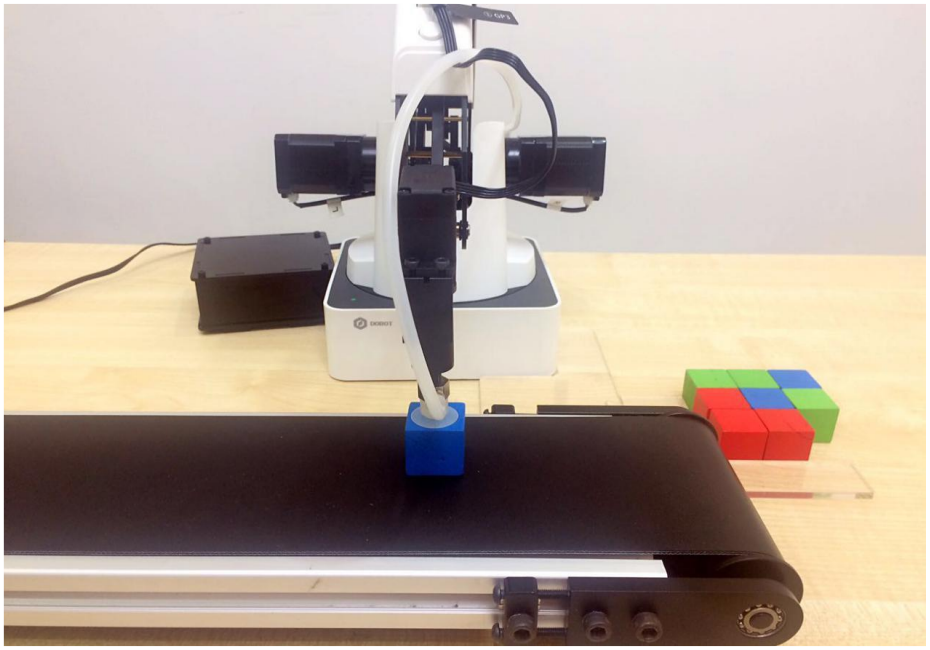


Figure 4.3 Adjust Placing position

2. Unselect **SuctionCup** to put down blocks on the conveyor belt. The operation panel on the DobotStudio will record the values of X, Y, Z axes automatically, and write the values of the X, Y, Z axes in the picking demo as shown in Figure 4.4.

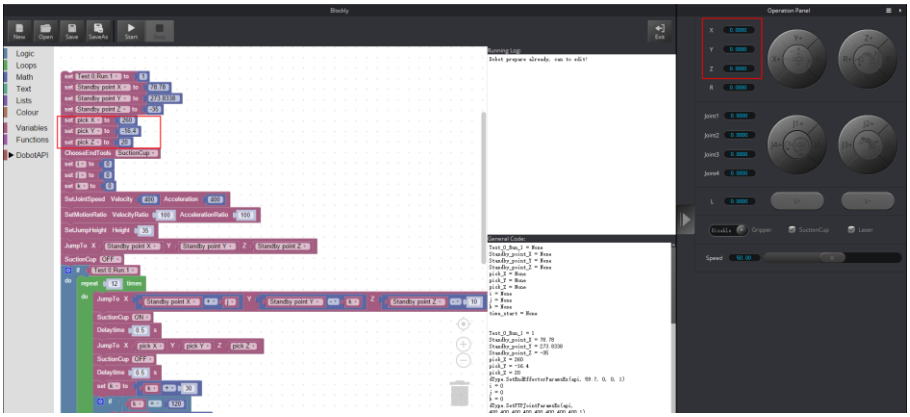


Figure 4.4 Modify the placing position

- Adjusting the stopping position

Control the conveyor belt move a distance by setting the speed and time in the picking demo to make these blocks in a position where is in the workspace of the Dobot 2.

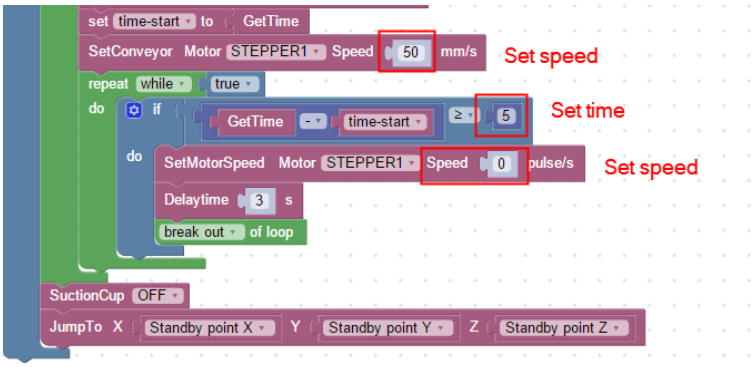



Figure 4.5 Adjust the stopping position

## 4.2 Adjusting Sorting Position of Dobot 2

- Adjust picking position

1. Press and hold down the **Unlock** button on the forearm to move the Dobot 2 to make the suction cup on the center of the block. As shown in Figure 4.6.

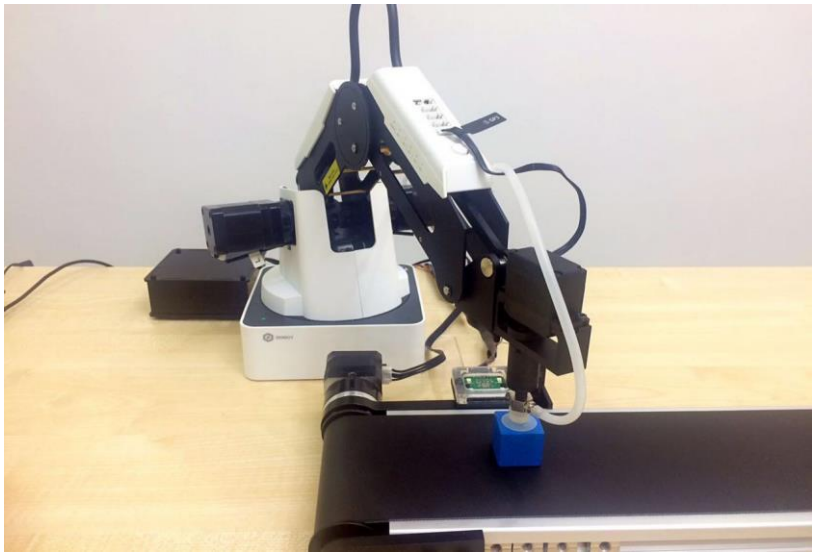


Figure 4.6 Adjust picking position

📖NOTE

You can move the Dobot 2 by the DobotStudio to make the suction cup on the center of the block.

2. The operation panel in DobotStudio will record the values of X, Y, Z axes automatically, and write the values of the X, Y, Z axes in the sorting demo as shown in Figure 4.7.

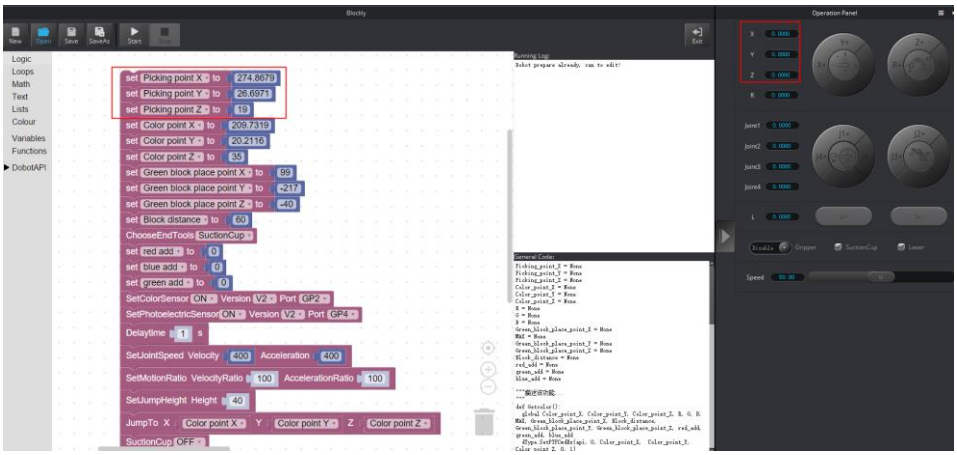



Figure 4.7 Modify picking position

- Adjust color-identified position

1. Select **SuctionCup** to pick up the block, and then press and hold down the **Unlock** button to move the Dobot 2 to make the block above the color sensor. The distance range between the color sensor and block should be 5mm to 10mm. As shown in Figure 4.8.

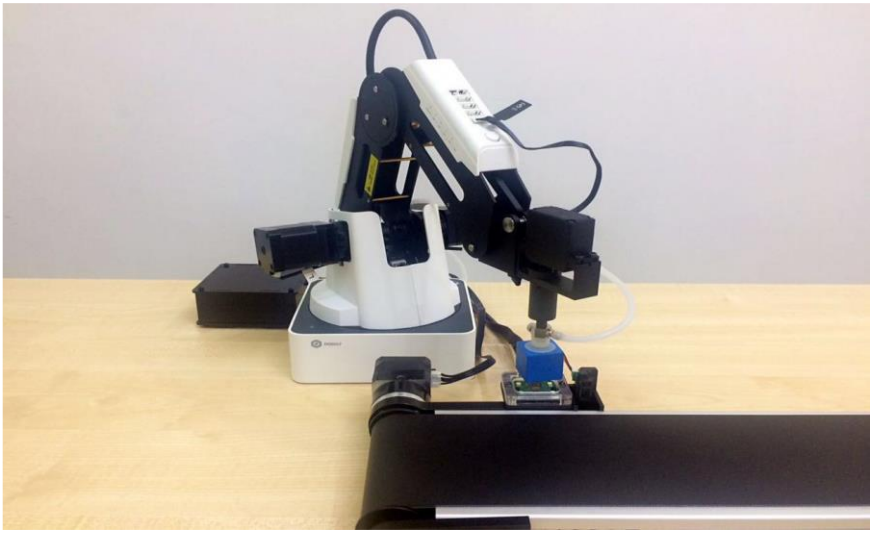


Figure 4.8 Adjust color-identified position

2. The operation panel on the DobotStudio will record the values of X, Y, Z axes automatically, and write the values of the X, Y, Z axes in the sorting demo as shown in Figure 4.9.

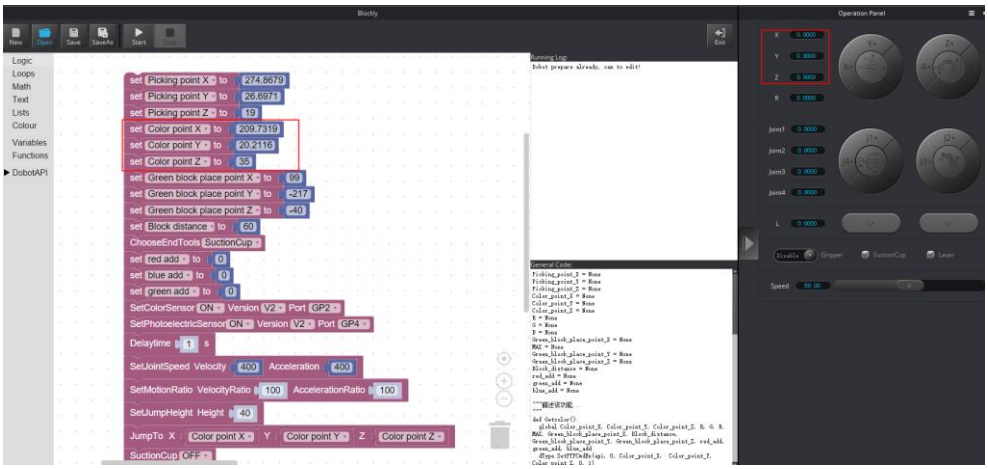



Figure 4.9 Modify color- identified position

- Adjust placing position

1. Press and hold down the **Unlock** button to move the Dobot 2 to make the block on a placing position. As shown in Figure 4.10.

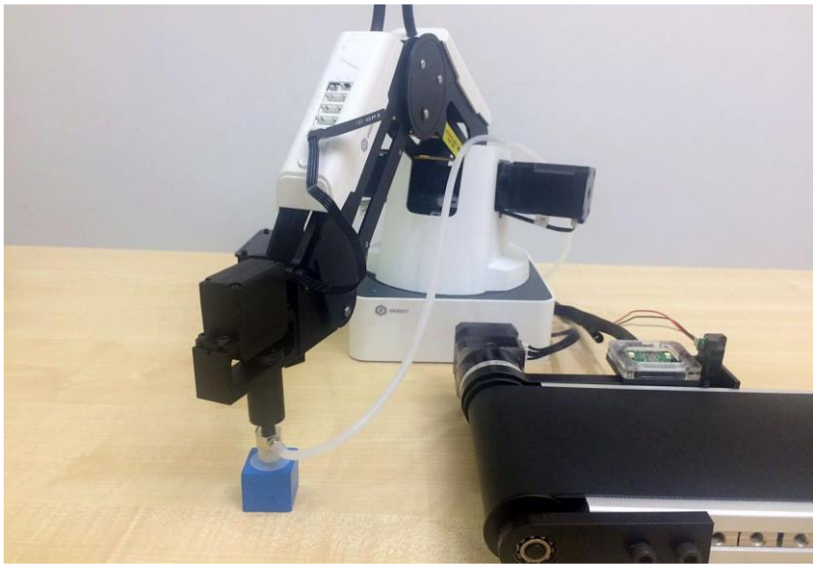


Figure 4.10 A placing position

📖NOTE

Make sure that this position is in the workspace of the Dobot Magician.

2. The operation panel on the DobotStudio will record the values of X, Y, Z axes automatically, and write the values of the X, Y, Z axes in the sorting demo as shown in Figure 4.11.

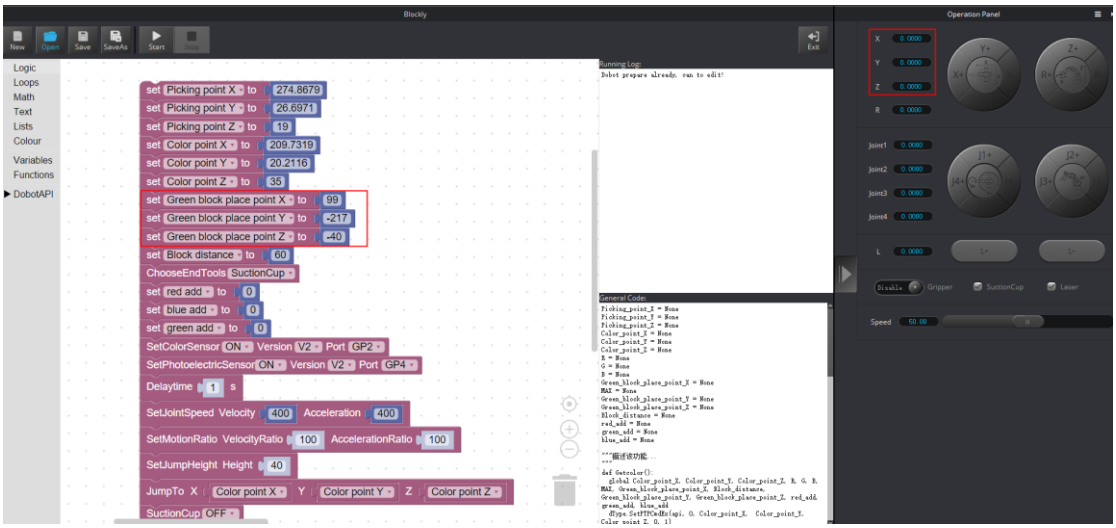



Figure 4.11 Modify placing position

3. Click **Save** to save the settings.

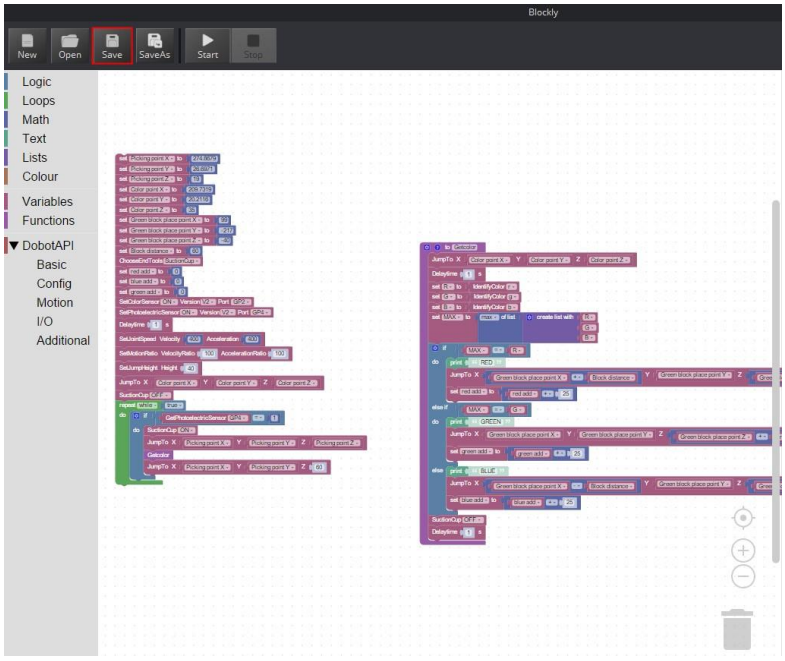



Figure 4.12 Save the settings

# 5. Run the Conveyor Belt

1. Modify 0 to 1 in the **Test:0; Run:1** module when running the picking demo as shown in Figure 5.1.

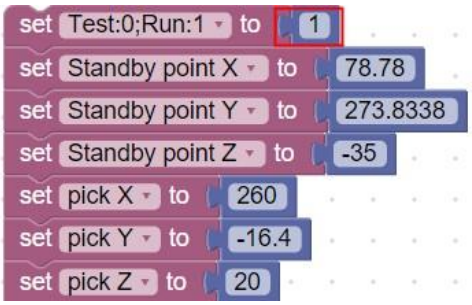



Figure 5.1 Modify 0 to 1

2. Click **Start** to run the Dobot 2 first, and then run the Dobot 1.

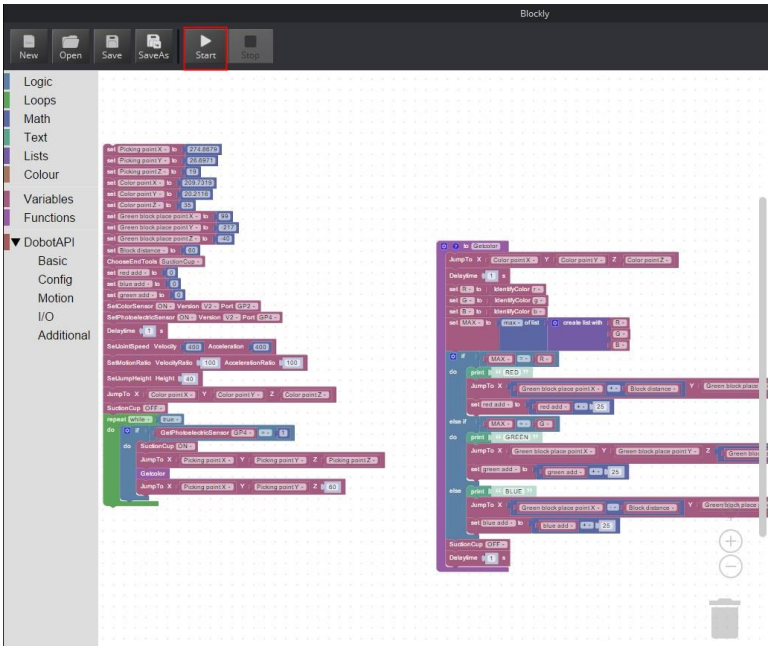



Figure 5.2 Start the Dobot 2

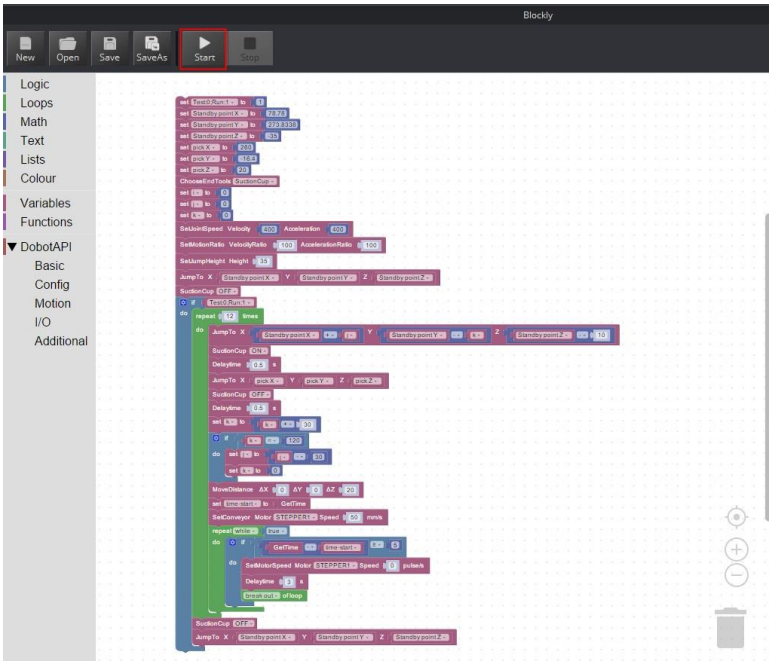



Figure 5.3 Start the Dobot 1

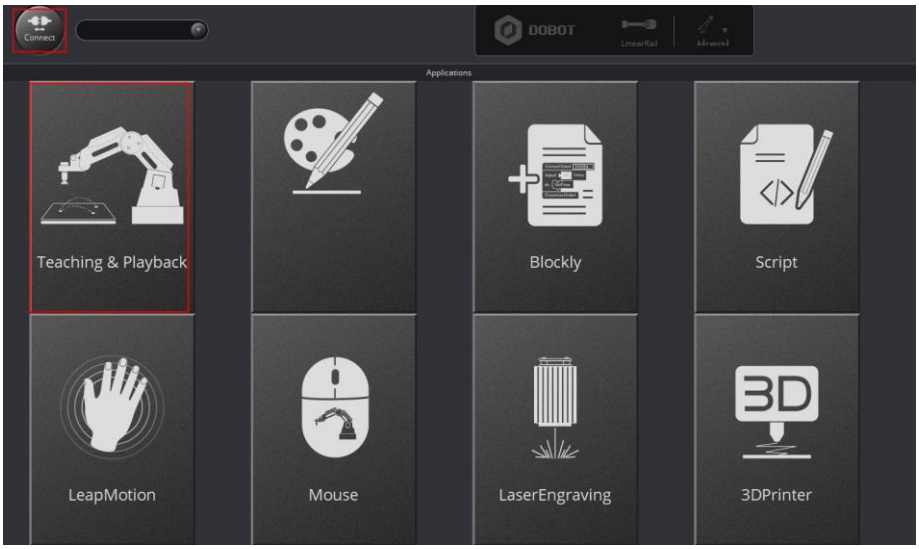
# 6. Precautions

- You need to reset Dobot Magician before running the conveyor belt, adjust and save positions after 20s. Reset Dobot Magician again, and run conveyor belt after 20s.
- The homing point should be set higher to avoid crash. If Dobot Magician loses step, you need to operate homing procedure again.

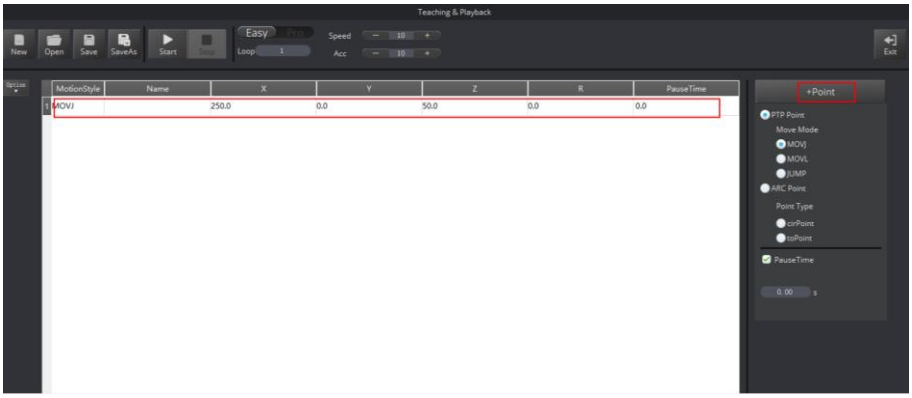
# Appendix A Setting home position

**Step 1.** Open DobotStudio, connect Dobot Magician and click **Teaching&Playback** as shown in Attach Figure 6.1.




Attach Figure 6.1 Teaching&Playback

**Step 2.** Click **+ point** to save a point of which the axes X, Y, Z, R are 250, 0, 50, 0 respectively. You can set the point based on site requirements.



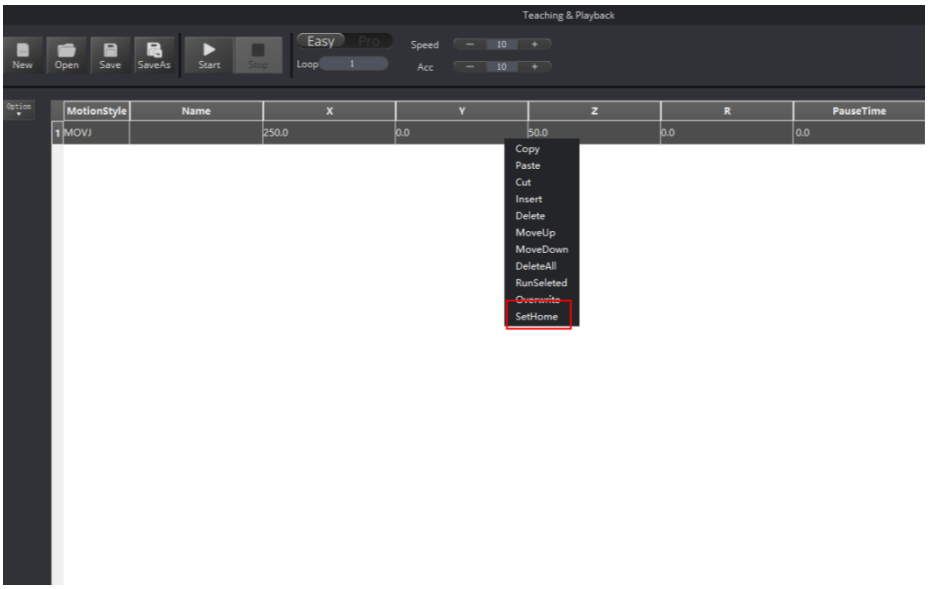

Attach Figure 6.2 Add Point

NOTE

Make sure that this position is in the workspace of the Dobot Magician.

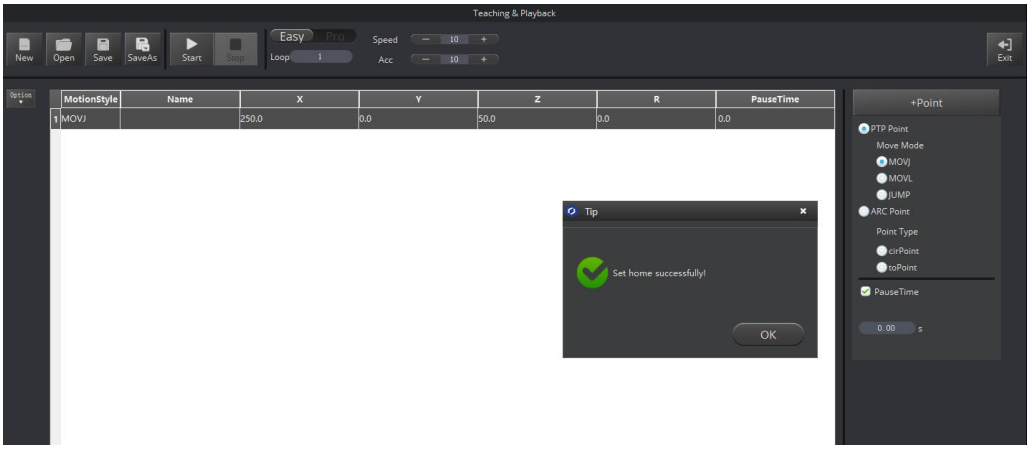
**Step 3.** Select this point and right-click **SetHome**. As shown in Attach Figure 6.3.




Attach Figure 6.3 Set home position

**Step 4.** If the settings are successful, it will pop up a tip as shown Attach Figure 6.4, click **OK**. Click **Home** to check whether the setting is available, if not, please set the homing position again after pressing down the reset key on base of Dobot Magician.




Attach Figure 6.4 Setting tip