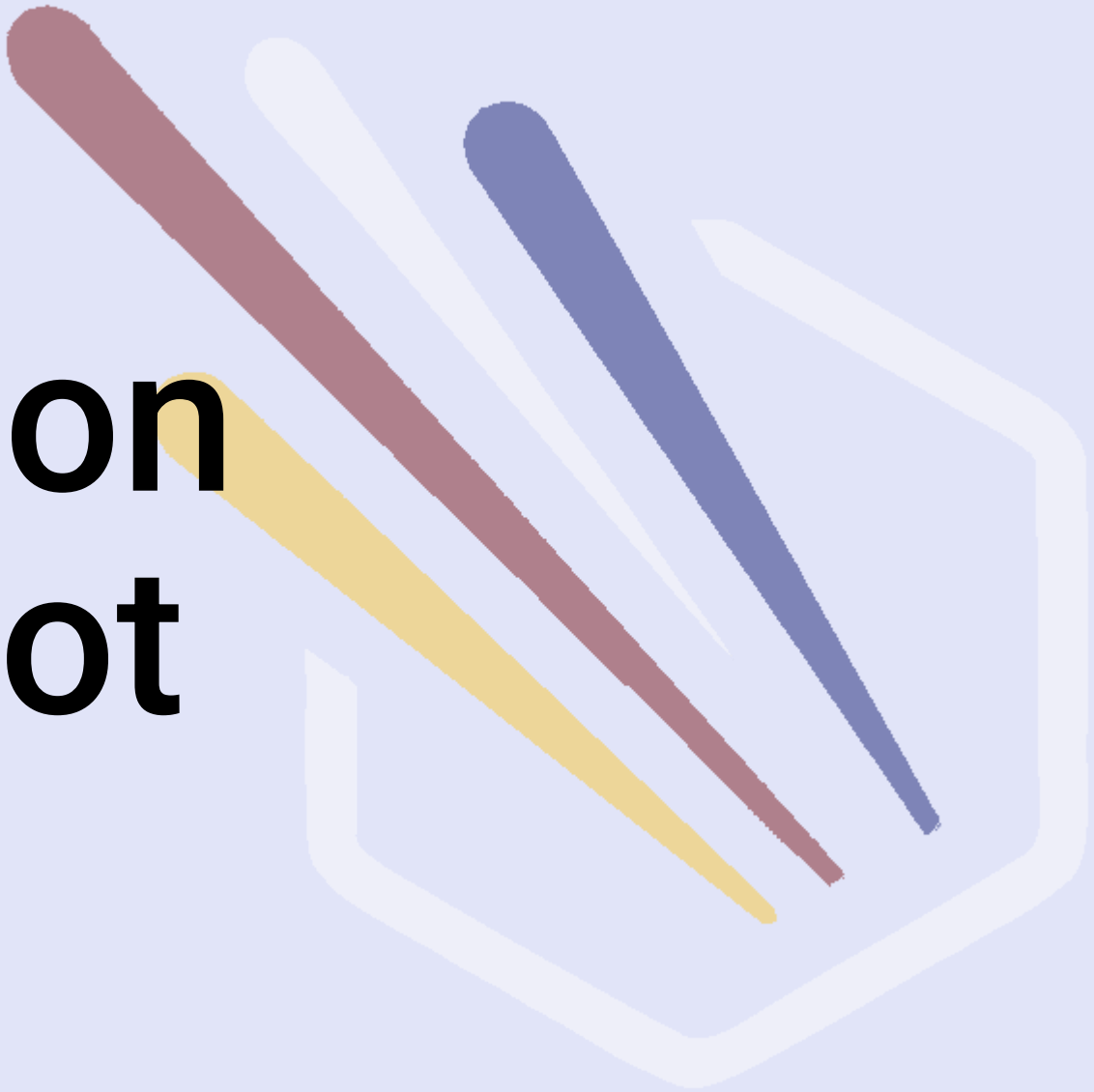
Presentation of the robot



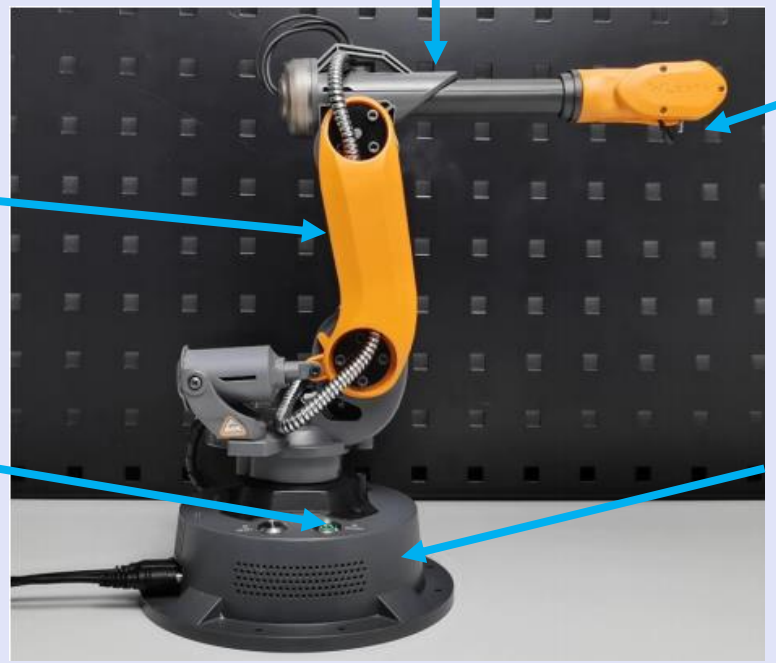
06/08/21

Summary

1. Presentation of the Mirobot and its equipment
2. How to install the Mirobot and presentation of the software
3. The different coordinate modes
4. The functions of control
5. Using the Pneumatic Unit
6. Using the Sliding Rail
7. Using the Conveyor
8. Bluetooth teach pendant

1. Presentation of the Mirobot and its equipment

WLKATA



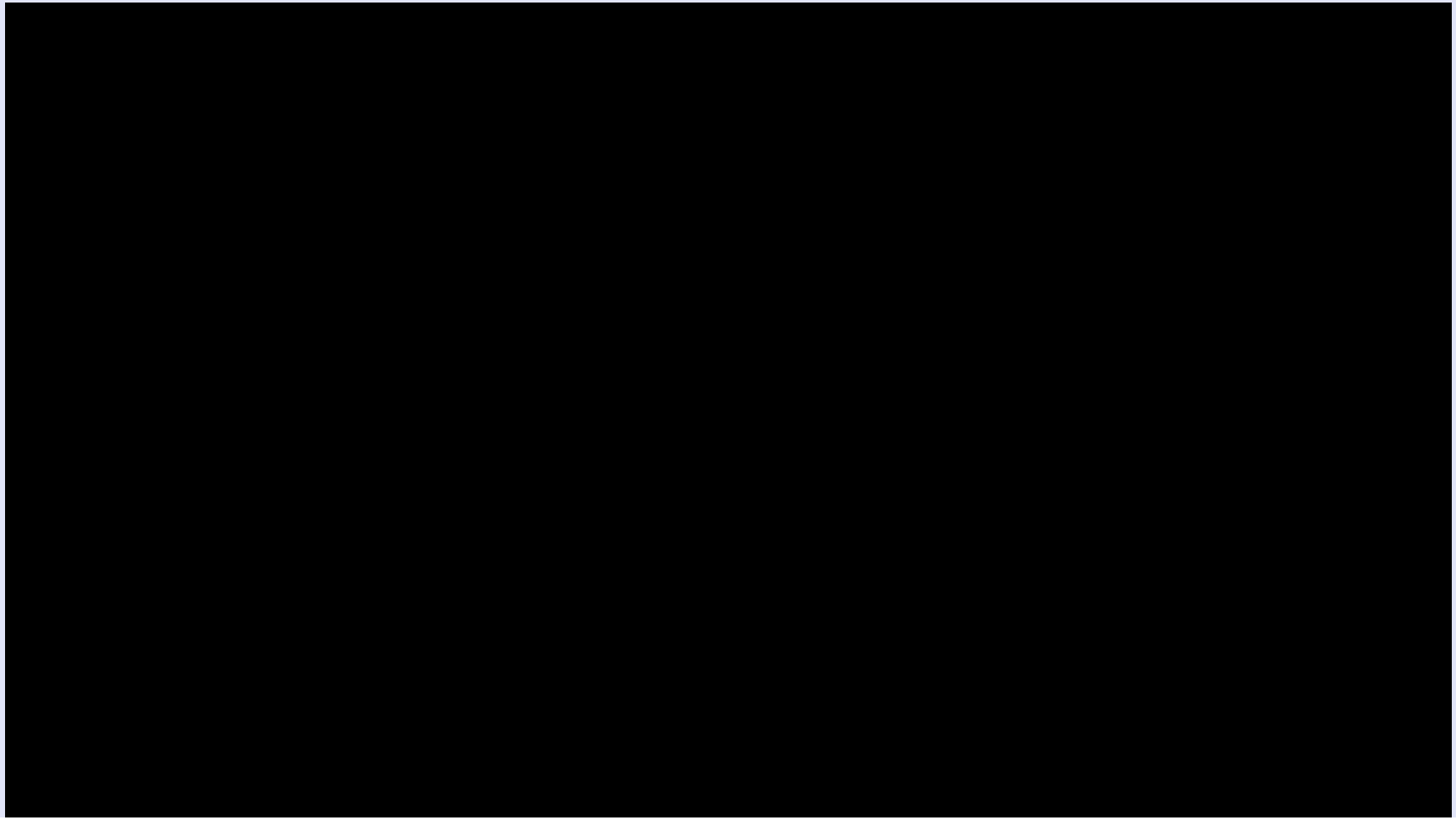
1. Presentation of the Mirobot and its equipment

Sliding Rail

Conveyor

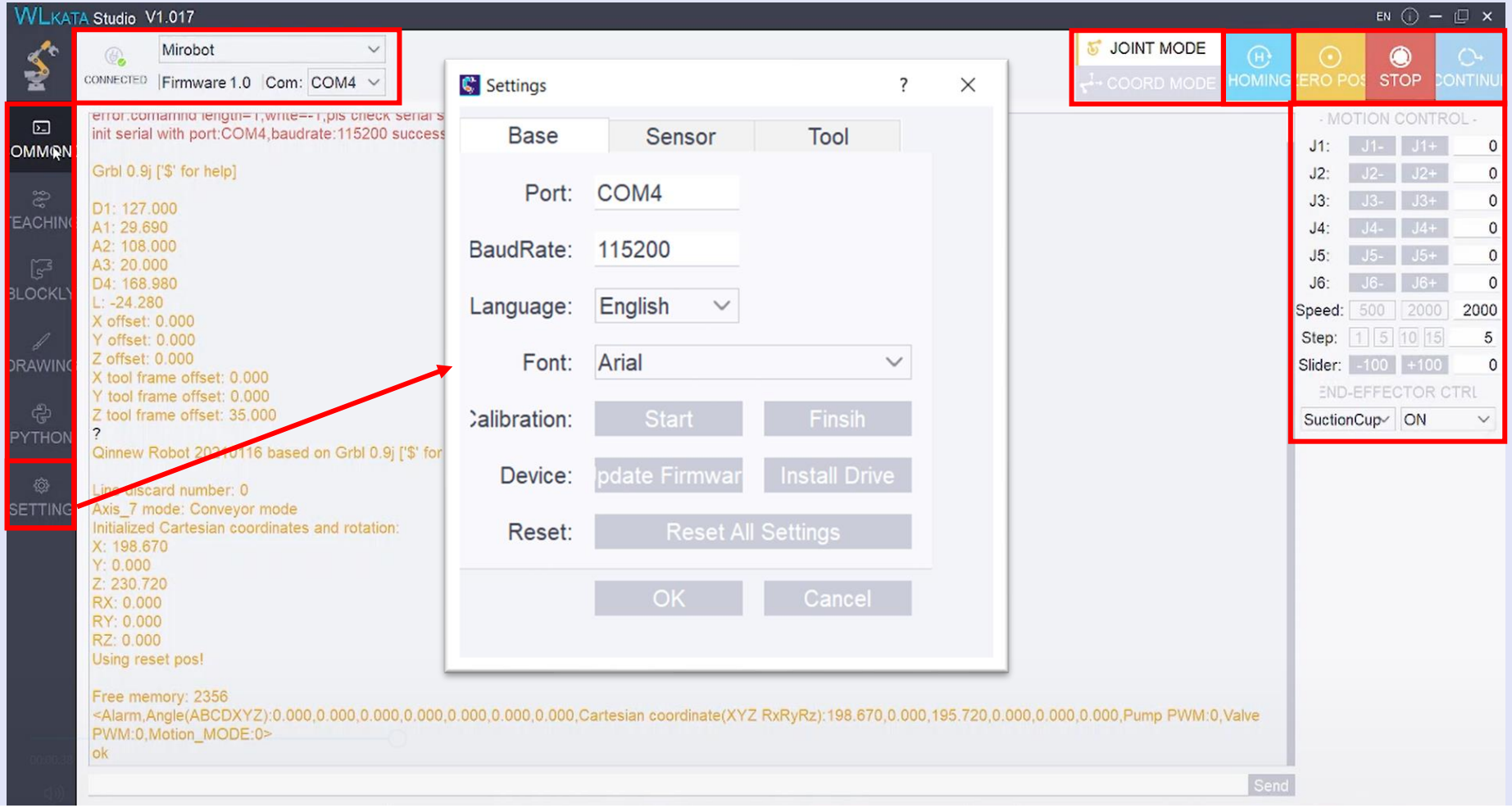
Vision Set

➢ Installation of the Mirobot



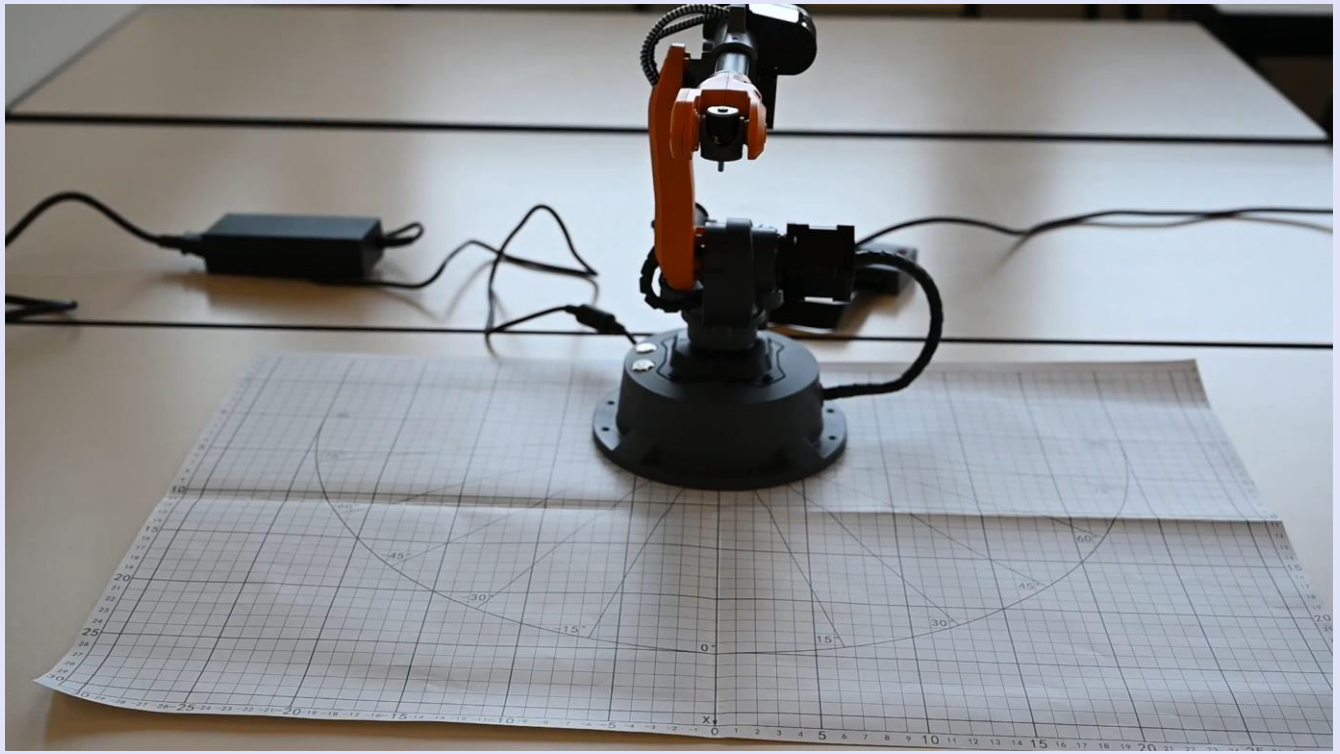
2. How to install the Mirobot and presentation of the software

➢ The software: Wlkata Studio



➢ HOMING the Mirobot

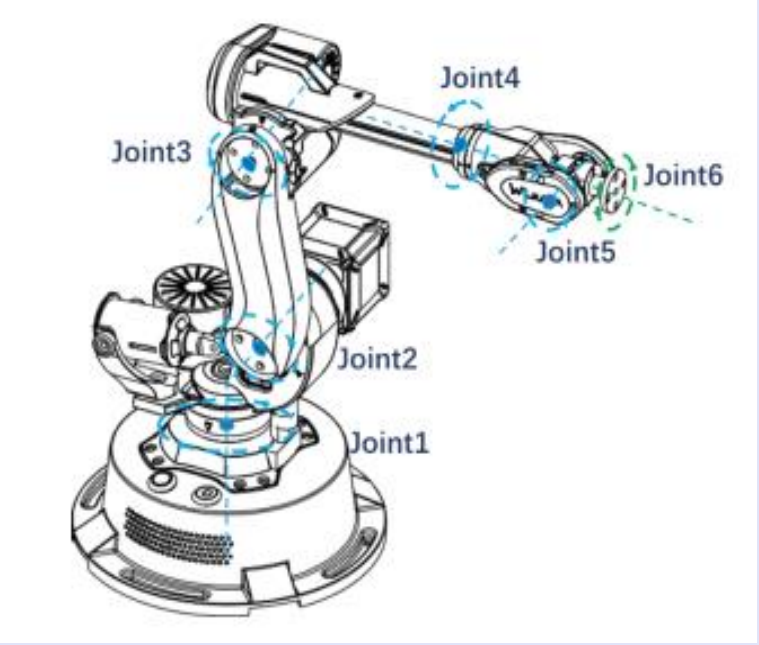
It’s a very important part of the process. It should be done every time the robot is power On or after a failure.



3. The different coordinate modes

➢ 2 coordinate modes exist to move the Mirobot: Joint Mode and Cartesian Mode

Joint Mode

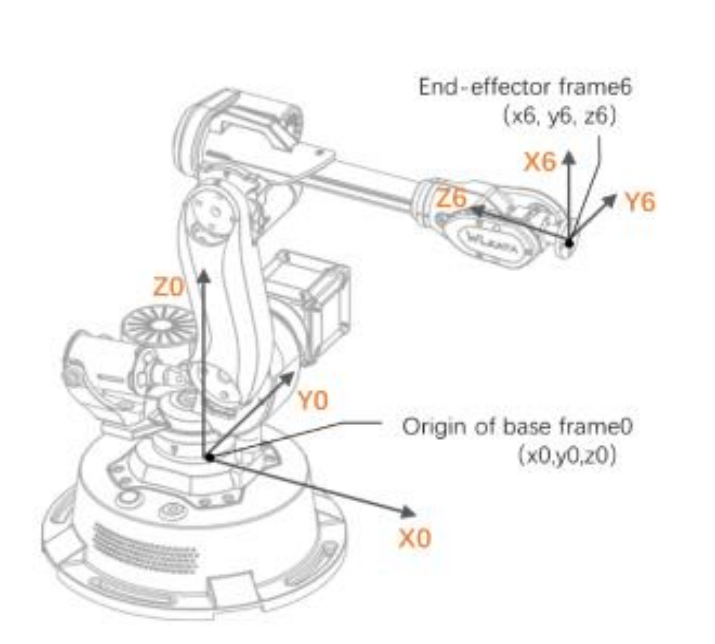


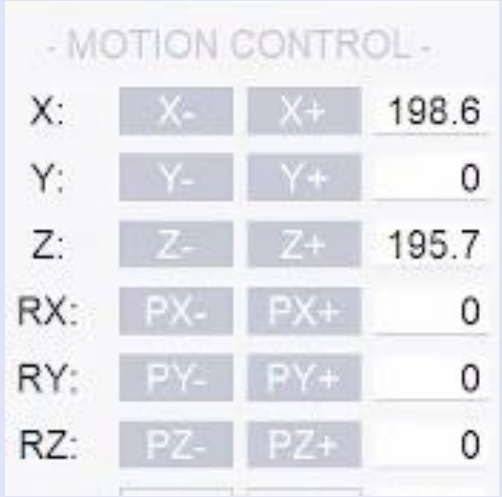
- MOTION CONTROL -			
J1:	J1-	J1+	0
J2:	J2-	J2+	0
J3:	J3-	J3+	0
J4:	J4-	J4+	0
J5:	J5-	J5+	0
J6:	J6-	J6+	0

Joints coordinate when the Mirobot is on the “Zero position”.

3. The different coordinate modes

Cartesian Mode



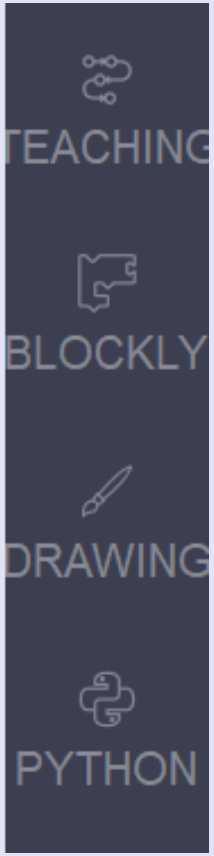


Cartesian coordinates when the Mirobot is on the “Zero position”.

4. The functions of control

- On the software, you can use 4 different functions of control:

- TEACHING
- BLOCKY
- DRAWING
- PYTHON



4. The functions of control: Python

➢ Python

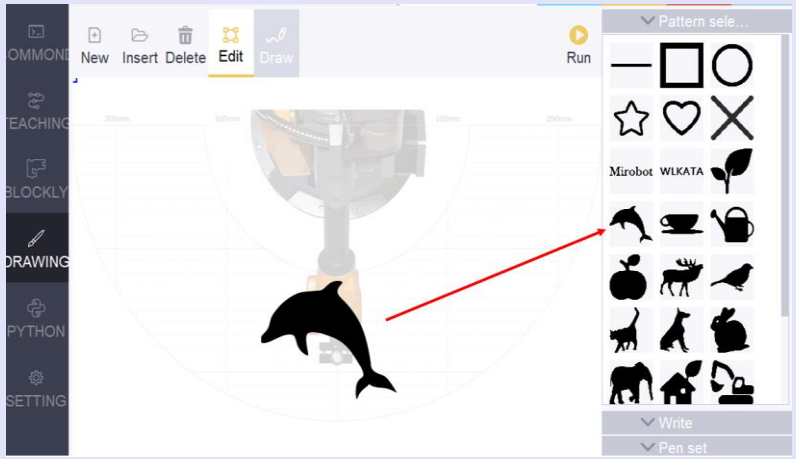
- Action
  - Homing
  - Unlock
  - Speed of movement
  - Zero Position
  - Open the suction cup
  - Close the suction cup
  - Blow the suction cup
  - Open the gripper
  - Close the gripper
  - Slider moveto
  - Conveyor move
  - Set delay time
  - Color sensor identification
- Robot Joint Mode
  - Send each axis to a specific position
  - Increment each axis a specific amount
  - Moving axis
- Coordinate Mode
  - Linear move to a Cartesian position
  - Linear increment in Cartesian space
  - Directional movement
  - Door track movement
  - Arc trajectory movement

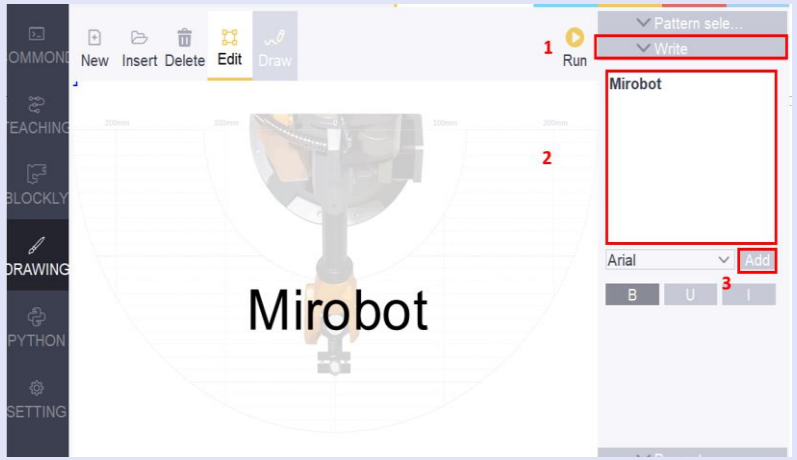
```
1 #version python 3.8
2 #coding=utf-8
3 from mirobot import *
4 from time import sleep
5 api=Mirobot()
6 #Please do not delete the above code
7 api.home_simultaneous()
8 sleep(15)
```

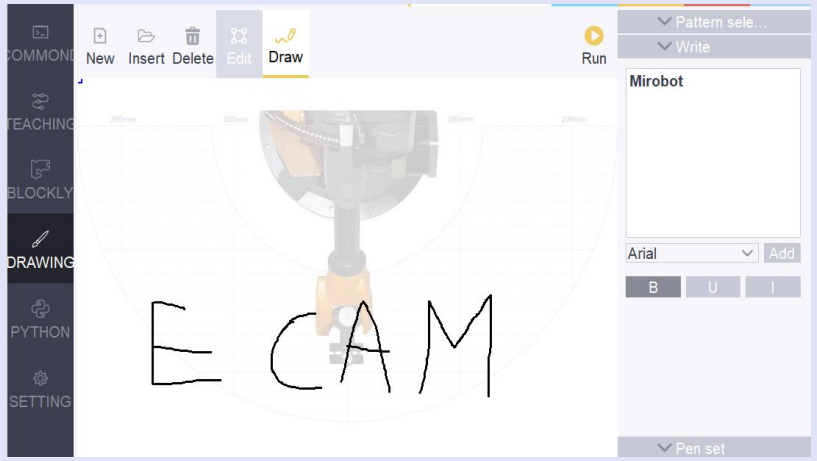
!!! Never delete the first 8 lines !!!

4. The functions of control: DRAWING

➢ DRAWING



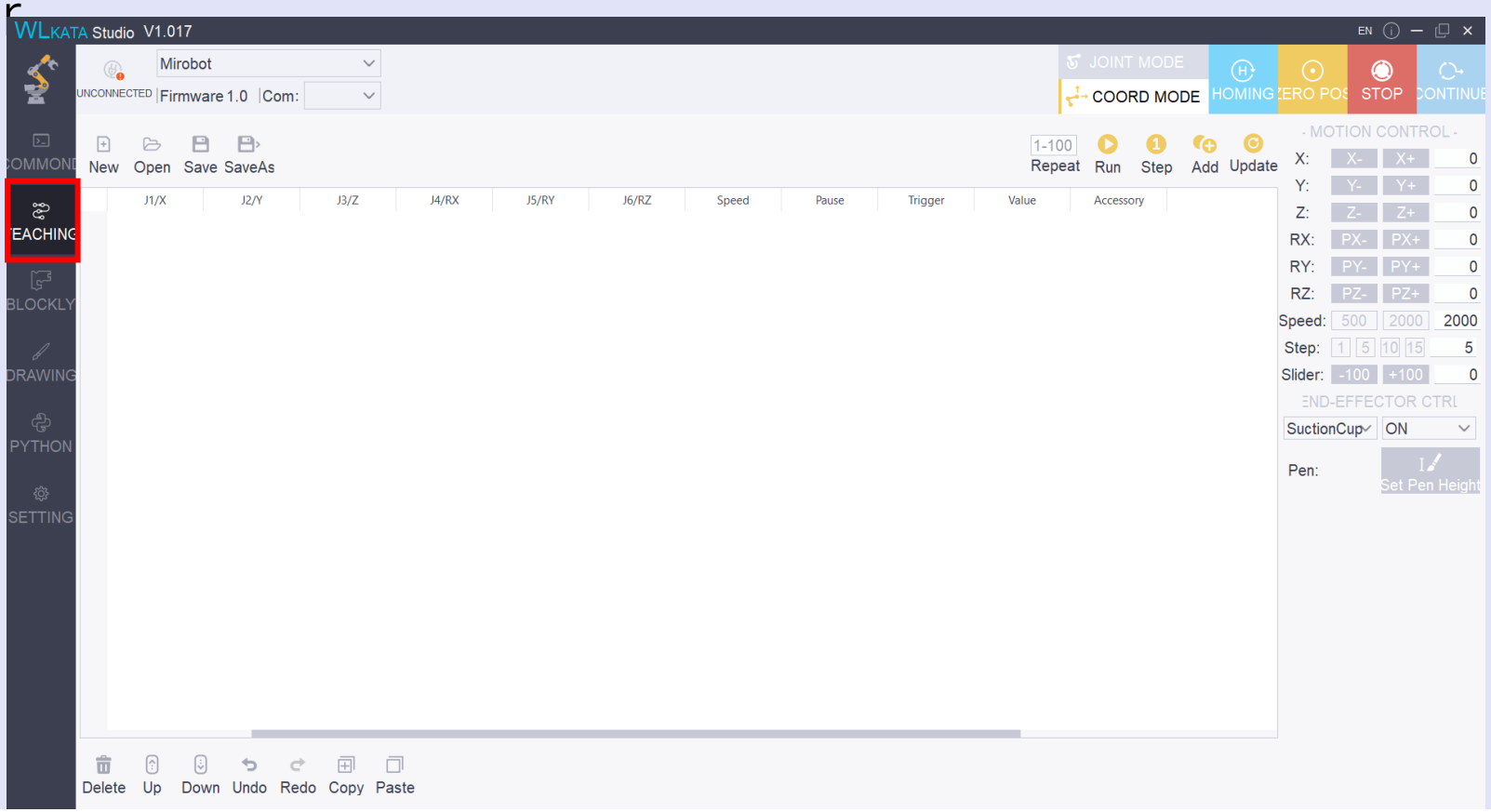




4. The functions of control: TEACHING

➢ TEACHING

You can control the robot by adding the different position of the Mirobot one after the other.



4. The functions of control: TEACHING

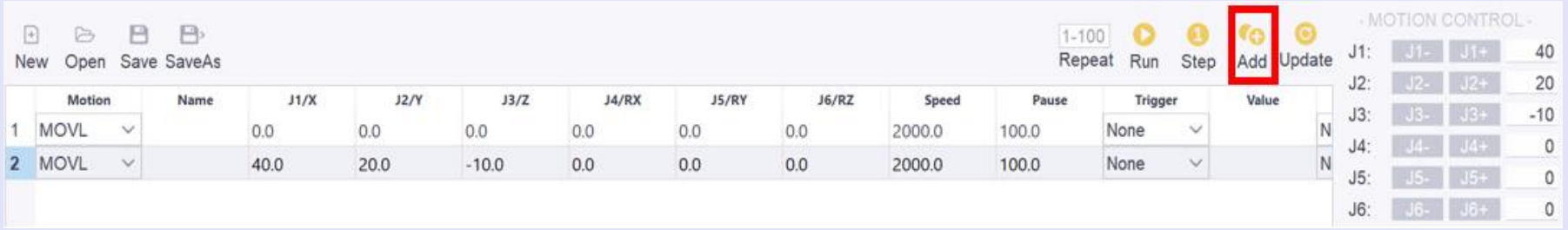
The two coordinate modes can be used with their function but when you begin to add position or run the program, DO NOT Change the control mode or the point data after switching the mode, it would be discordant and cause illegal motion.

	Motion	Name	J1/X	J2/Y	J3/Z	J4/RX	J5/RY	J6/RZ	Speed	Pause
1	MOVL		0.0	0.0	0.0	0.0	0.0	0.0	2000.0	100.0
2	MOVJ		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*2000.0*	*100.0*

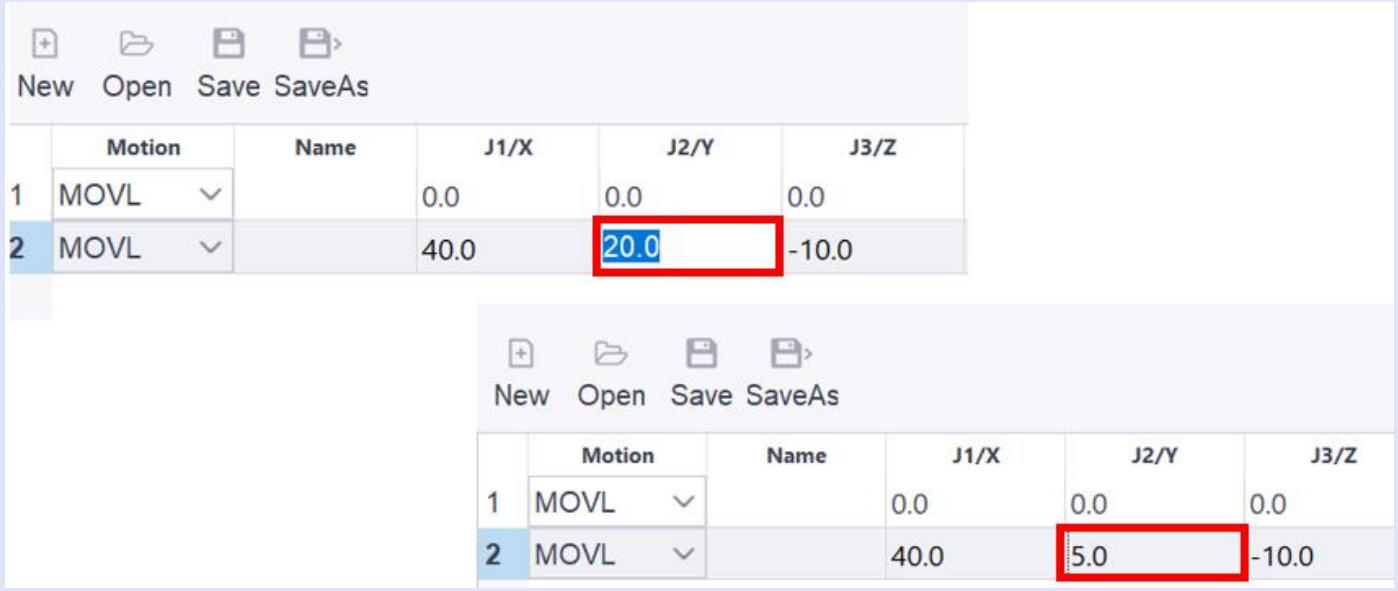
Line 1: Joint Mode
Line 2: Cartesian Mode → *Appears in Italic*

4. The functions of control: TEACHING

Add a new position

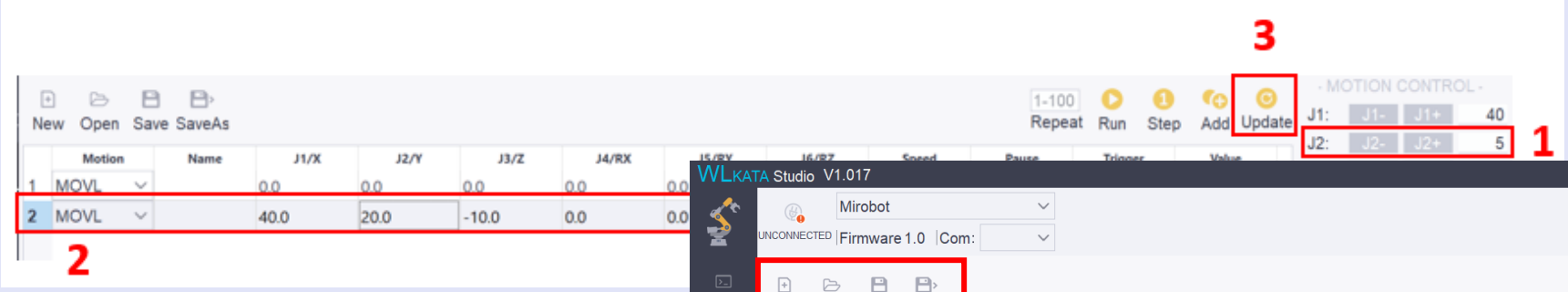


Change the value of one of the Joint/axis

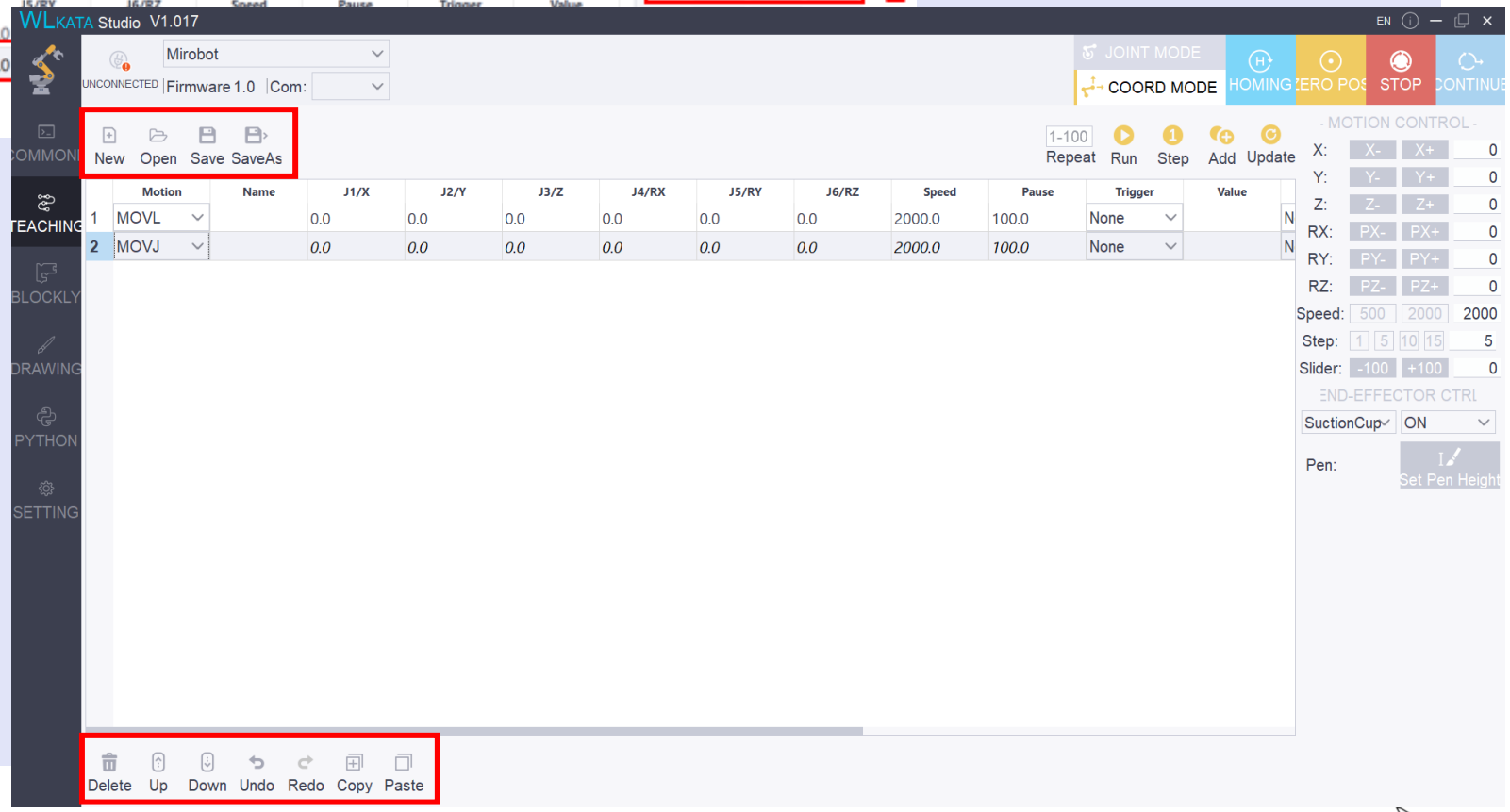


4. The functions of control: TEACHING

Change the value of one of the Joint/axis by updating

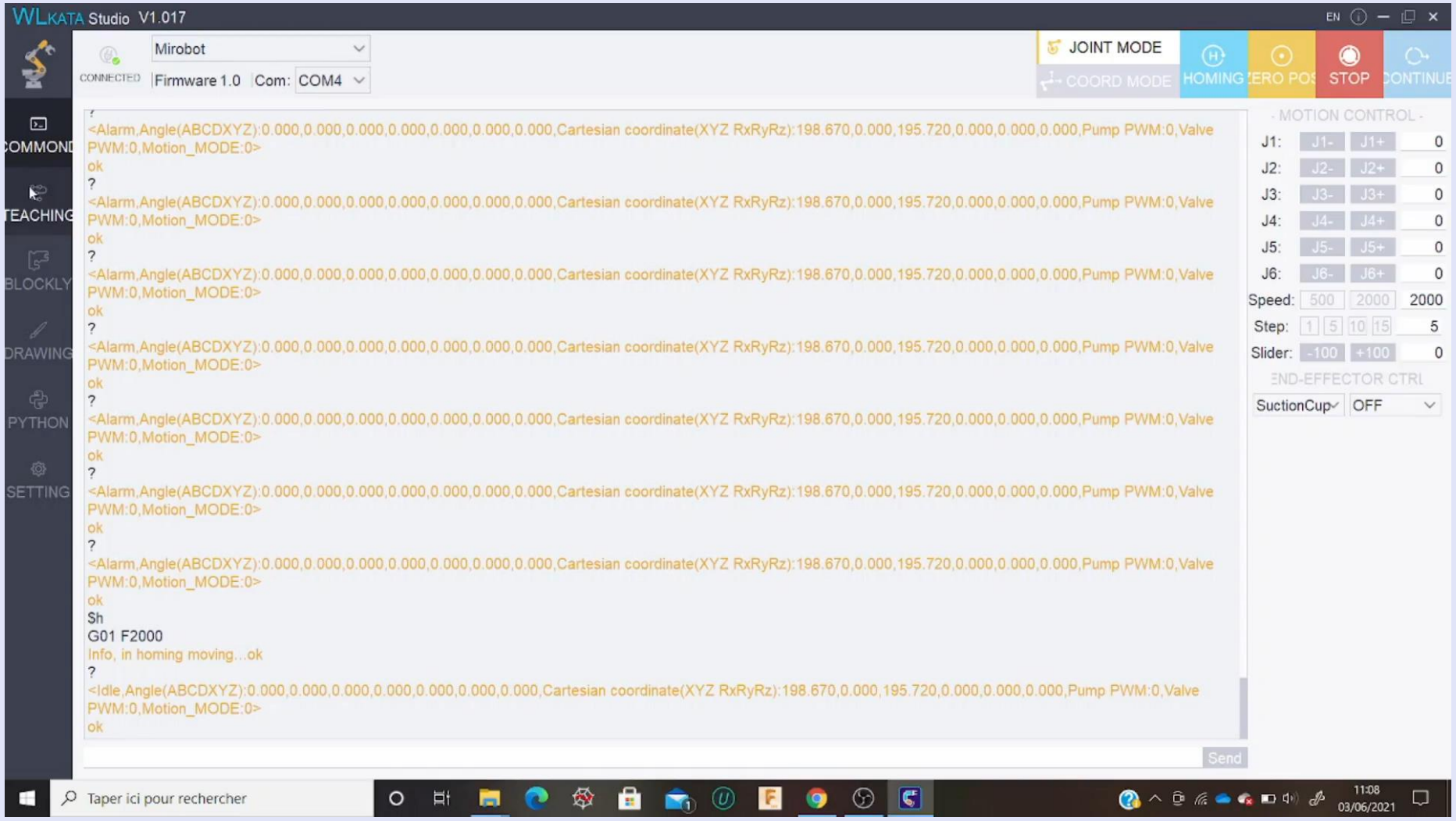


Basic functions on TEACHING



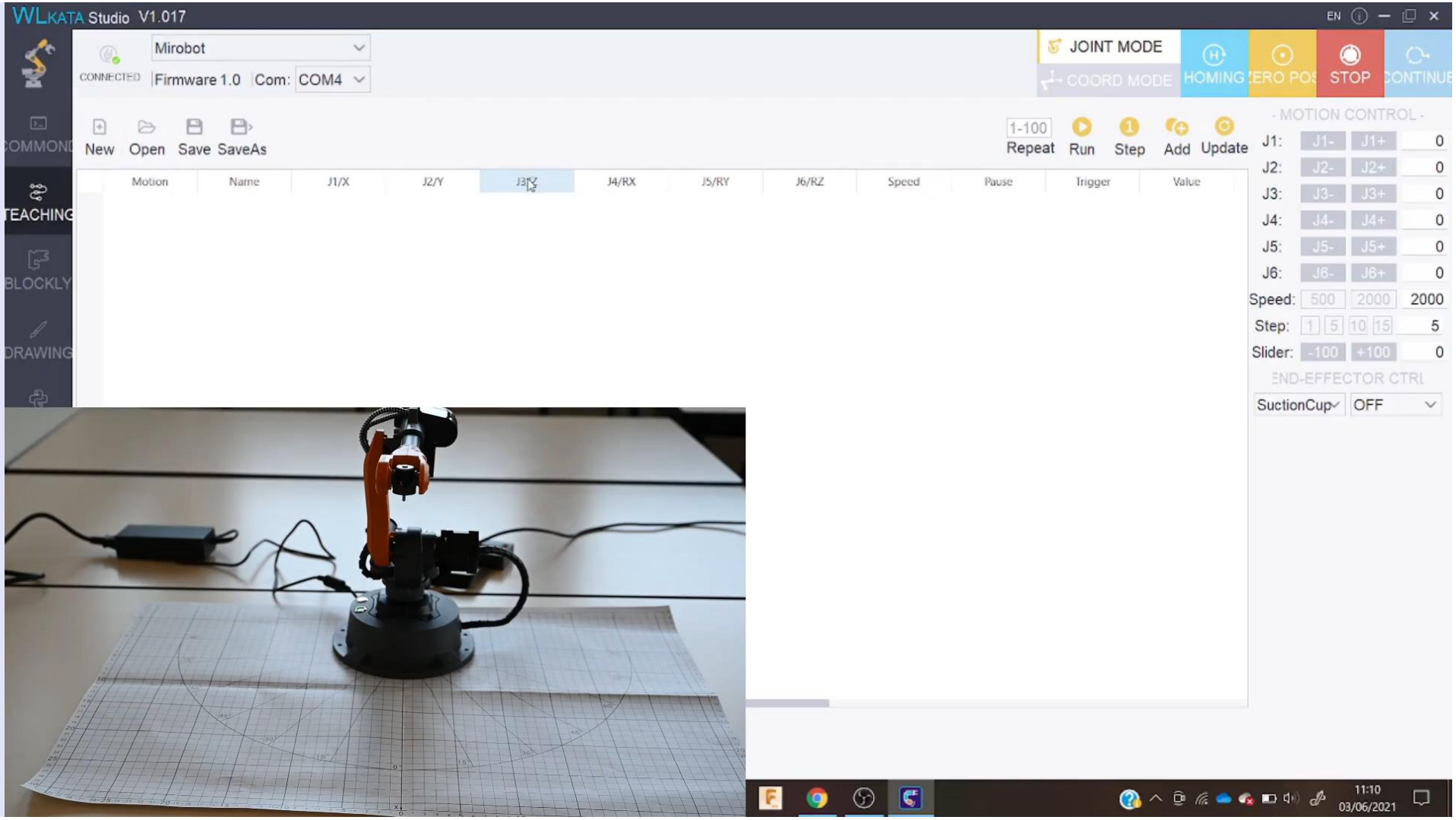
4. The functions of control: TEACHING

Example:
With the Joint Mode



4. The functions of control: TEACHING

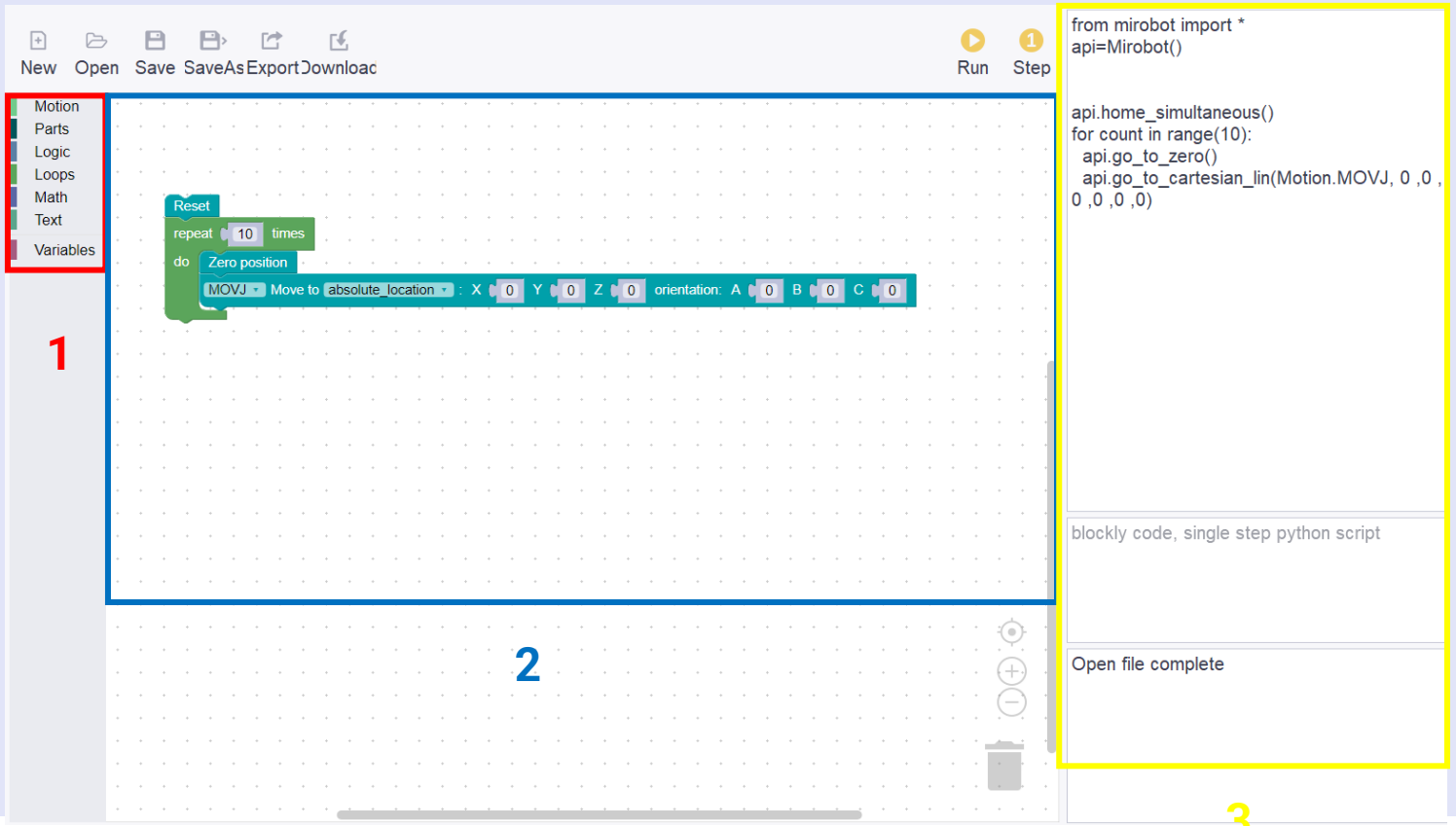
Example: With the Cartesian Mode



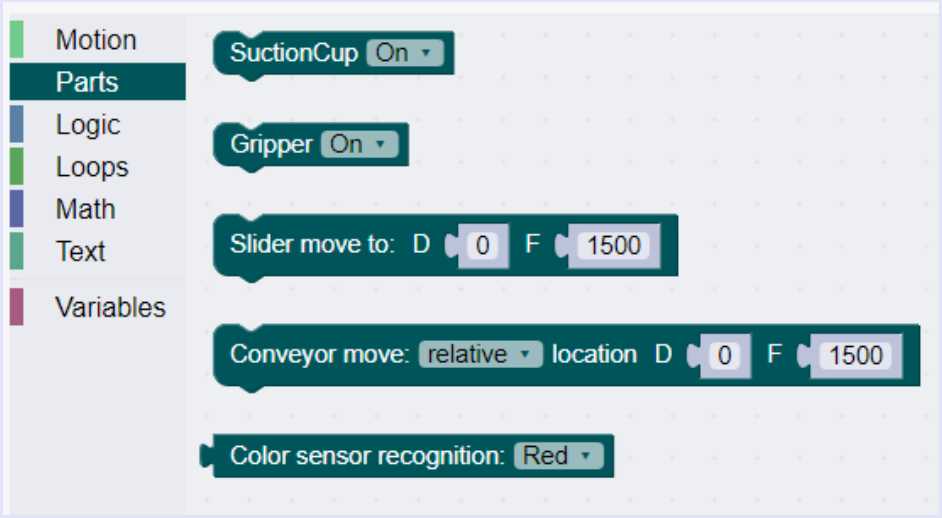
4. The functions of control: BLOCKY

➢BLOCKY

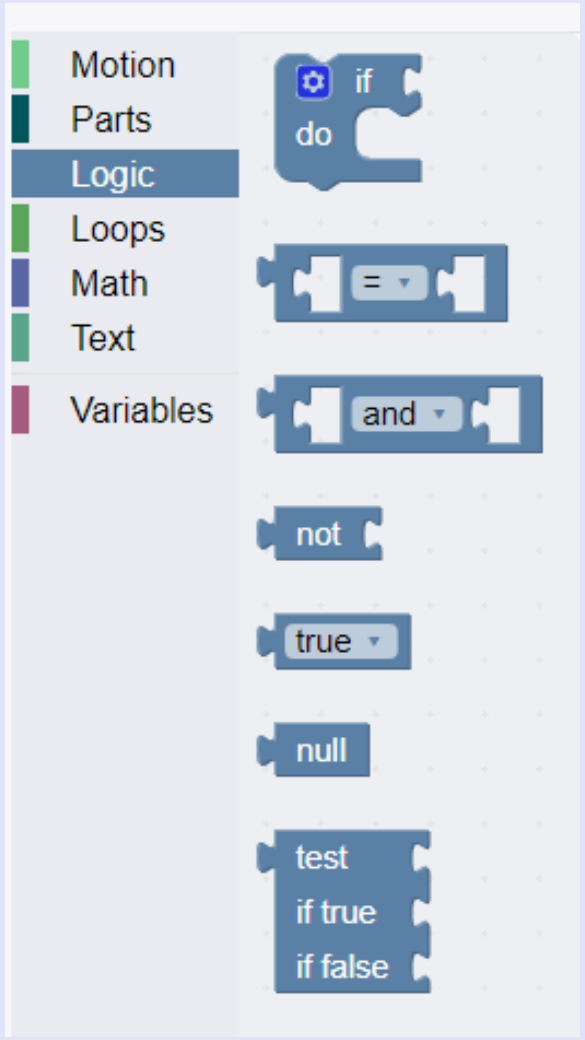
BLOCKY is an open-source graphical programming platform created by Google, which is easy to be learnt and applied by starters

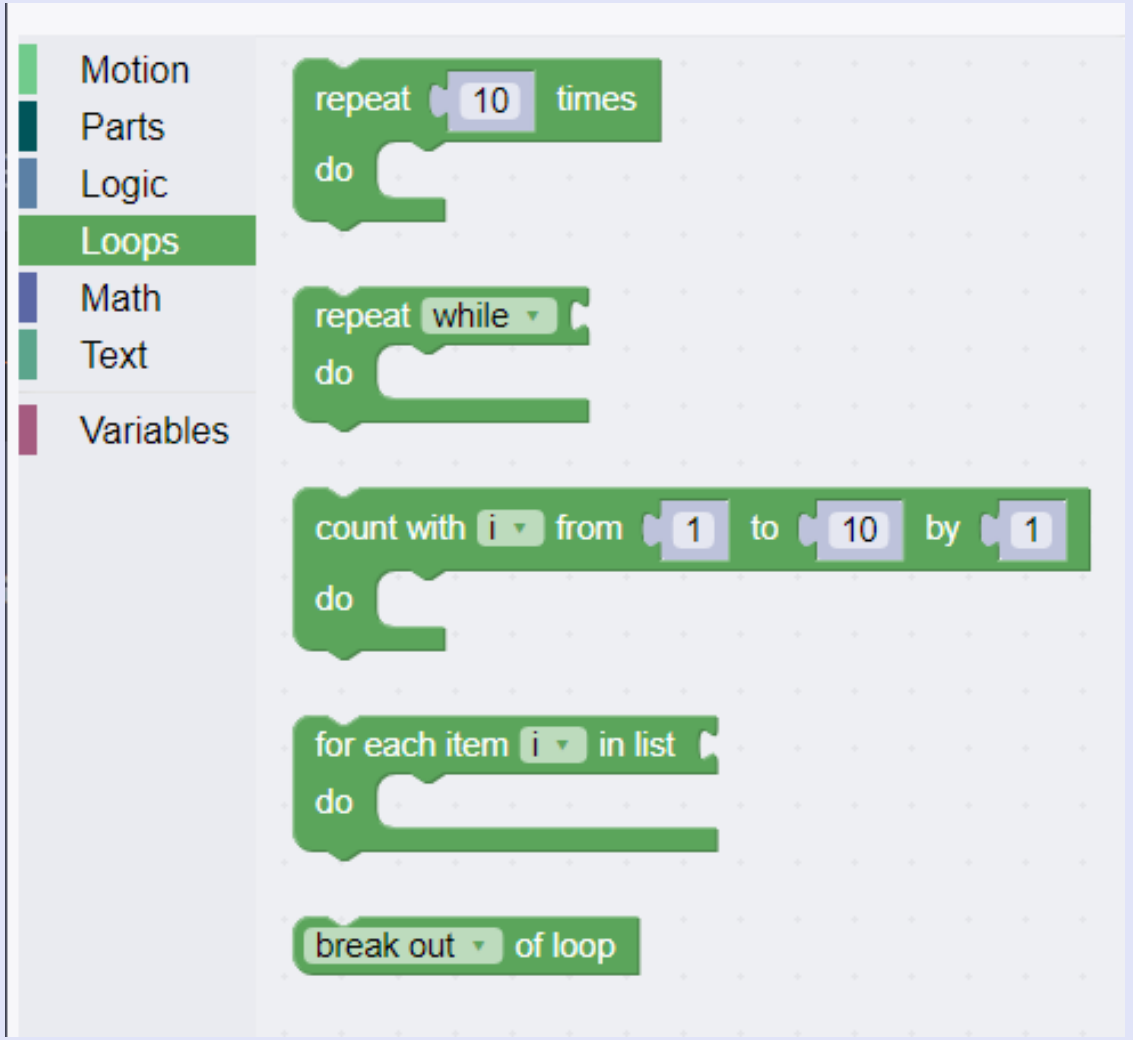


4. The functions of control: BLOCKY



4. The functions of control: BLOCKY





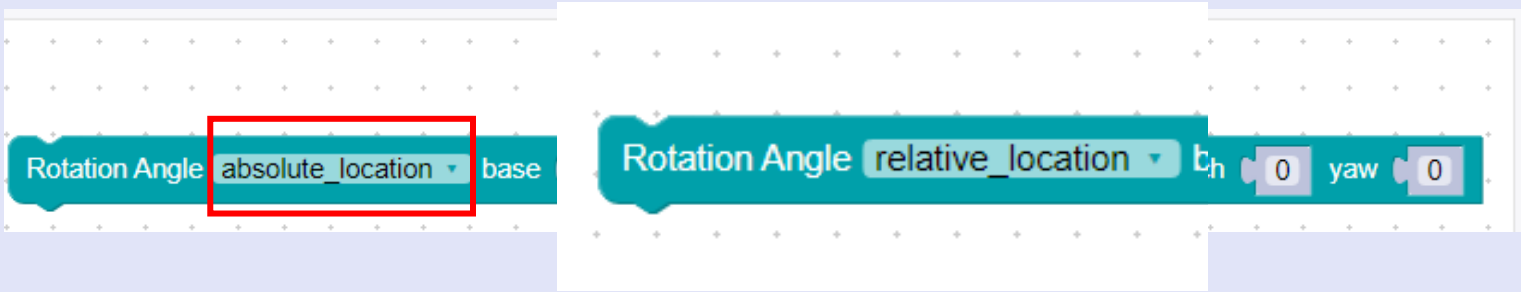
To move the Mirobot:

➢With the Cartesian Mode


```
api.go_to_cartesian_lin(Motion.MOVJ, 0 ,0 ,0 ,0 ,0 ,0)
```

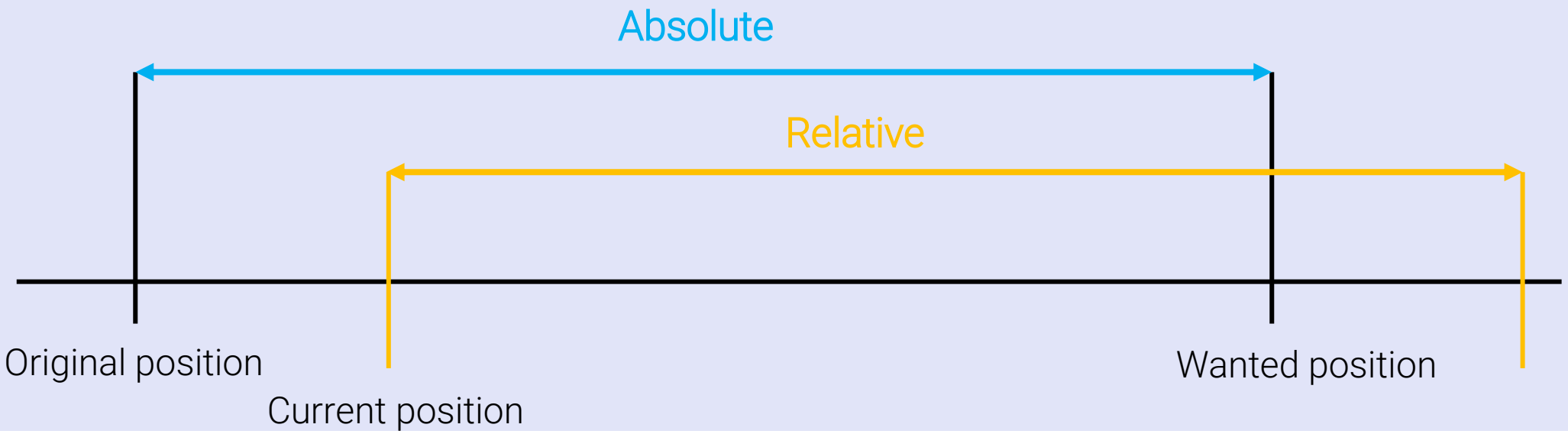
➢With the Joint Mode

What is the difference between the absolute and the relative position?

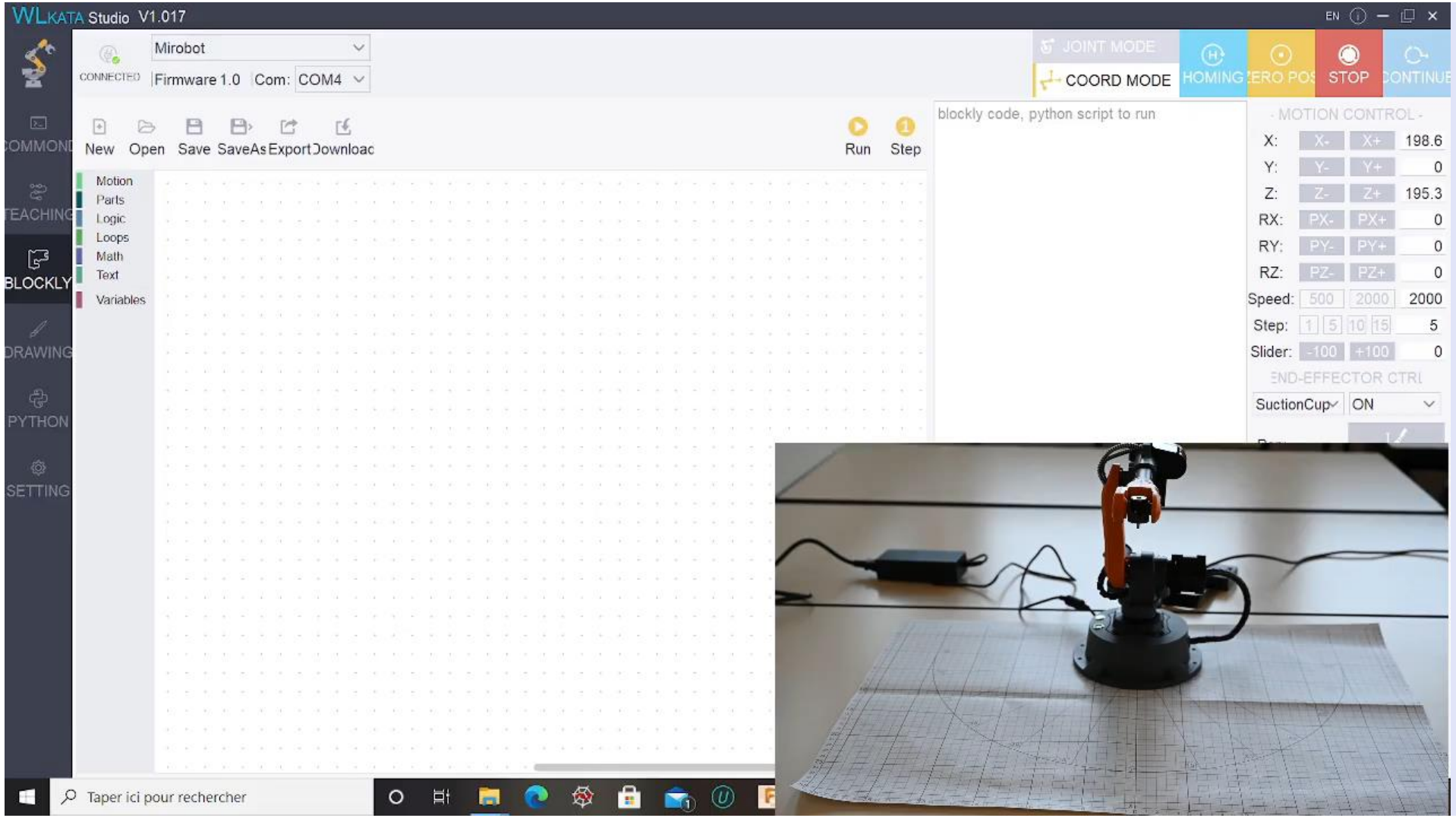



```
api.go_to_axis(0 ,0 ,0 ,0 ,0 ,0)
```

- The absolute position corresponds to a distance travelled from the original position
- The relative position is the distance travelled depending on the current position.

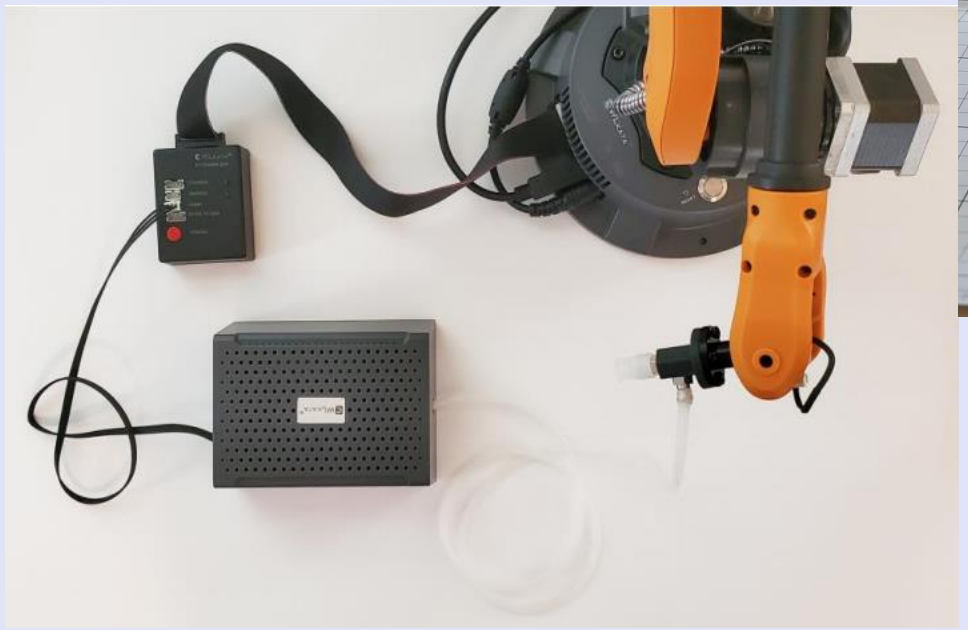


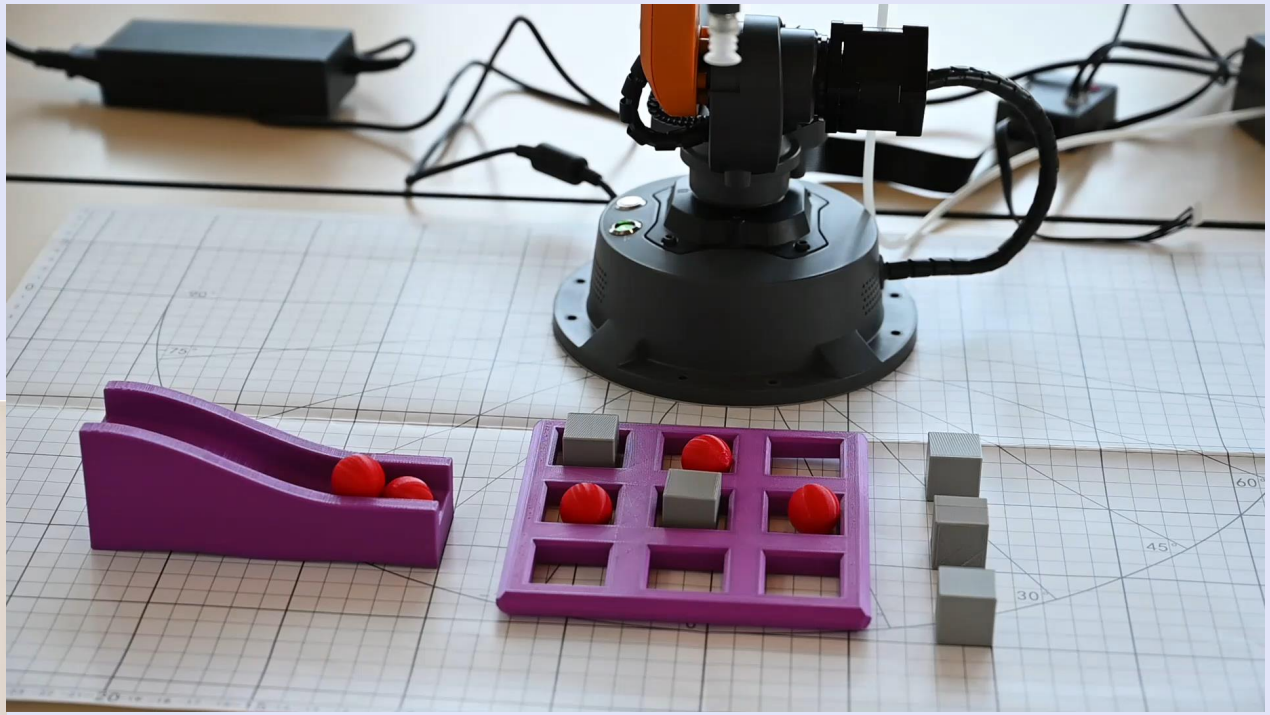
4. The functions of control: BLOCKY



Example: With the Cartesian Mode

5. Using the Pneumatic Unit





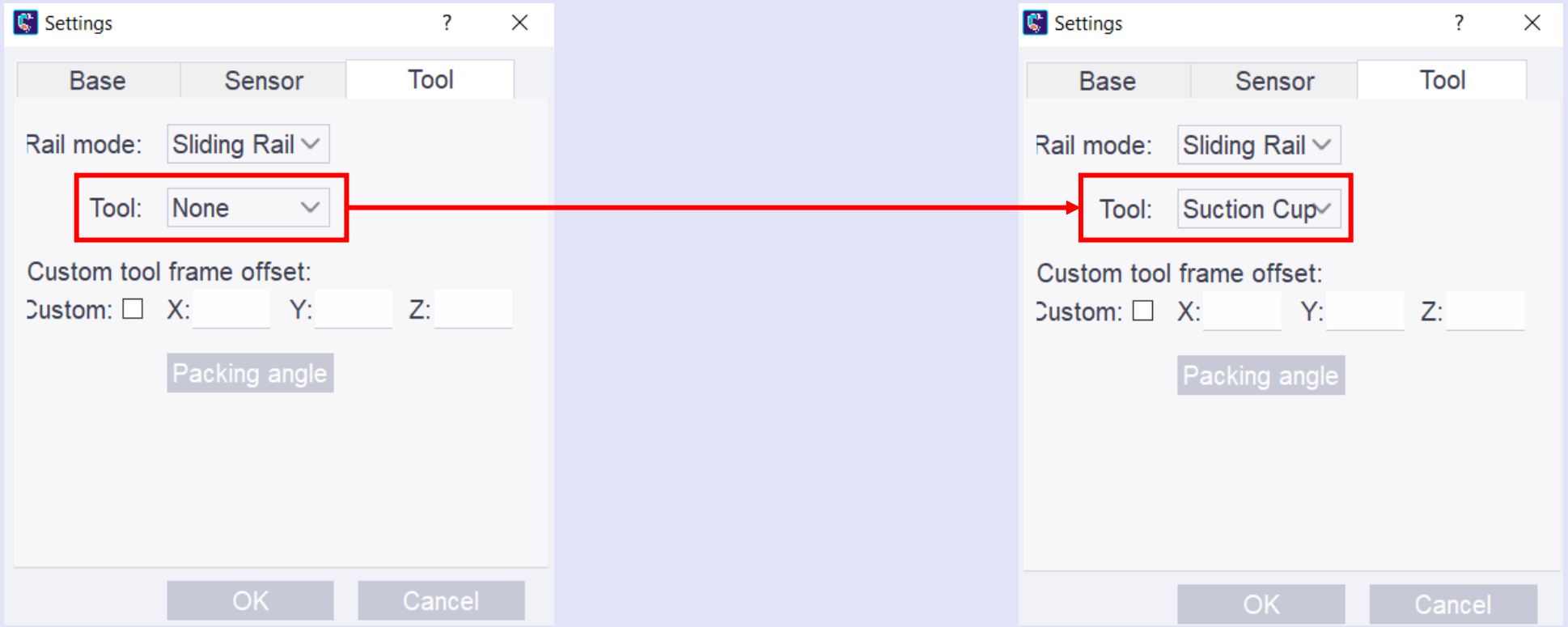
- 3 End-Effector:

Suction Cup

2 Finger Gripper

3 Finger soft claw

Parameter the Mirobot to use the Pneumatic unit



➢ With the TEACHING function

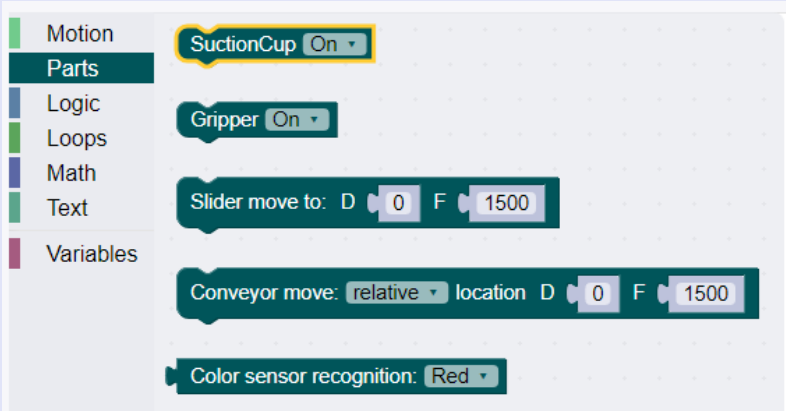
J4/RX	J5/RY	J6/RZ	Speed	Pause	Trigger	Value	Accessory
0.0	0.0	0.0	2000.0	100.0	None		None

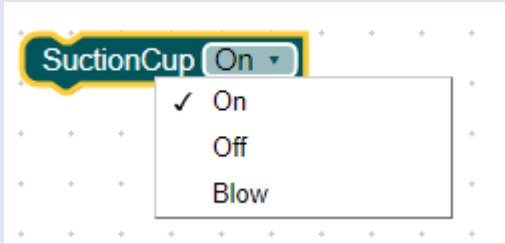
None
Gripper
SuctionCup

J4/RX	J5/RY	J6/RZ	Speed	Pause	Trigger	Value	Accessory
0.0	0.0	0.0	2000.0	100.0	SuctionCup	On	None

On
Off
Blow

➢ With the BLOCKY function





5. Using the Pneumatic Unit

On

Off

➢Particularity of the 3 Finger soft claw

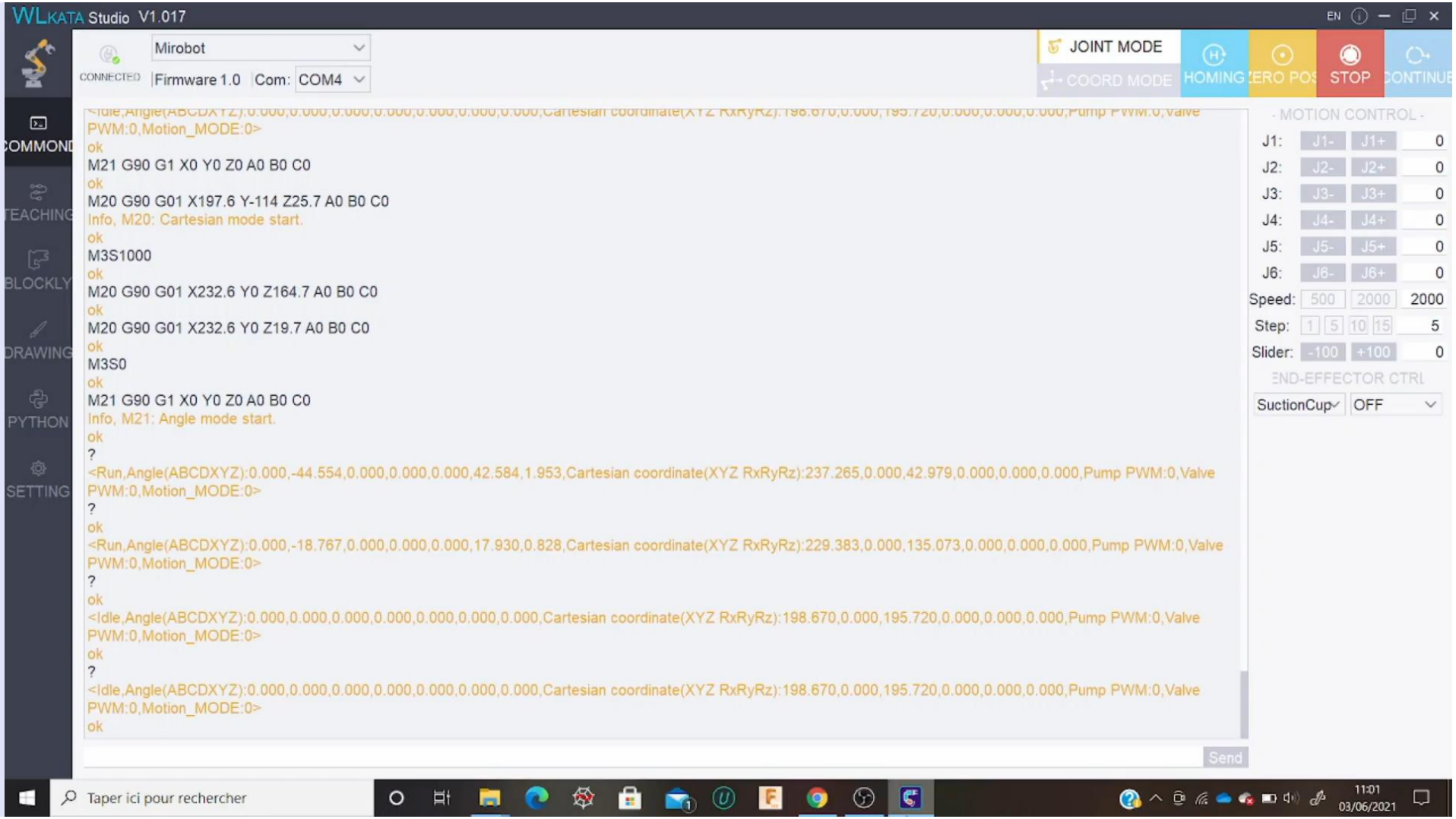
On

Off

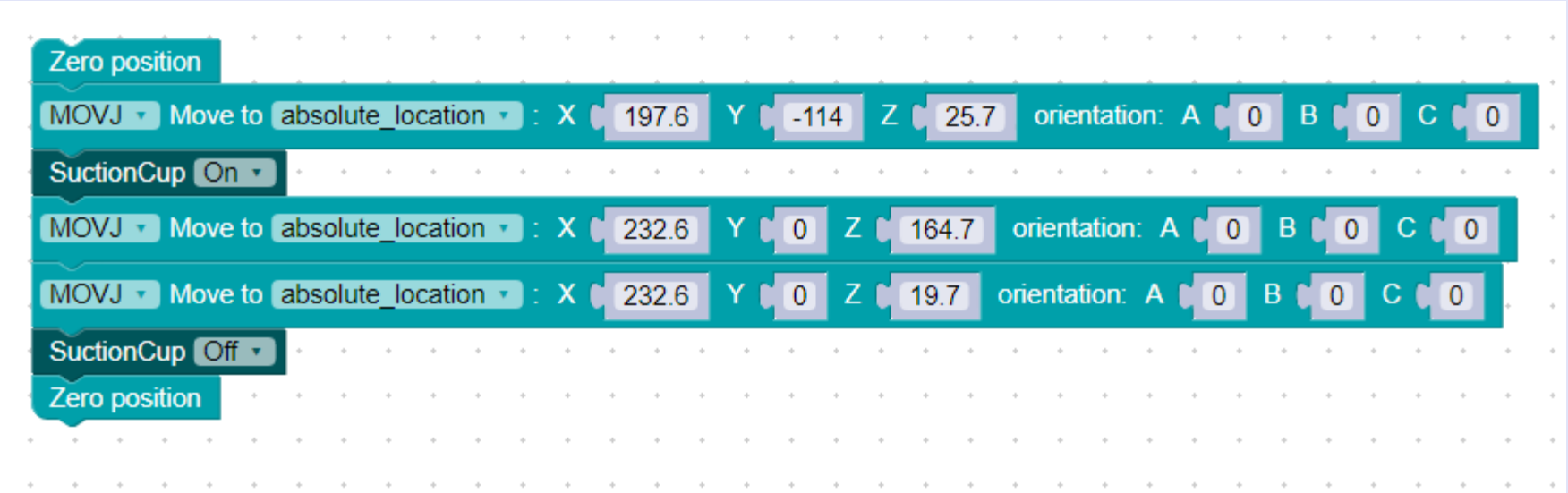
5. Using the Pneumatic Unit

Example:

With the TEACHING function in Joint Mode

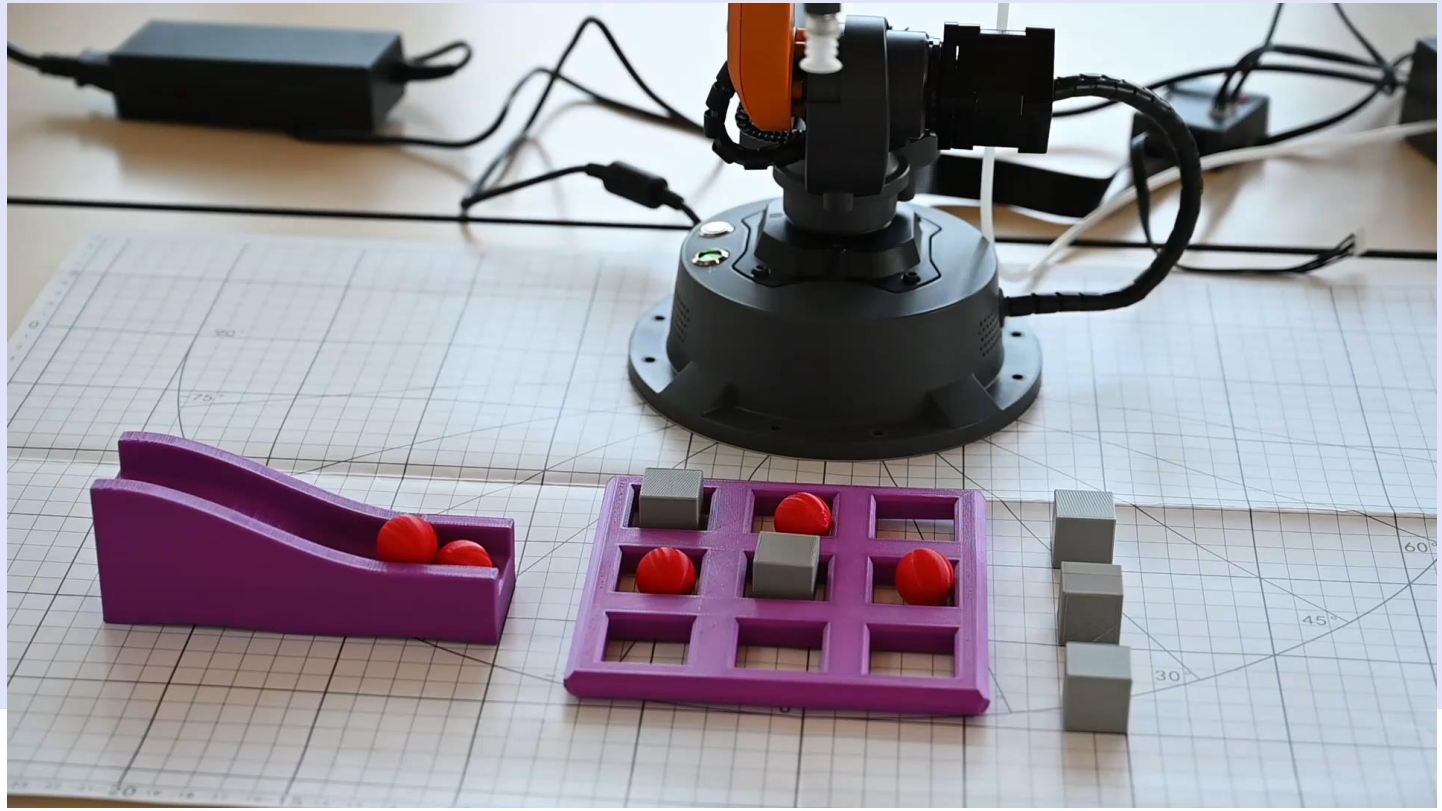


Same program as before but with the BLOCKY function in the Cartesian mode.



5. Using the Pneumatic Unit

	Motion	Name	J1/X	J2/Y	J3/Z	J4/RX	J5/RY	J6/RZ	Speed	Pause	Trigger	Value
1	MOVL		0.0	0.0	0.0	0.0	0.0	0.0	2000.0	100.0	None	
2	MOVL		15.0	59.0	-8.0	-1.0	-50.0	0.0	2000.0	100.0	SuctionCup	On
3	MOVL		7.0	26.0	2.0	-1.0	-50.0	0.0	2000.0	100.0	SuctionCup	On
4	MOVL		8.0	43.0	5.0	-9.0	-54.0	12.0	2000.0	100.0	SuctionCup	On
5	MOVL		8.0	43.0	5.0	-9.0	-54.0	12.0	2000.0	100.0	SuctionCup	Off
6	MOVL		0.0	0.0	0.0	0.0	0.0	0.0	2000.0	100.0	None	

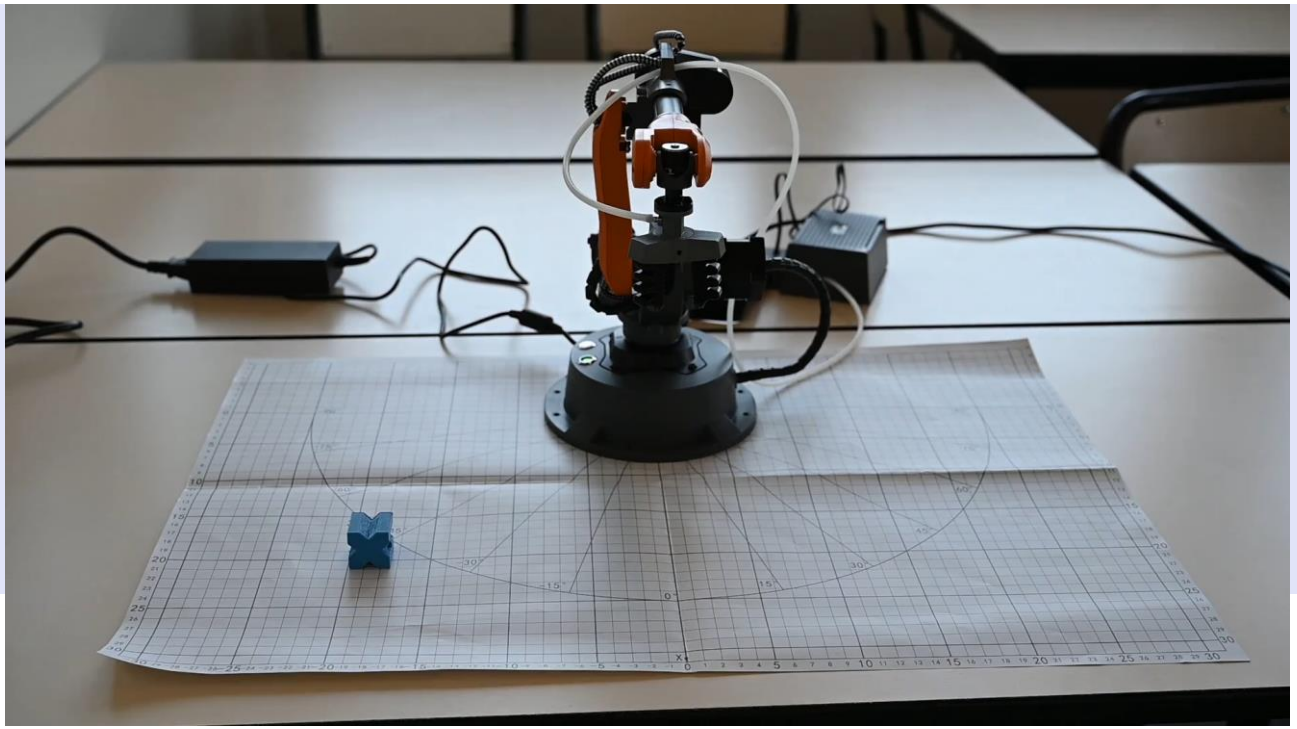


5. Using the Pneumatic Unit

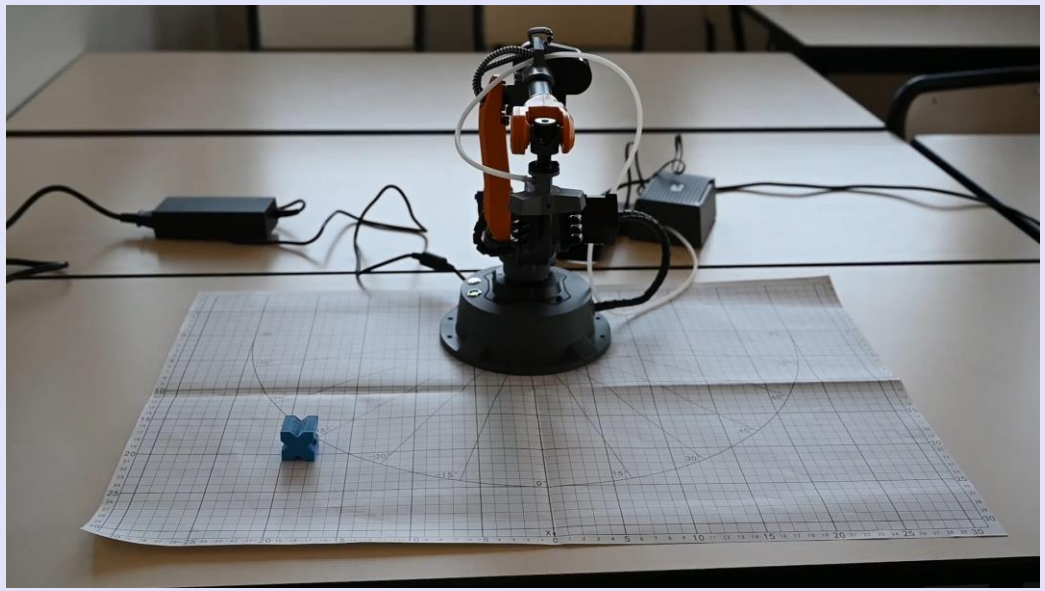
	Name	J1/X	J2/Y	J3/Z	J4/RX	J5/RY	J6/RZ	Speed	Pause	Trigger	Value
1		0.0	0.0	0.0	0.0	0.0	0.0	2000.0	100.0	SuctionCup	On
2		-29.0	60.0	-15.0	0.0	-42.0	0.0	2000.0	100.0	SuctionCup	On
3		-29.0	60.0	-15.0	0.0	-42.0	0.0	2000.0	100.0	SuctionCup	Off
4		-29.0	25.0	-15.0	0.0	-42.0	0.0	2000.0	100.0	None	
5		0.0	60.0	-15.0	0.0	-42.0	0.0	2000.0	100.0	SuctionCup	Off
6		0.0	60.0	-15.0	0.0	-42.0	0.0	2000.0	100.0	SuctionCup	On
7		0.0	0.0	0.0	0.0	0.0	0.0	2000.0	100.0	SuctionCup	On
8		0.0	0.0	0.0	0.0	0.0	0.0	2000.0	100.0	SuctionCup	Off

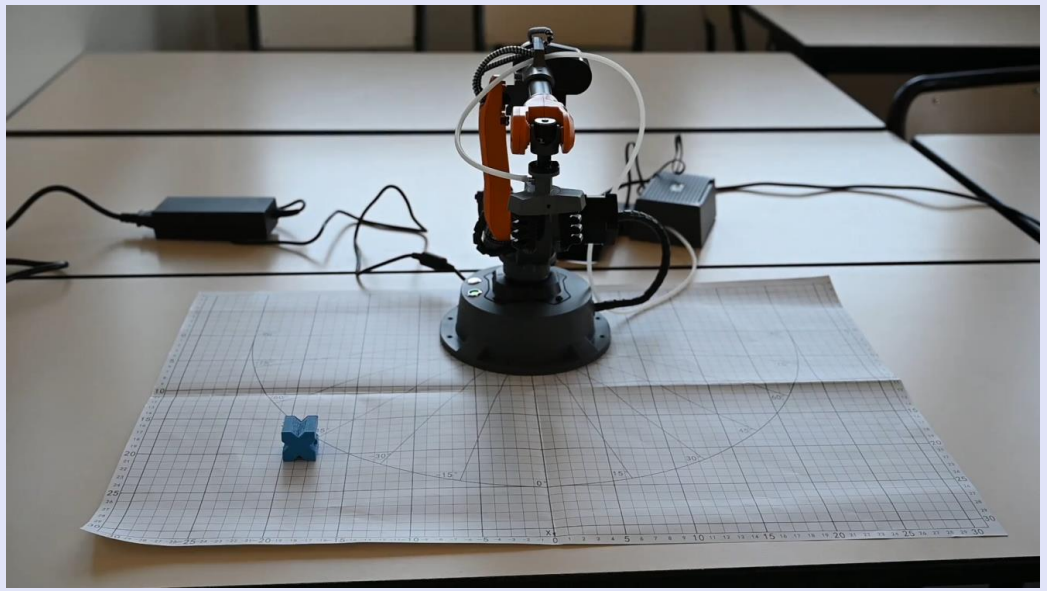
Example:

With the 3 Finger soft-claw

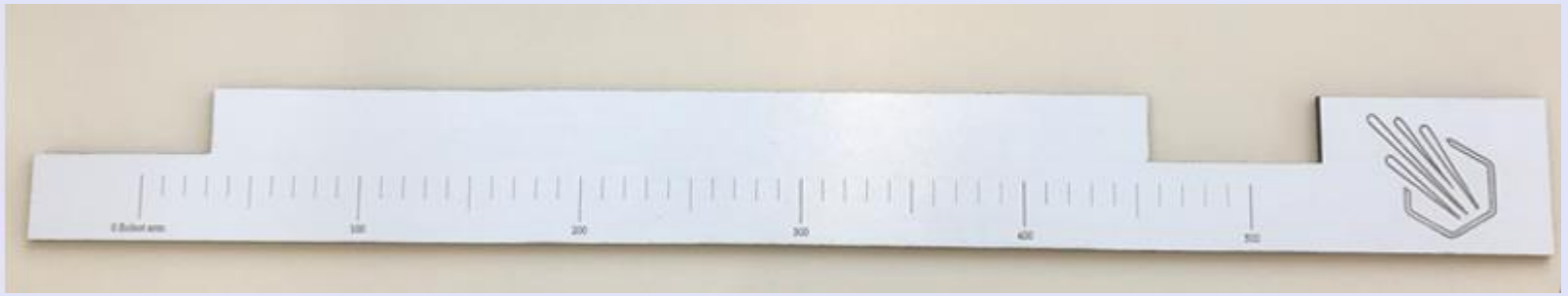


- Always raise the robot arm when it moves a piece



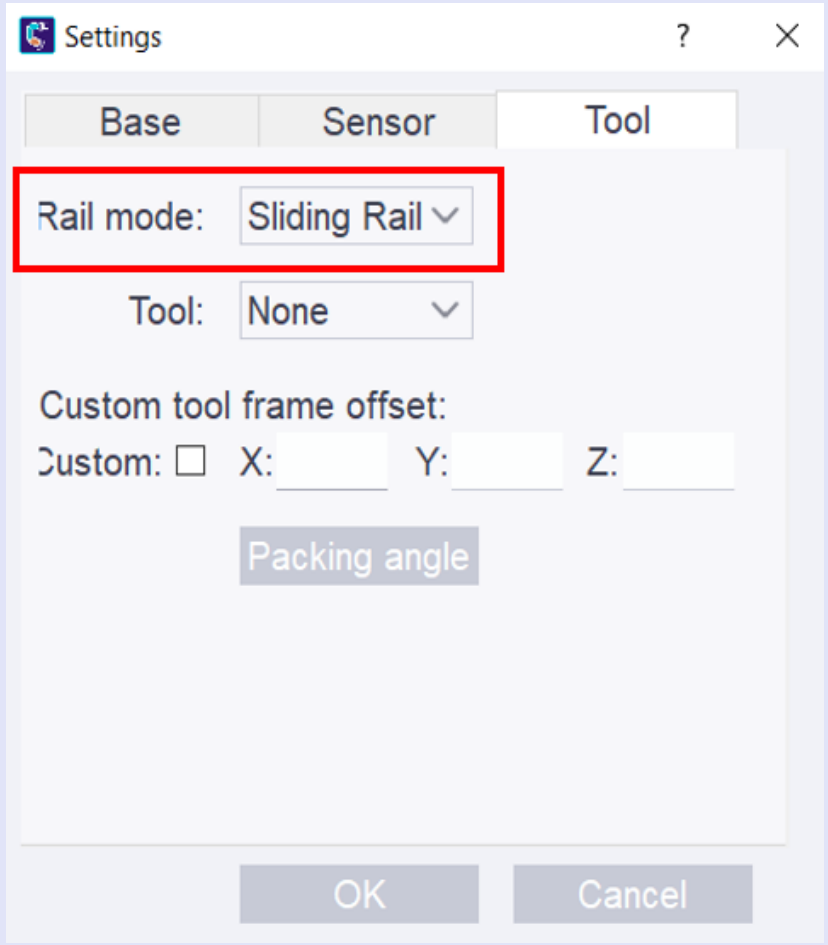


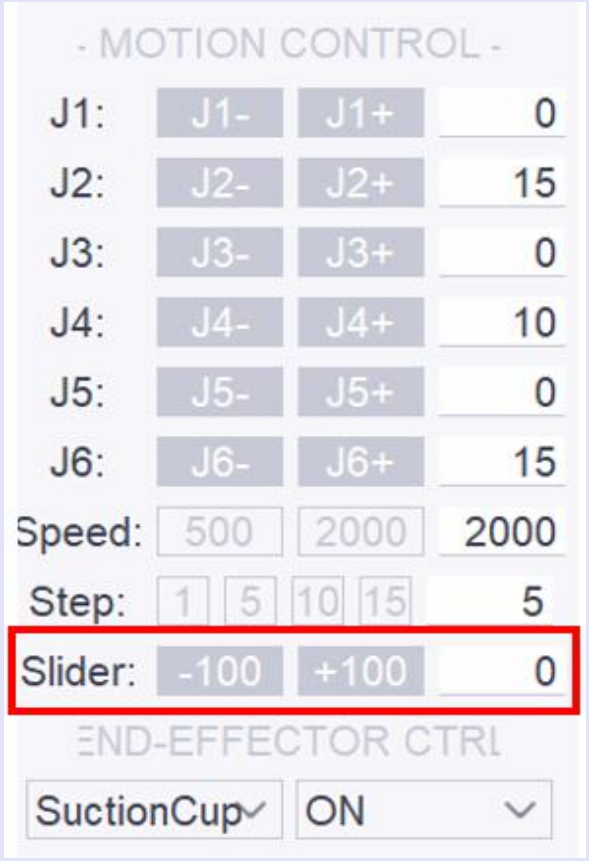
6. Using the Sliding Rail



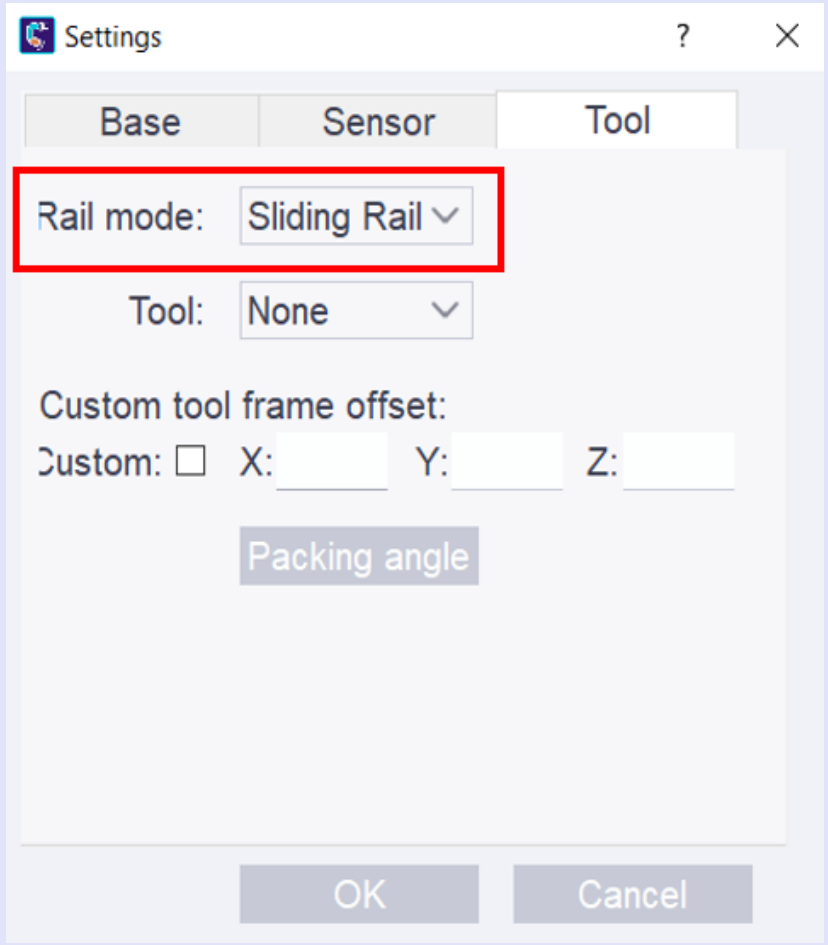
The measuring rule is here to help you when you choose the position of the Sliding Rail

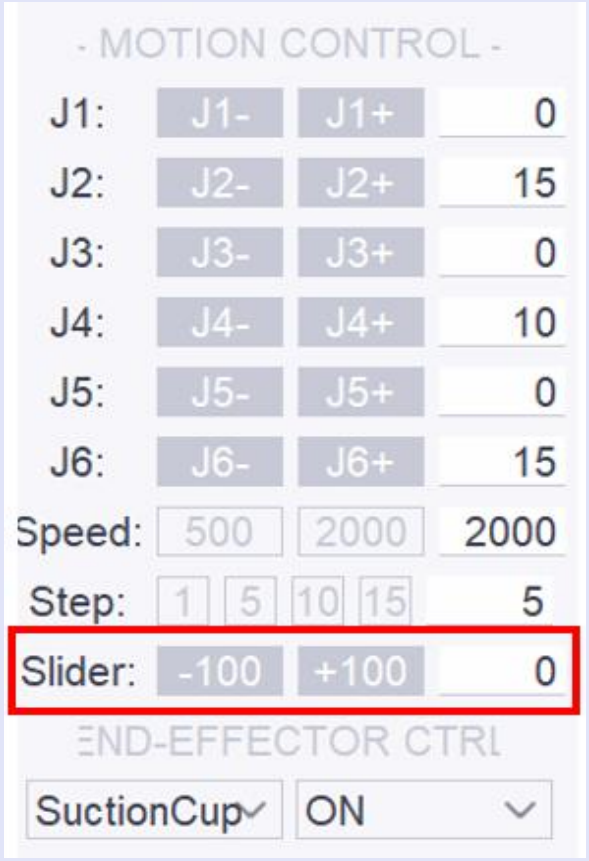
6. Using the Sliding Rail





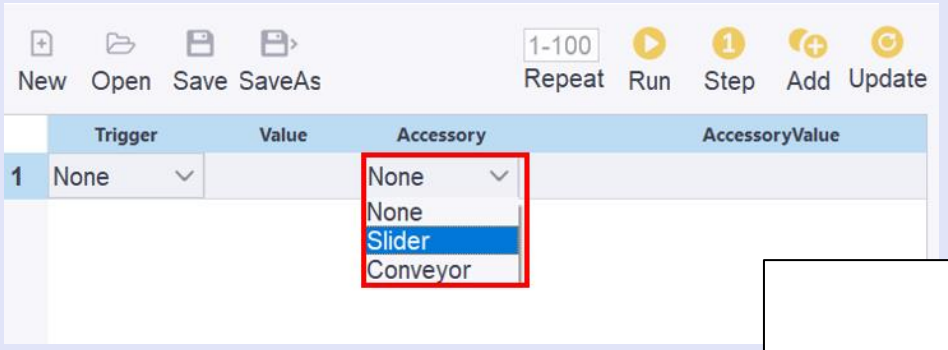
6. Using the Sliding Rail

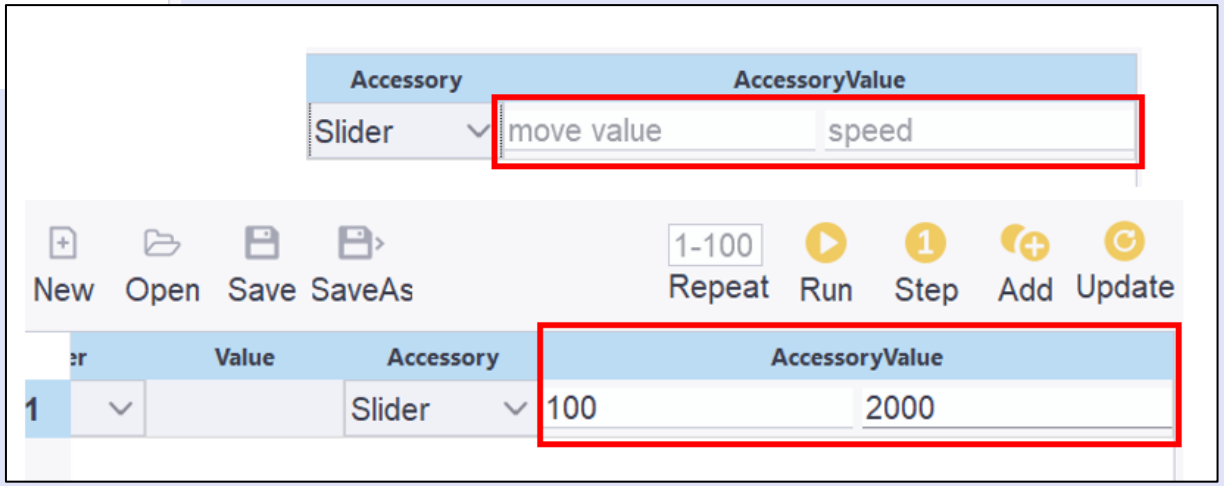




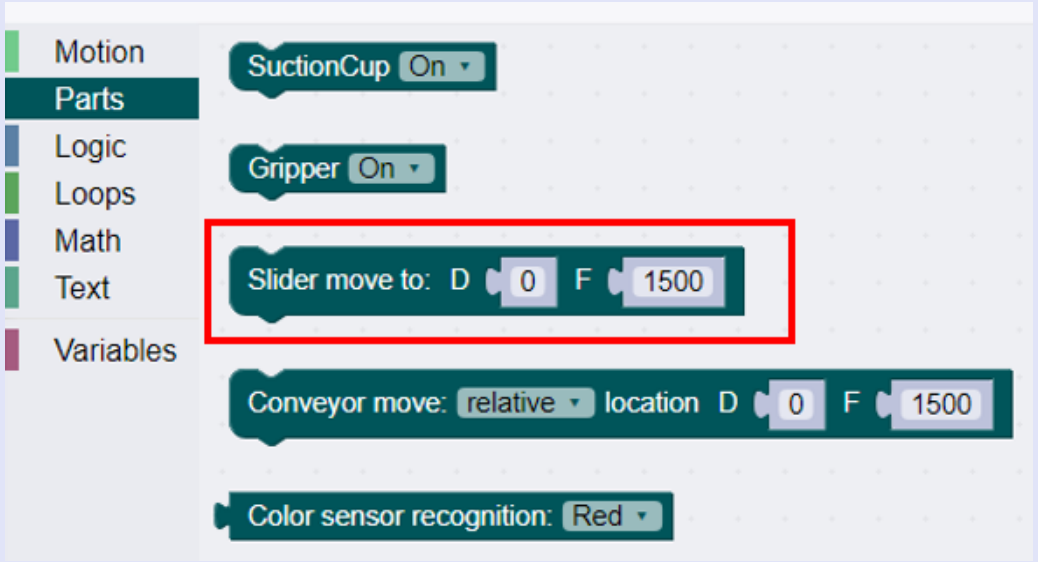
6. Using the Sliding Rail

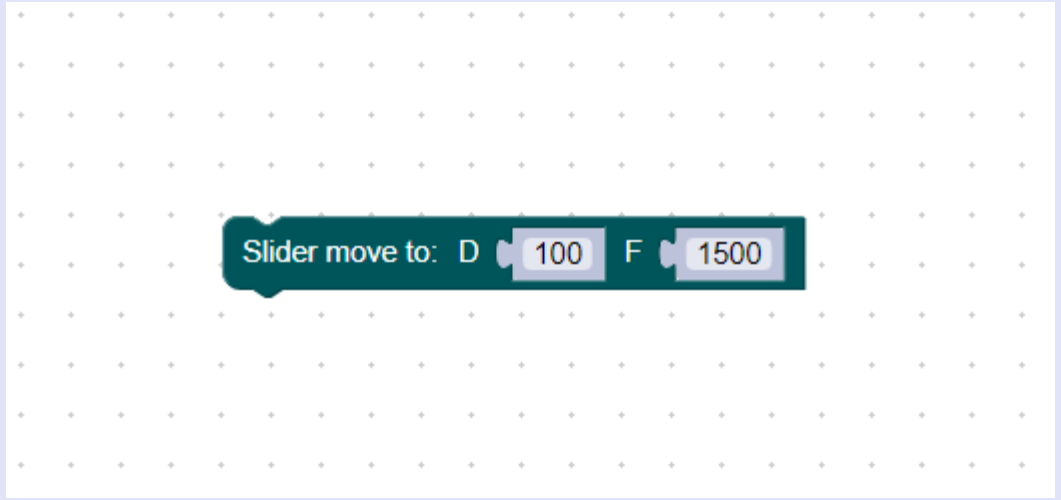
➢With the TEACHING function





➢ With the BLOCKY function

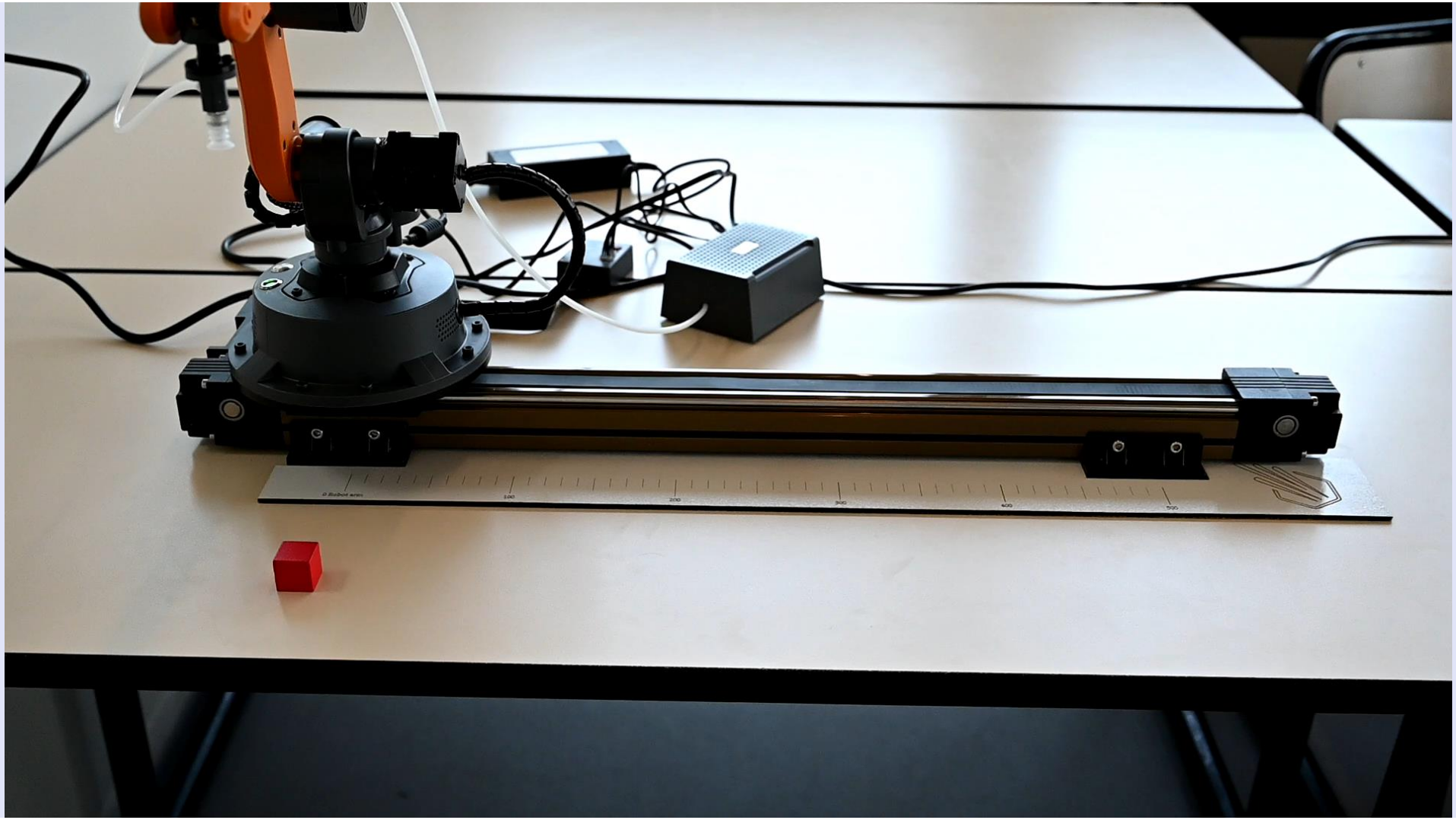




➢ Using it with the Pneumatic Set

	J3/Z	J4/RX	J5/RY	J6/RZ	Speed	Pause	Trigger	Value	Accessory	AccessoryValue	
1	0.0	0.0	0.0	0.0	2000.0	100.0	None		Slider	0	2000
2	12.0	0.0	-80.0	0.0	2000.0	100.0	SuctionCup	On	None		
3	2.0	0.0	-80.0	0.0	2000.0	100.0	SuctionCup	On	None		
4	2.0	0.0	-80.0	0.0	2000.0	100.0	SuctionCup	On	Slider	100	1000
5	12.0	0.0	-80.0	0.0	2000.0	100.0	SuctionCup	Off	Slider	100	1000
6	0.0	0.0	0.0	0.0	2000.0	100.0	None		Slider	100	1000
7	0.0	0.0	0.0	0.0	2000.0	100.0	None		Slider	0	2000

6. Using the Sliding Rail



7. Using the Conveyor

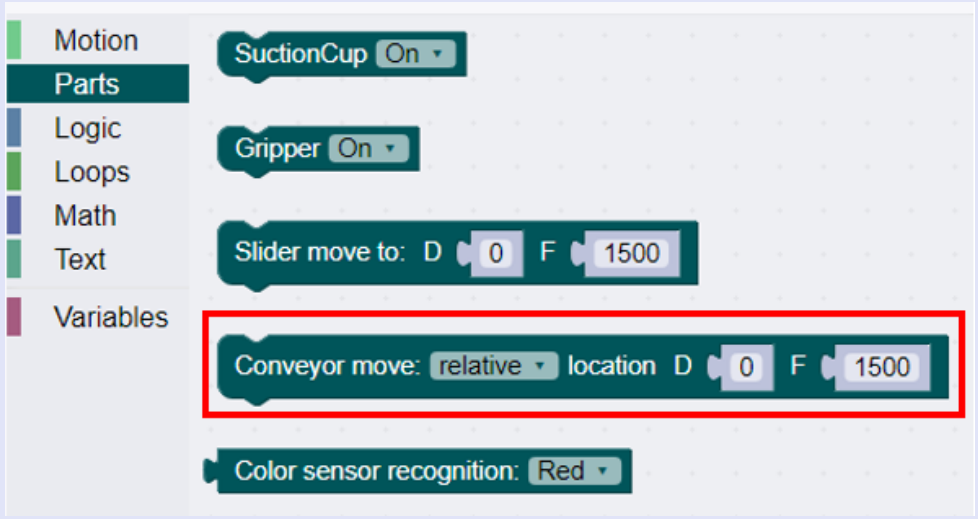
7. Using the Conveyor

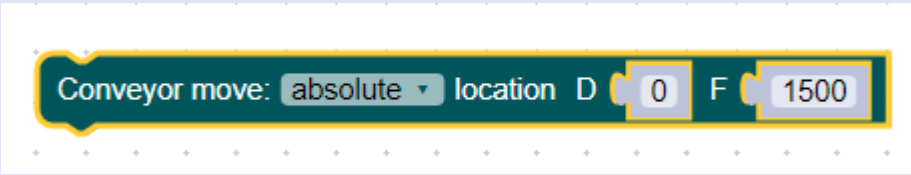
➢With the TEACHING function

Accessory	AccessoryValue		
Conveyor	Relative	move value	speed

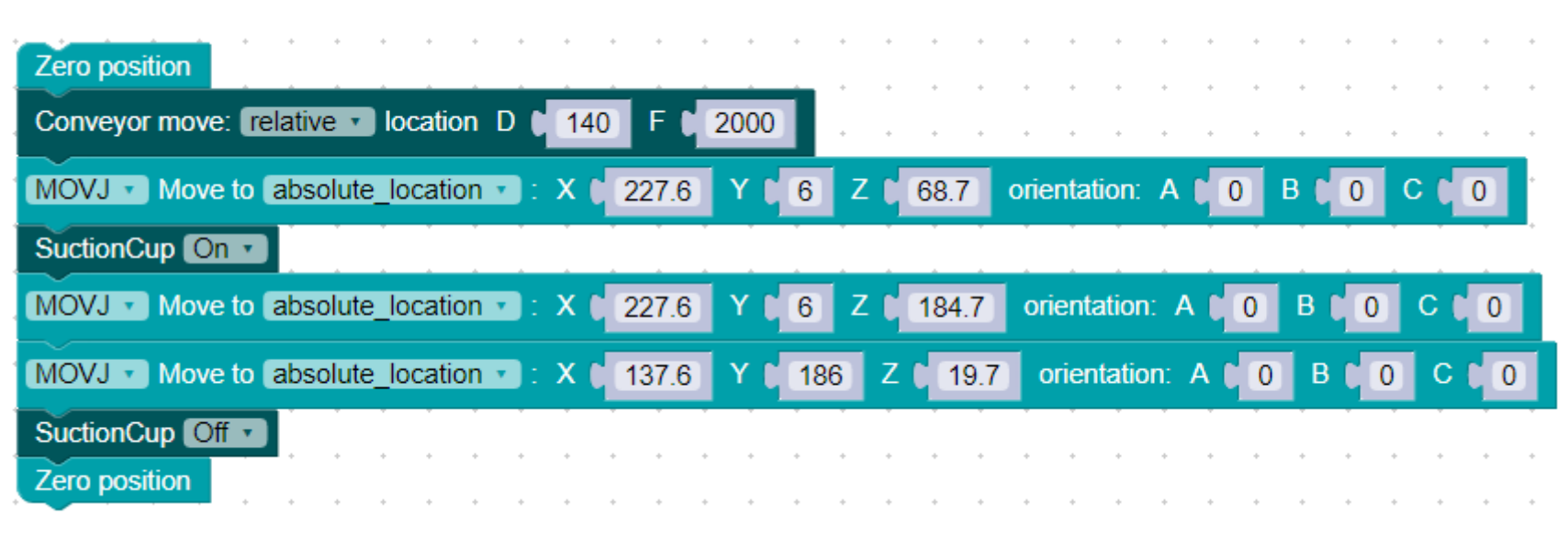
Accessory	AccessoryValue		
Conveyor	Absolute	move value	speed

➢With the BLOCKY function

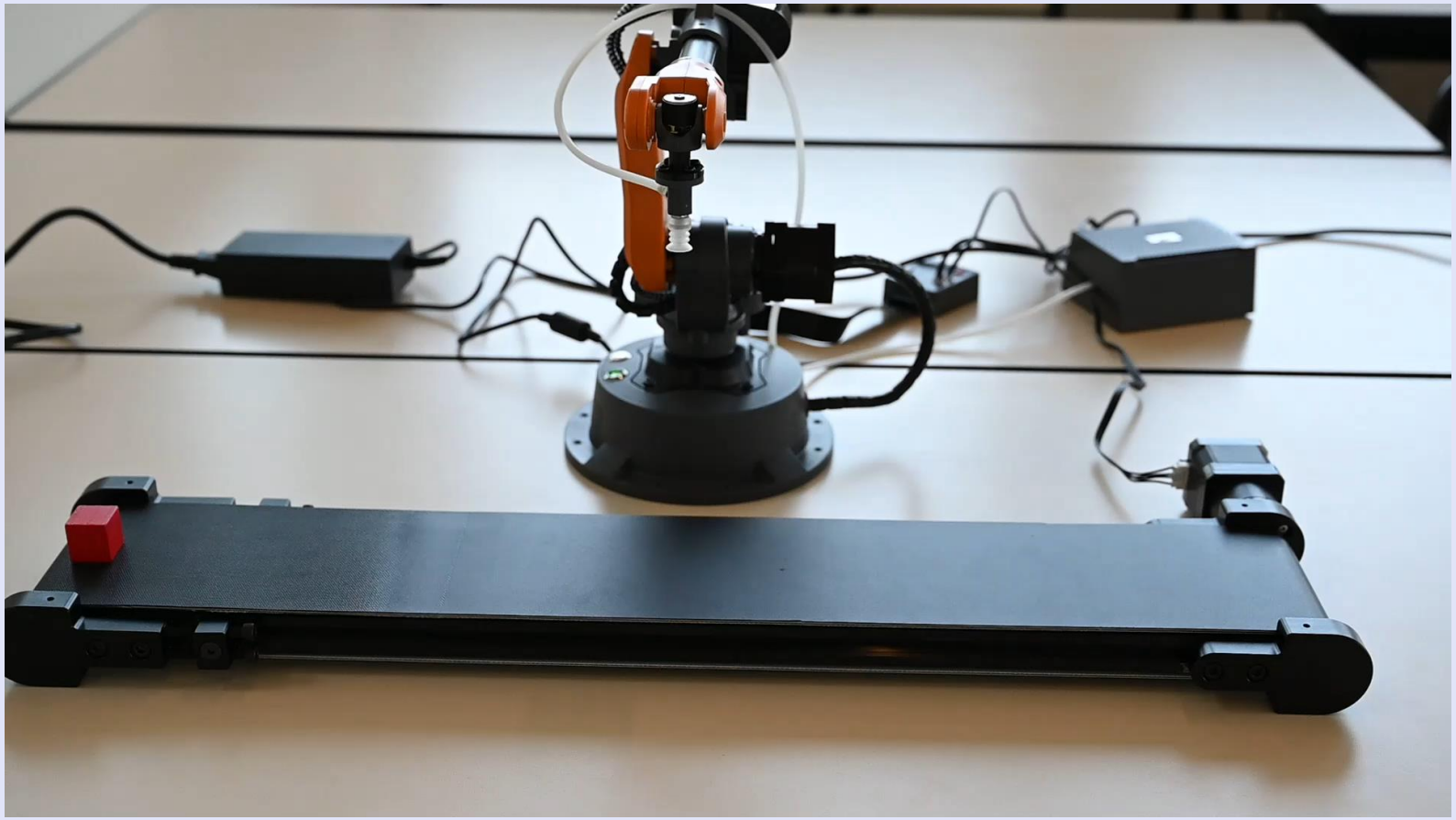




➢Example: using the conveyor with the Pneumatic Set



- Example: using the Conveyor with the Pneumatic Set

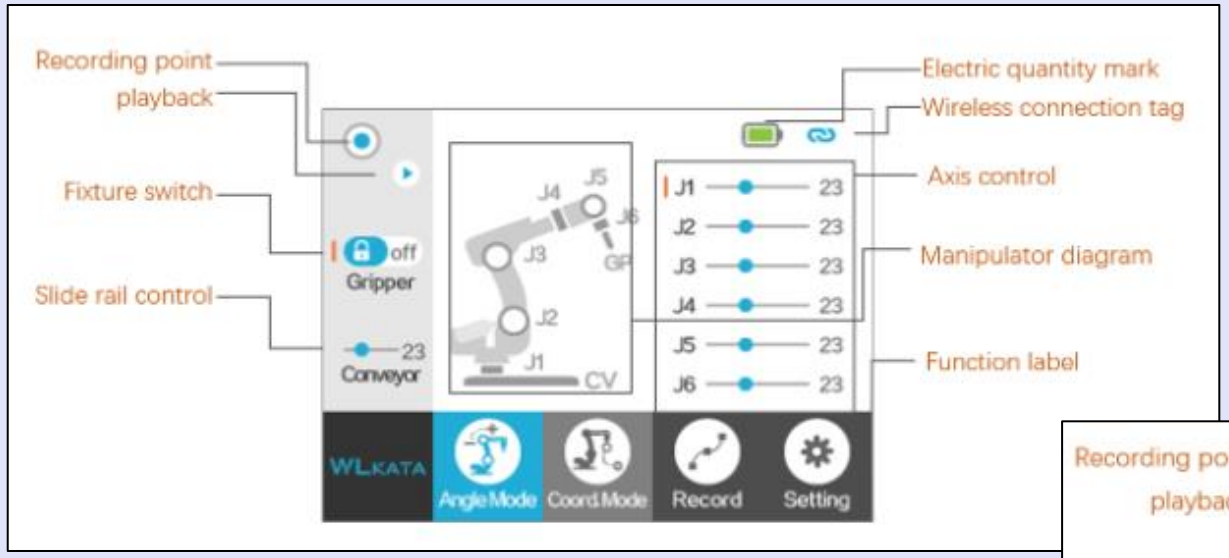


8. Bluetooth teach pendant

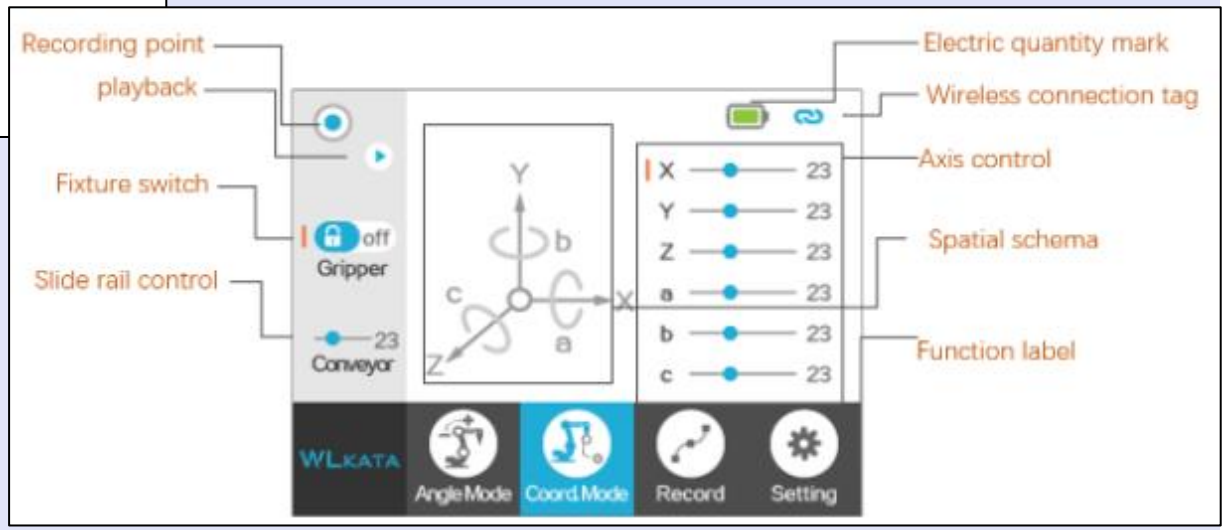
Mirobot Bluetooth teach pendant is a Bluetooth controller to wirelessly control Mirobot desktop robotic arm. It supports each axis control mode, Cartesian control mode and teaching record mode.

8. Bluetooth teach pendant

Angle Mode page

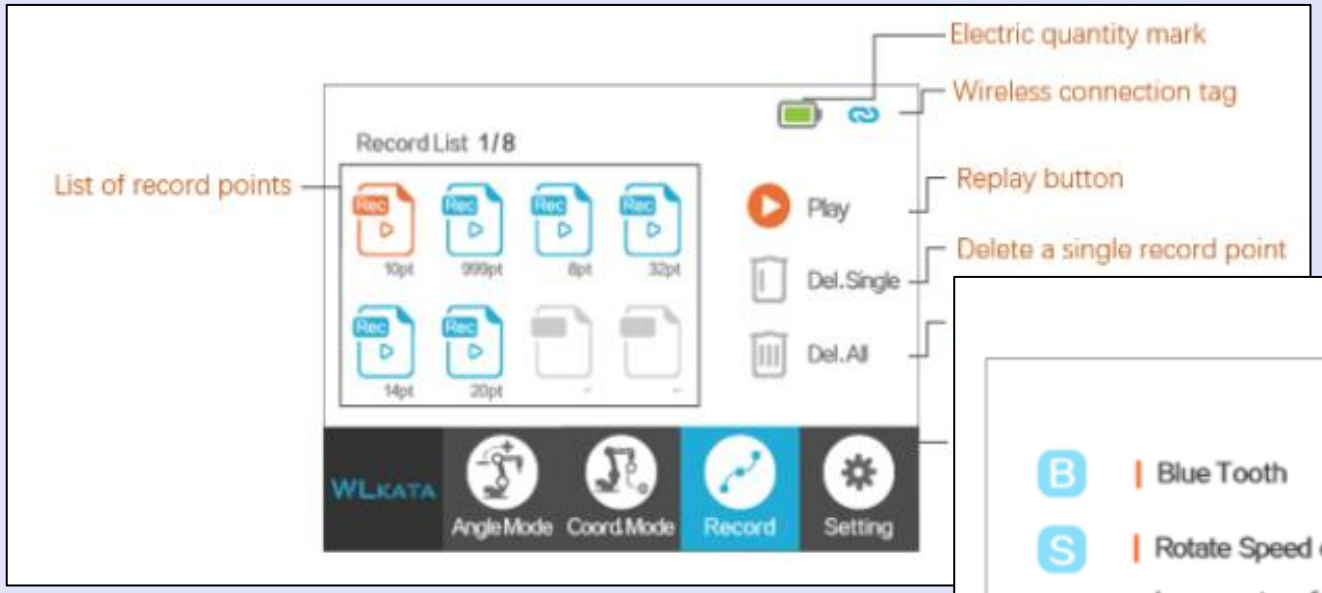


Coord Mode page

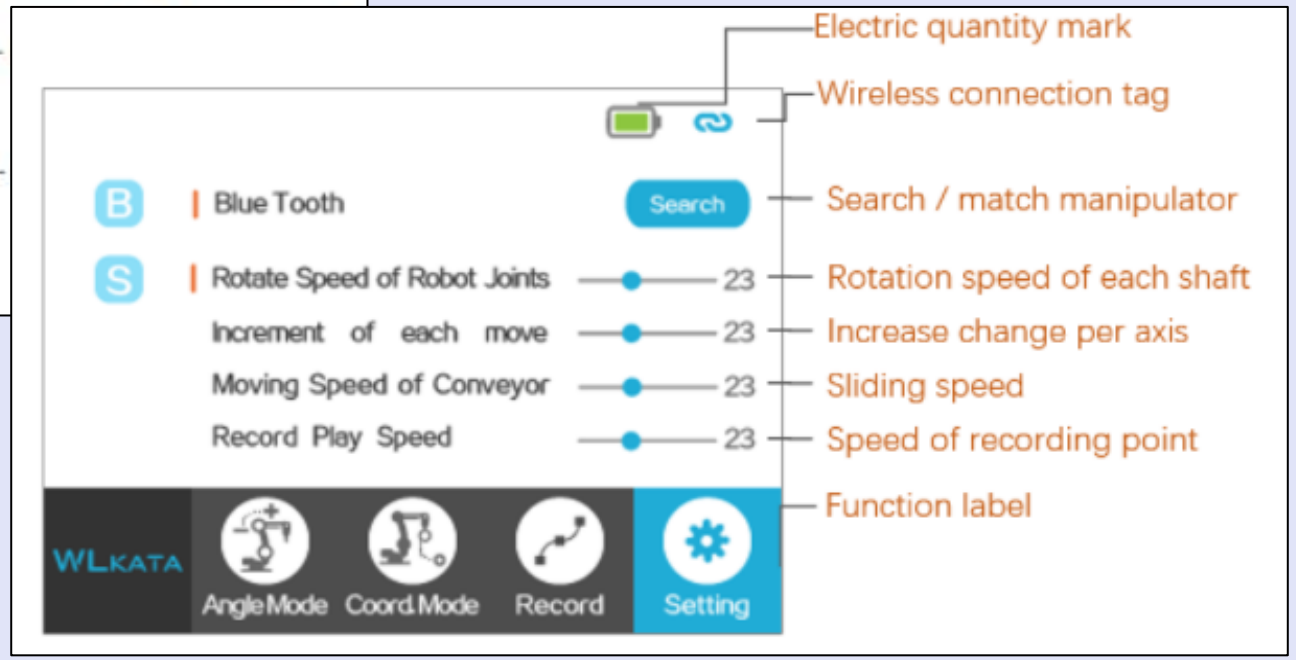


8. Bluetooth teach pendant

Record page



Setting page



Thank you for your attention