



# TM5 Guide Book

Hardware Version: 2.00  
Software Version: 1.62



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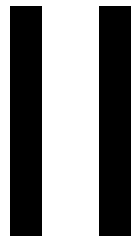
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TECHMAN ROBOT INC.



## II Quick Guide

<b>1. Overview</b>	
1.1 Overview	2
<b>2. Unboxing</b>	
2.1 Carton Types	2
2.2 Contents of Each Carton	3
2.3 Installing Your Robot	5
2.3.1 Remove the Control Box	5
2.3.2 Verification Before Removal of the Robot Body	6
2.3.3 Removal of the Robot Body and Tightening	6
2.3.4 Connect the Robot and Control Box	6
2.4 Bootup	7
2.4.1 Connect to Power Supply	7
2.4.2 Booting from the Packaging State	7
2.4.3 Normal Bootup	11
2.4.4 Operation of HMI TM Flow of TM Robot	13
2.4.4.1 Local Operation Instructions	13
2.4.4.2 Physical AP Connection Method	15
2.4.4.3 Wired Connection Method	18
2.4.5 Initial Settings	19
2.5 M/A Mode and Hand Guide	22
2.6 Create and Run Your First Project	23
2.7 Shutdown	31



# Quick Start

# 1. Overview

## 1.1. Overview

These instructions guide the user of the Techman Robot through the boot process for the first time. The user must thoroughly read and understand Volume 1 "I. Hardware Setup Instructions" before performing the operations of this Chapter. Otherwise, failure to do so may cause serious danger.



### Warning

The subsequent chapters of this guide will describe how to install the Techman Robot. If this is your first time using the Techman Robot, but the robot is not newly unpacked from the carton, especially when the robot has been installed in the working environment, follow the following instructions to perform installation and initial boot according to this Guide:

1. To avoid changes to the original working environment and settings, resulting in risks when returning to work, verify and retain all necessary setting records together with the person responsible for the working environment, such as software settings and all hardware wiring.
2. Remove all of the control box's external I/O connections including the analog I/O, EtherCAT port and network port.
3. Remove all of the control box's connections to external devices / external storage devices through USB interface, Serial port, and network interface.
4. Unload any object/end effector attached to the end flange, and any electrical connection between the end effector and end module / control box of the robot.
5. Unload any hardware attached to the robot arm.

## 2. Unboxing

### 2.1 Carton Types

The Techman Robot product is packed in 2 cartons: the robot arm carton and the control box carton, as shown below:

Robot arm carton



Control box carton:



## 2.2 Contents of Each Carton

Each carton has the following contents. Please check them when you unpack the cartons for the first time. If any item is missing, contact your vendor.

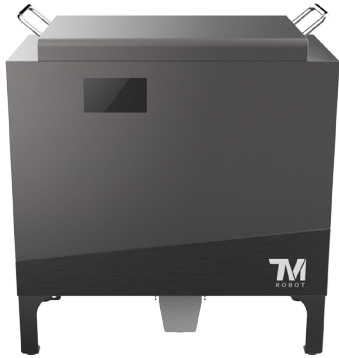
The robot arm carton contains:



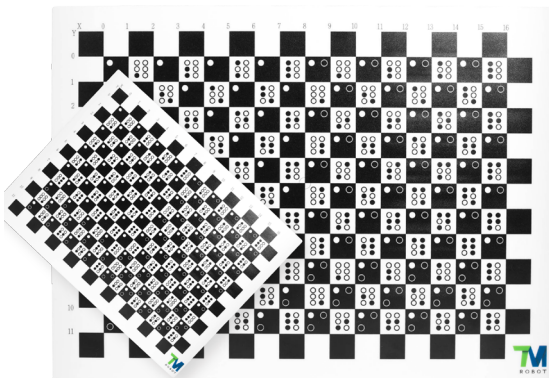
Robot arm



The control box carton contains:



Control box



Calibration Plate

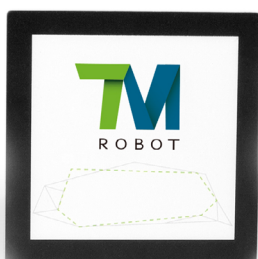
(Contains one large and one small calibration plate)

\*The Calibration Plate are only included with TM robots fitted with the hand-eye camera. No Calibration Plate are included with the following series: TM5X-700/TM5X-900



IO cables

(2 packs)



TM Landmark

(Contains two TM Landmark)  
\*The TM Landmark are only included with TM robots fitted with the hand-eye camera. No TM Landmark are included with the following series: TM5X-700/TM5X-900



Power cable of the control box

(1 cable)

## 2.3 Installing Your Robot

The Techman robot arm cannot stand independently after being removed from the carton. Therefore, prepare the mounting base with the corresponding holes as described in Subsection 4.2.1.2 "Robot Arm Mounting" of Volume 1 "I. Hardware Setup Instructions" in advance. Then follow these instructions to install the robot.



### Warning

At the installation site, at least two people should simultaneously perform installation of the robot, otherwise you risk robot arm damage or personal injury. Do not install the robot alone.

### 2.3.1 Remove the Control Box

After checking the contents, remove the contents in order and perform installation.

Control box carton:

- Remove the Calibration Plate
- Remove the power cable of the control box
- Remove the control box
- Connect the power cable to the control box
- Place the control box near the robot base



### Note

At this stage, do not connect the power cable of the control box to any electrical outlet, or it may cause equipment damage.

### 2.3.2 Verification Before Removal of the Robot Arm

The Techman robot arm cannot stand independently after being removed from the carton. Place the four (4) screws (M10 \*4) used to attach the robot to the base near the robot base in advance. If the base is designed with corresponding pinholes, mount them to the base.

### 2.3.3 Removal of the Robot Arm and Tightening

At least two people should remove the robot arm from the carton. For the correct holding positions, follow the Chapter 3 "3. Transportation" of Volume 1 "I. Hardware Setup Instructions" in this Guide. Place the robot on the mounting base. If it is designed with connection pins, align the pinholes of the robot base module. Tighten the four locking screws for the robot base module diagonally in order. Follow the tightening torque recommended in Subsection 4.2.1.2 "Robot Arm Mounting" of Volume "I. Hardware Setup Instructions."



When the robot is installed to the base, make sure two people work together to install it. If it is designed with pinholes, pay attention to your safety to avoid pinching. If you do not have connection parts at hand, such as the connecting pins, screws, do not leave the robot without completely tightening it (for example, the 4 sets of screws are not completely tightened). One person should continuously support the robot arm while the other person goes to get required parts. Otherwise, falling of the robot arm may result in equipment damage or personal injury.

### 2.3.4 Connect the Robot and Control Box

Connect the power cables of the robot arm and the control box to the control box to boot up the controller.



Power cable of the control box



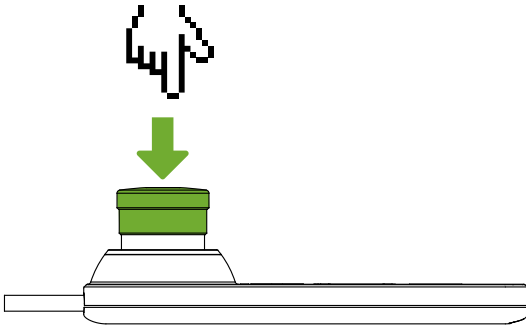
Power cable of the robot arm

## 2.4 Bootup

### 2.4.1 Connect to Power Supply

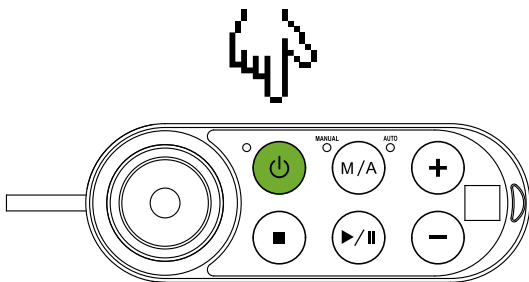
Connect the power plug from the control box to the power socket.

### 2.4.2 Booting from the Packaging State



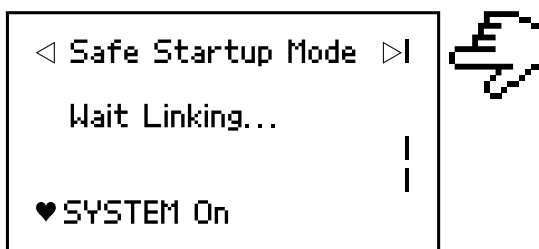
#### Step1

Press the Emergency Switch on the Robot Stick.



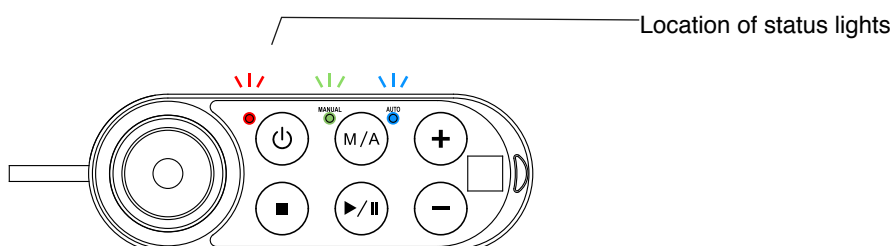
#### Step2

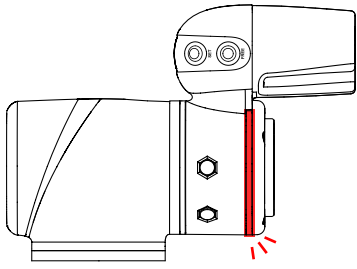
Press the Power button on the Robot Stick to activate the robot. The three status lights on the Robot Stick will begin flashing.



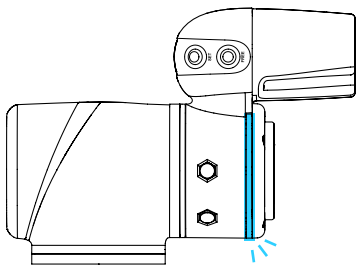
#### Step3

All three status lights are now flashing.

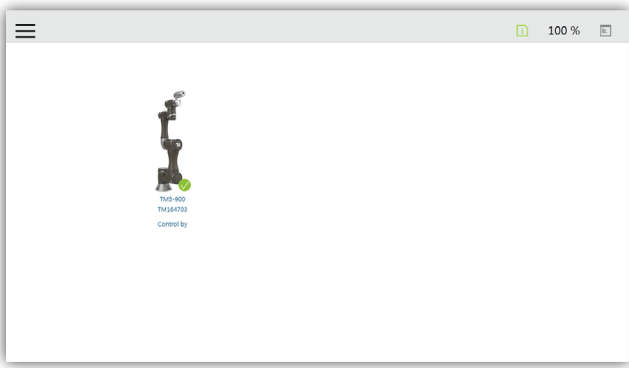


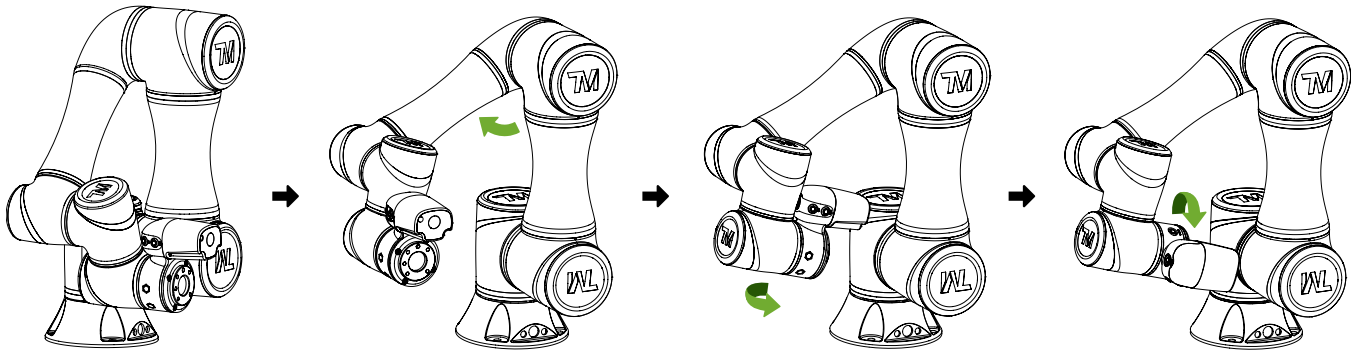


**Step4** The robot status light will flash red while the Controller is booting.

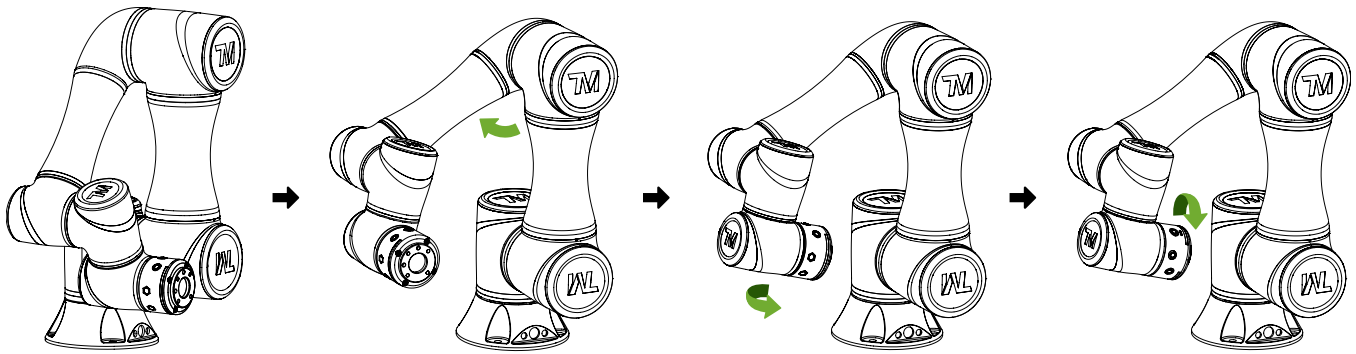


**Step5** The Robot indication light ring will flash light blue light while controller has finished booting.

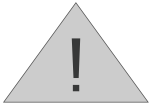




**Step6** Hold down the FREE button and guide the robot to the safety position as shown.

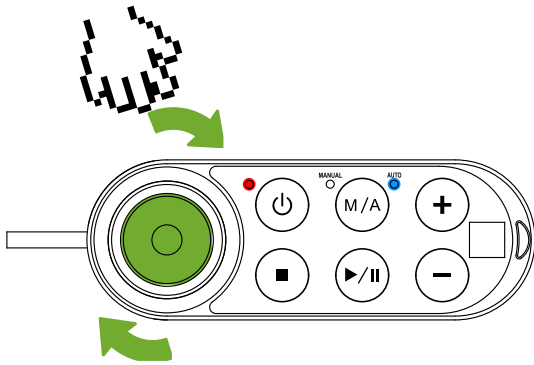


Safety position for TM5X-700/TM5X-900 models



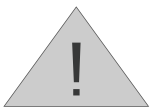
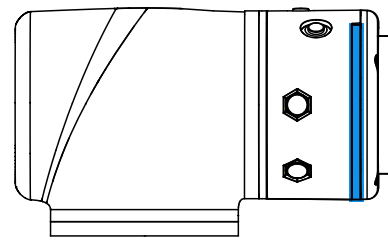
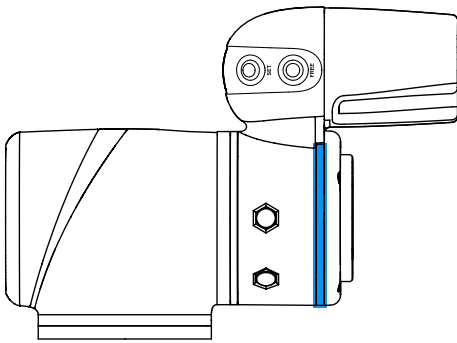
Note

If you do not guide the robot to the safe position as shown above, and then release the Emergency Switch, some axis (especially the Axis 5) may be beyond the angular limit of the joint when the robot returns to normal status. At this time, the robot cannot return to normal and a red light turns on. In this case, press the Emergency button again and repeat this step to get the safe position shown in the diagram.



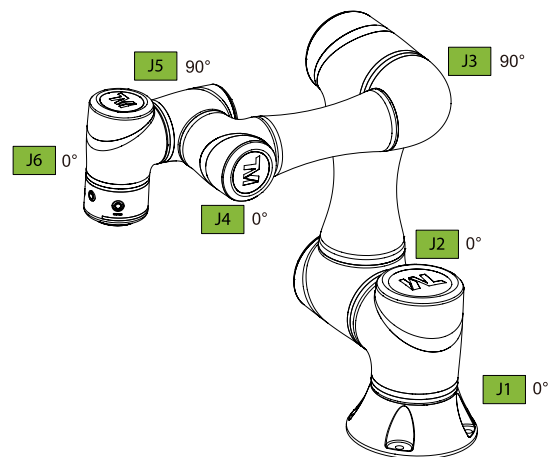
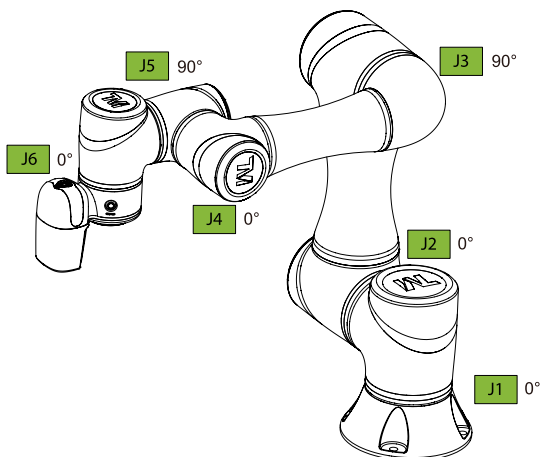
**Step7**

Release the Emergency Switch on the robot stick clockwise and the indication light ring of the robot lights up solid blue. At this time, you can control the robot normally.

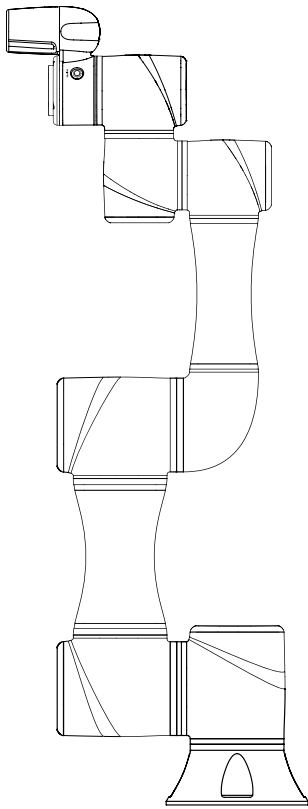


Note

When the boot is completed from the packaged position, Please use the TM Flow controller page to move the robot arm to the home point ( Joint angle of each axis: 0, 0, 0, 0, 0, 0), and you can move the robot arm to normal position by hand guide( Joint angle of each axis: 0, 0, 90, 0, 90, 0) , As shown below.

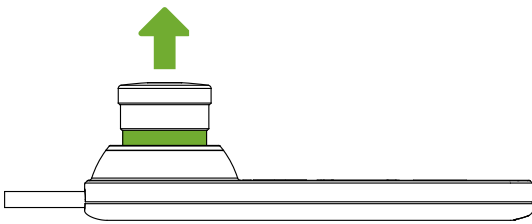


### 2.4.3 Normal Bootup



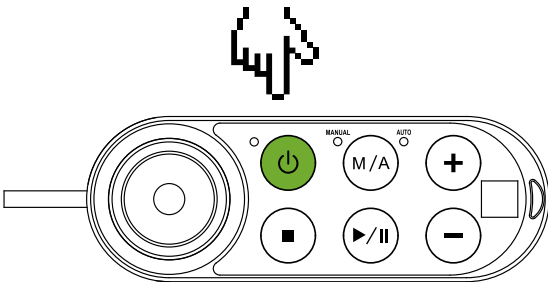
#### Step1

Make sure the robot is in a safe position



#### Step2

Make sure the Emergency Switch on the Robot Stick is released.



#### Step3

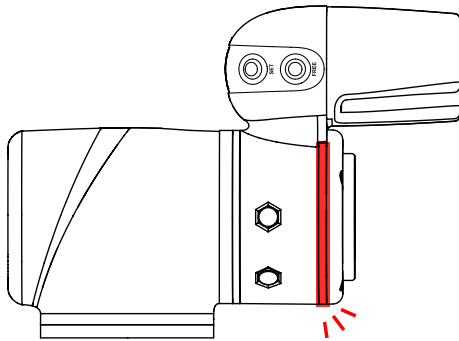
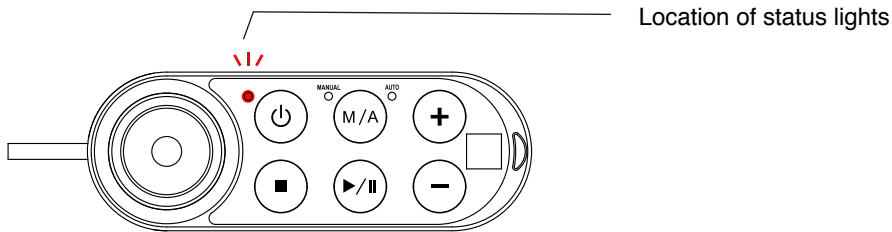
Press the Power button on the robot stick to activate the robot



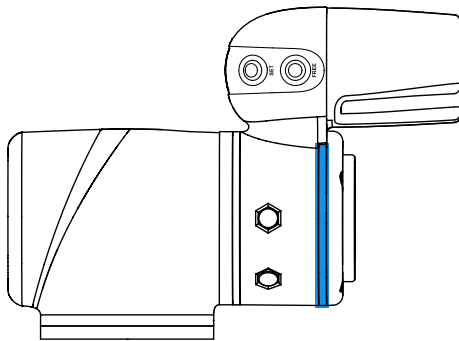
```

    ____Techman_Robot____|
    Wait Linking...      |
                           |
    SYSTEM On           |
    
```

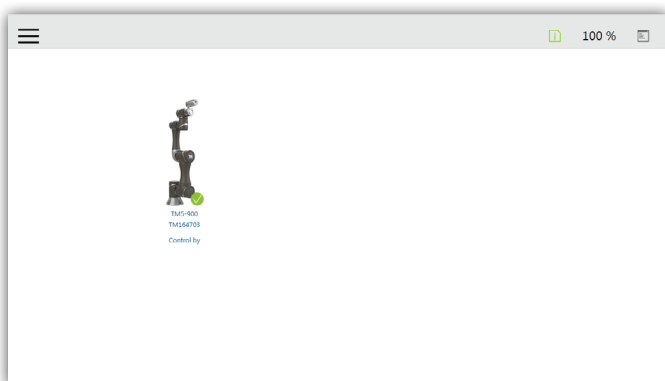
**Step4** Make sure the small display shows Boot Mode and the lights on the Robot Stick are flashing.



**Step5** The Robot Indication Light Ring will flash red while the Controller is booting.



**Step6** Once the controller has finished booting, the Robot Indication Light Ring will glow a constant blue. The robot can now be used normally.



#### 2.4.4 Operation of HMI TM Flow of TM Robot

For TM Robot, there are three ways to launch HMI TM Flow: Local operation method - Connect the monitor, keyboard, and mouse to the control box to launch TM Flow. Or go to the Customer section on the official website and download TM Flow Client. Install it in a Windows computer (such as Windows laptop / Windows tablet) and connect it to the robot through wired or wireless connection. You can choose one of the methods for operation:

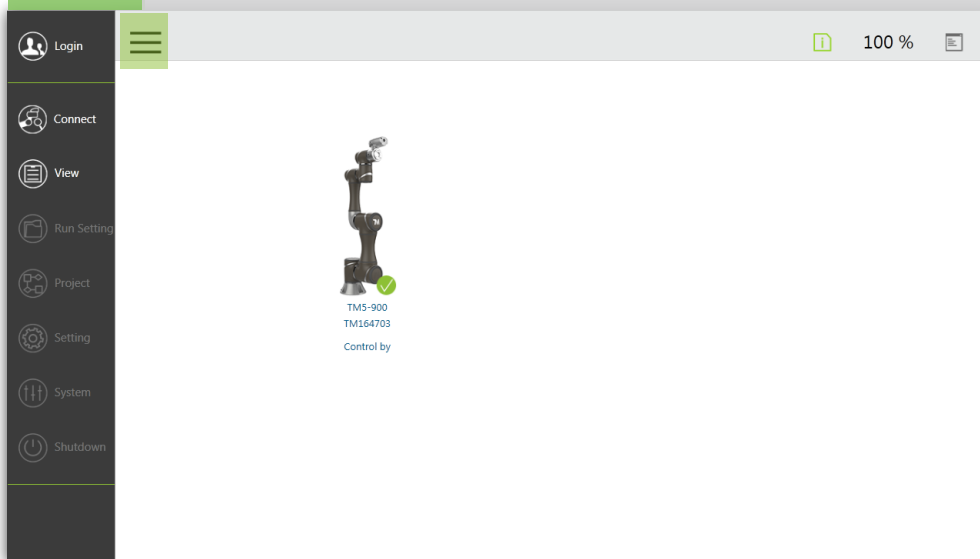
##### 2.4.4.1 Local Operation Instructions

### Step1

Connect the monitor, keyboard, and mouse to the control box.

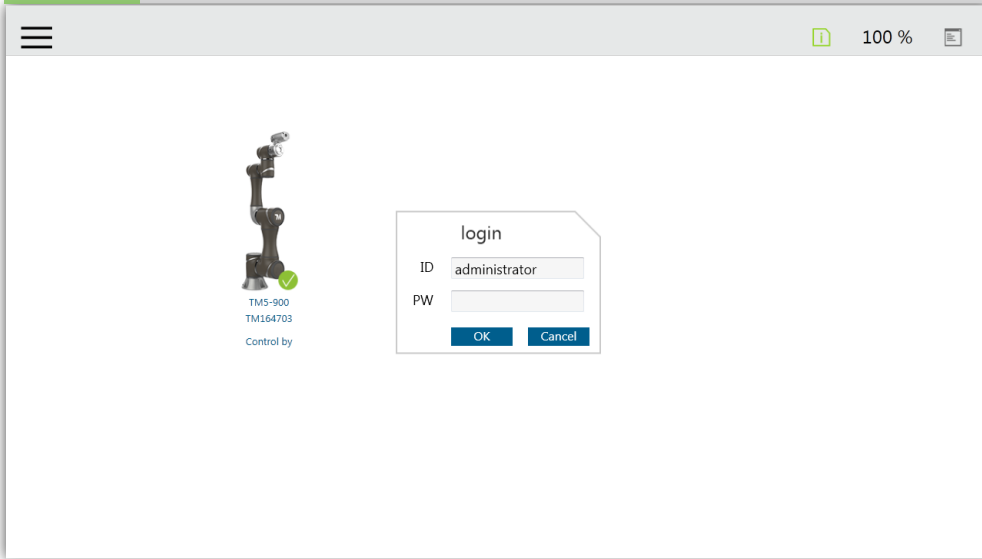
### Step2

Click the icon at the top left corner of the HMI to bring up the menu. Click to login.



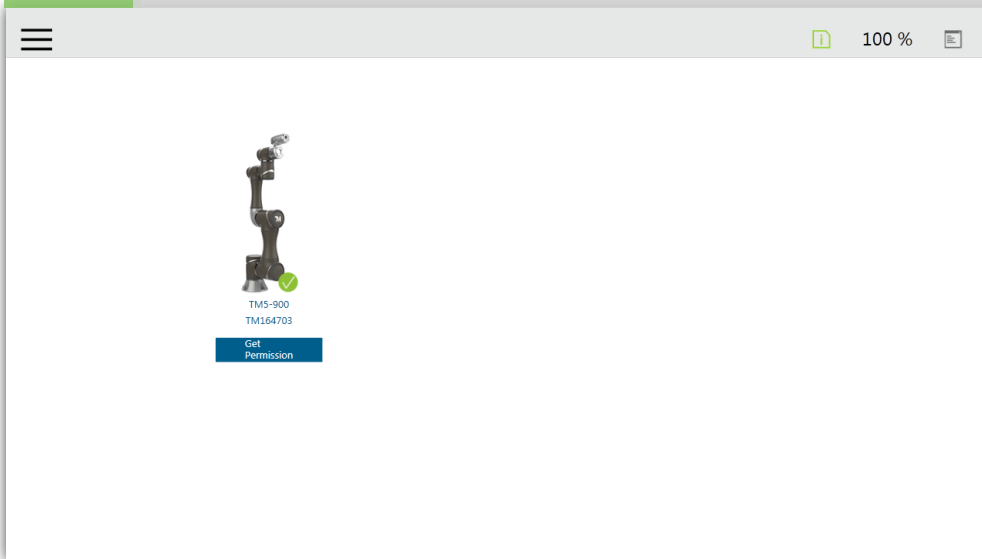
**Step3**

No password is set by default for "Administrator." Confirm to login directly.



**Step4**

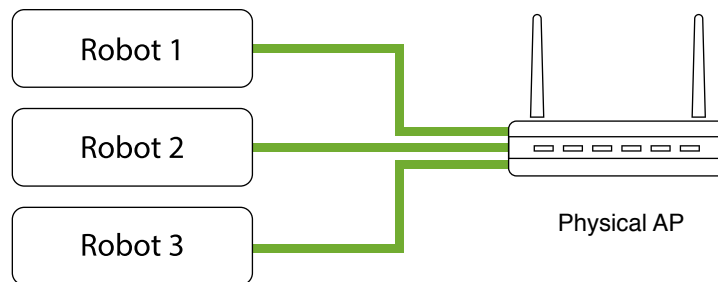
Select "Get Permission" to get control of the robot.



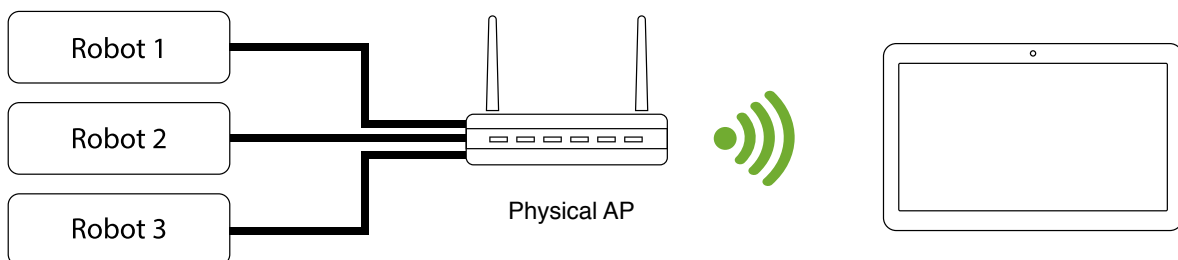
### 2.4.4.2 Physical AP Connection Method

**Step1** Install the client-side HMI system.

**Step2** Connect the robot to the same physical AP or a physical AP on the same network.

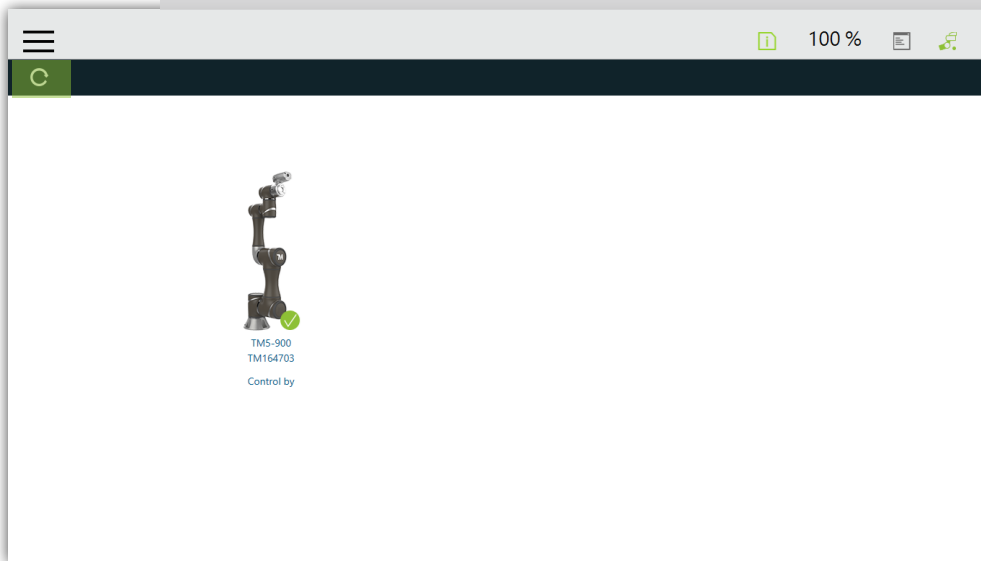


**Step3** Connect the client-side network to the above local network.



### Step4


Open the client-side HMI system and click on the Refresh icon. The corresponding robot ID will appear on the connecting page.



### Step5

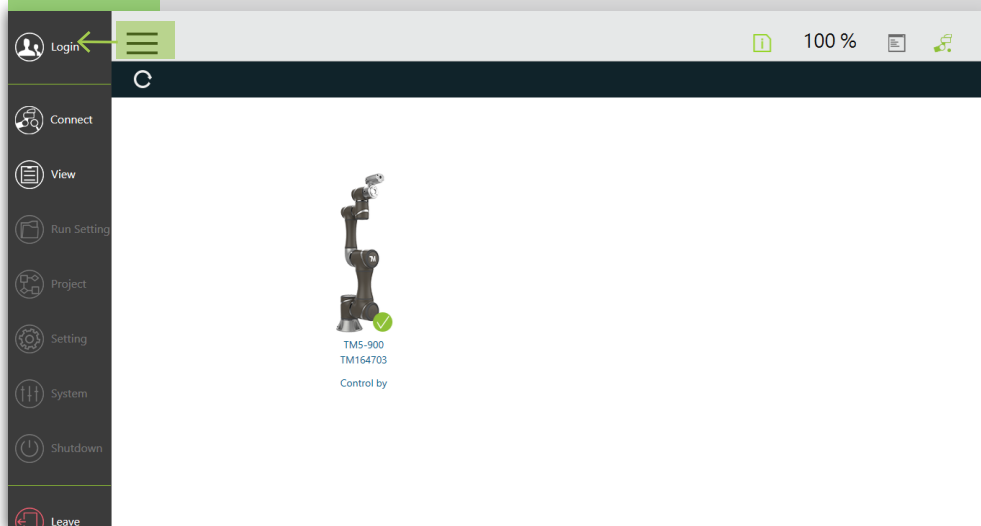
Double click the robot on the screen to connect to it.

### Step6

Once the robot has been connected the icon  will appear. The robot icon will also appear in the top right.

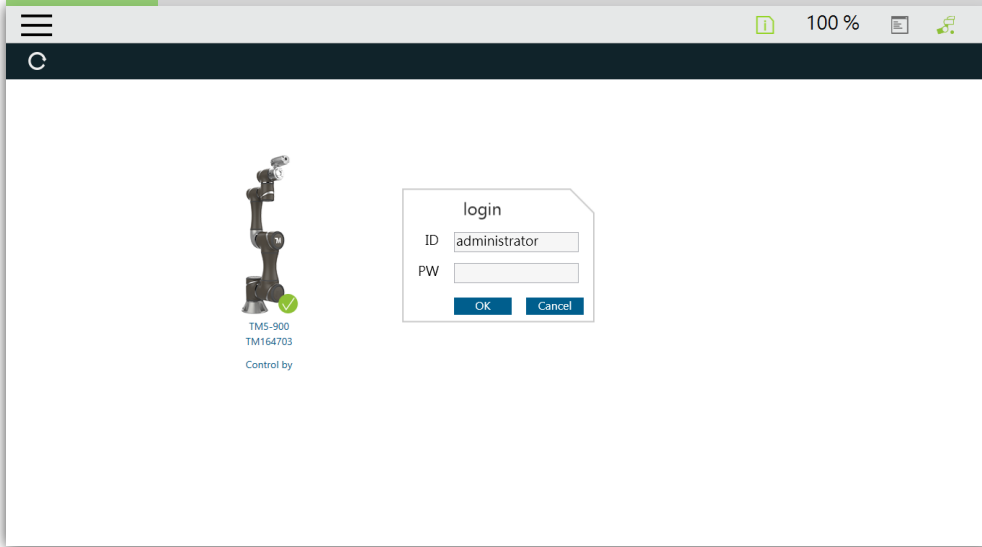
### Step7

Click the icon at the top left corner of the HMI to bring up the menu. Click to login.



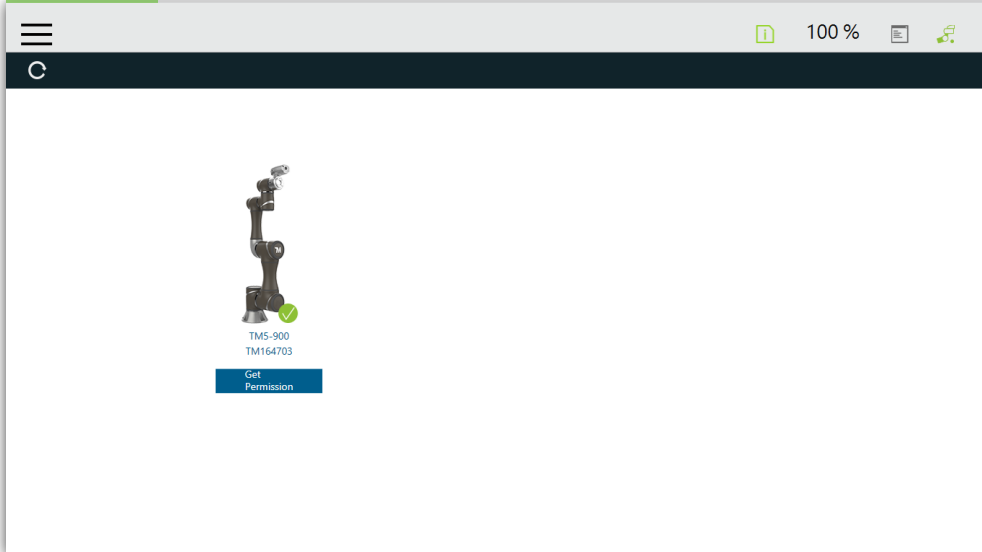
Step8

No password is set by default for "Administrator." Confirm to login directly.



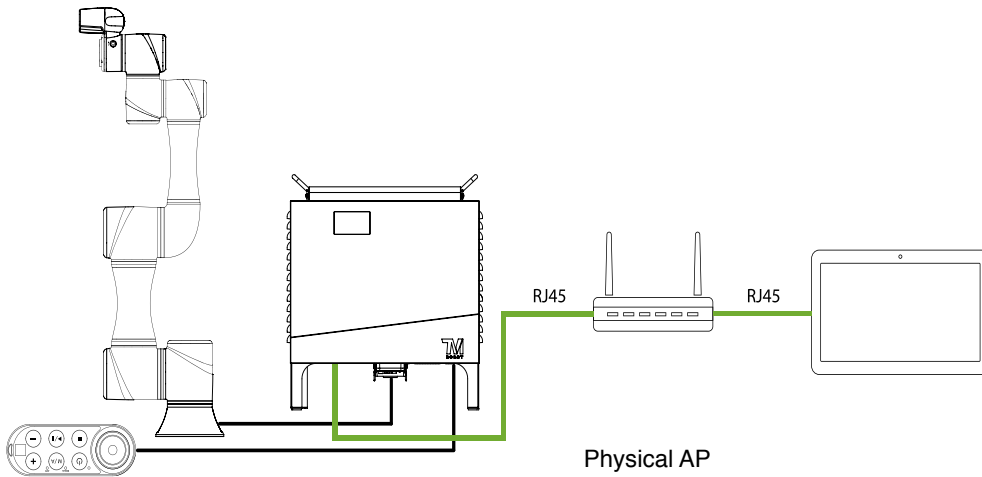
Step9

Select "Get Permission" to get control of the robot.

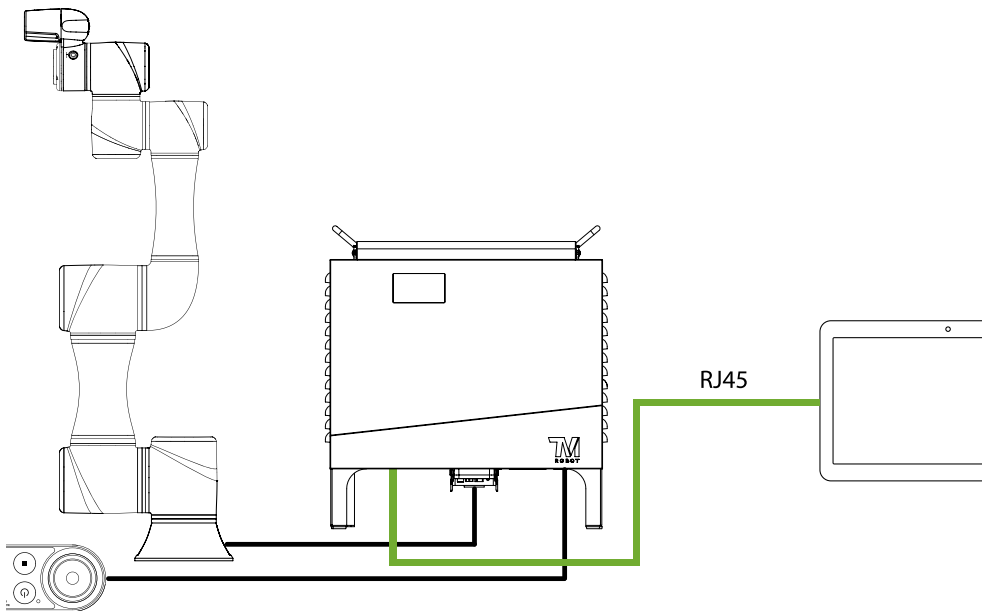


2.4.4.3 Wired Connection Method

- Step1** Install the client-side HMI system.
- Step2** Connect the robot and client device to the same physical AP or a physical AP on the same network. Or use the network cable to connect the robot's control box with the client.



Or

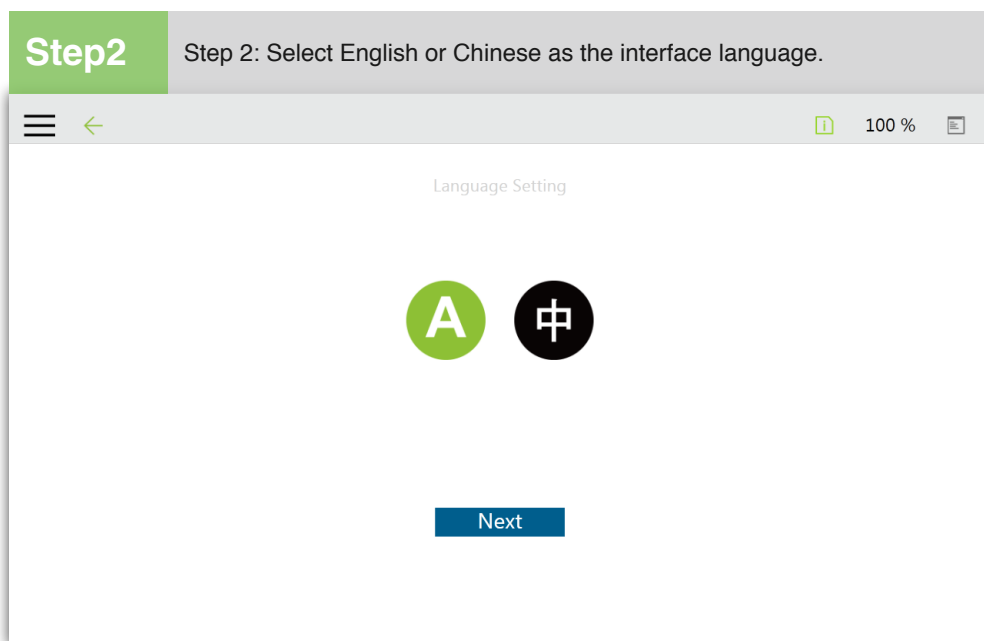
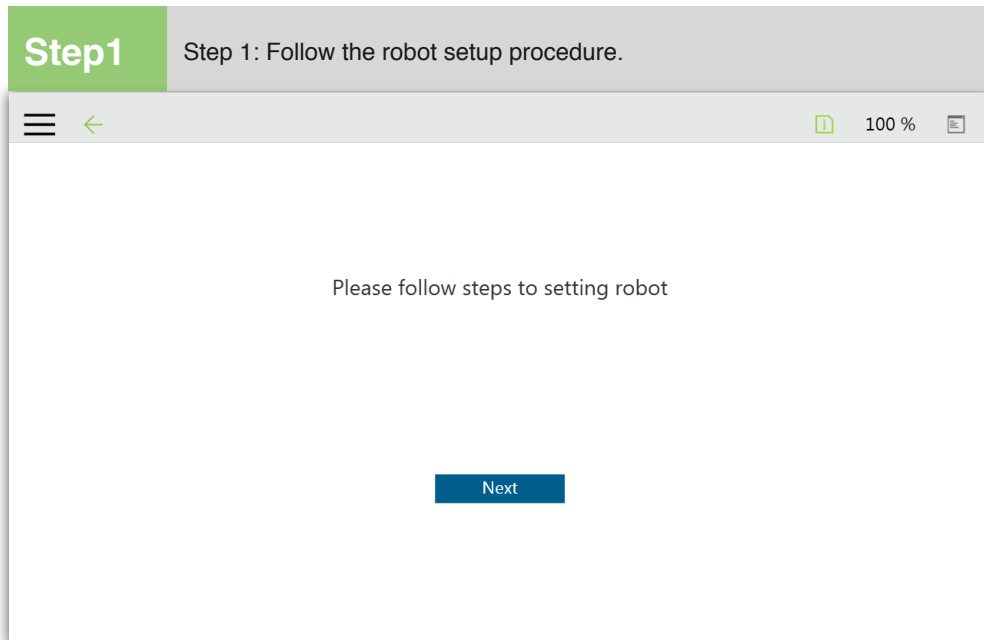


Note

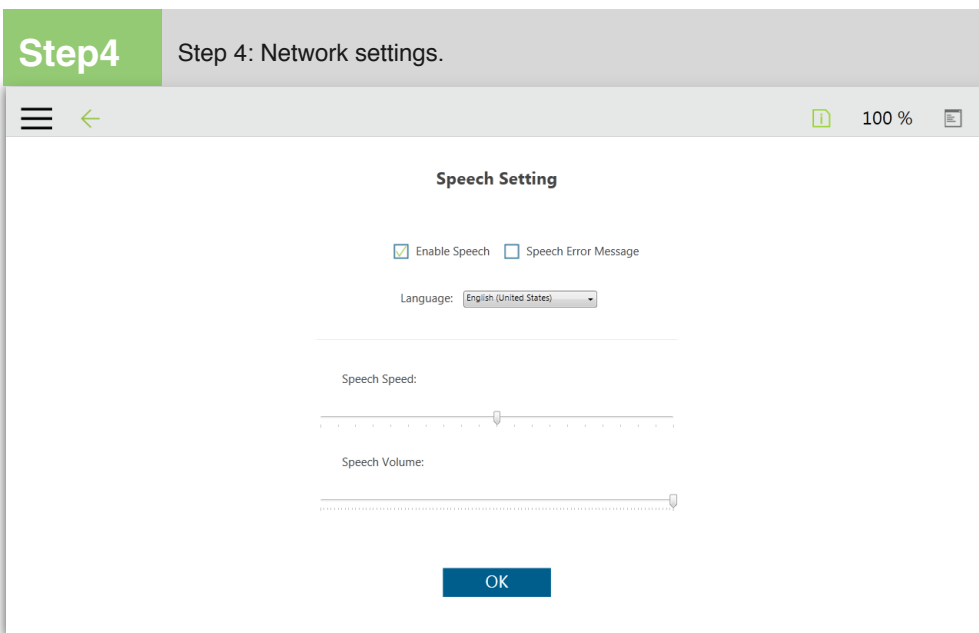
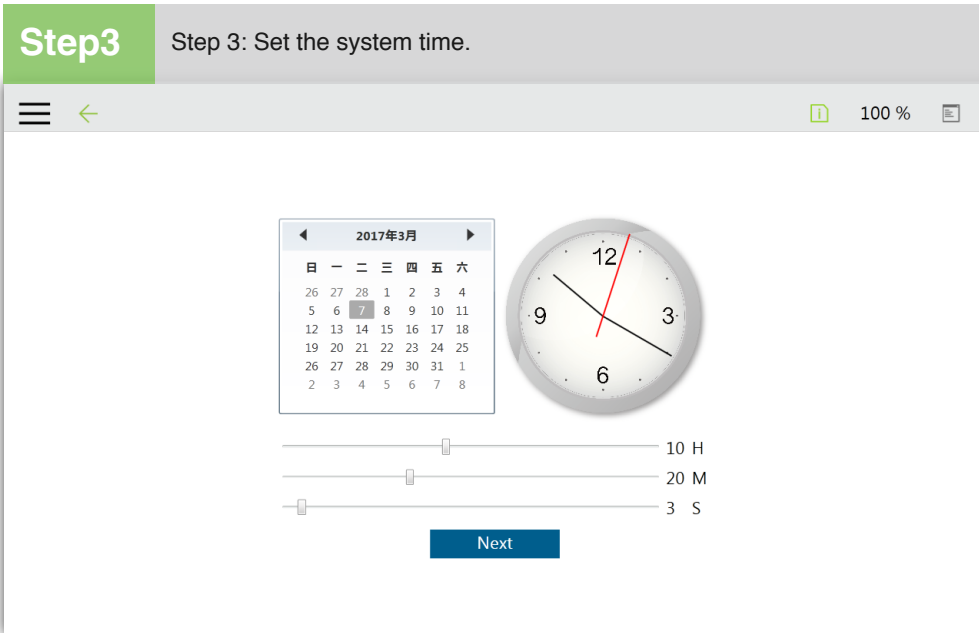
Do not connect the network cable to the EtherCAT port of the control box.

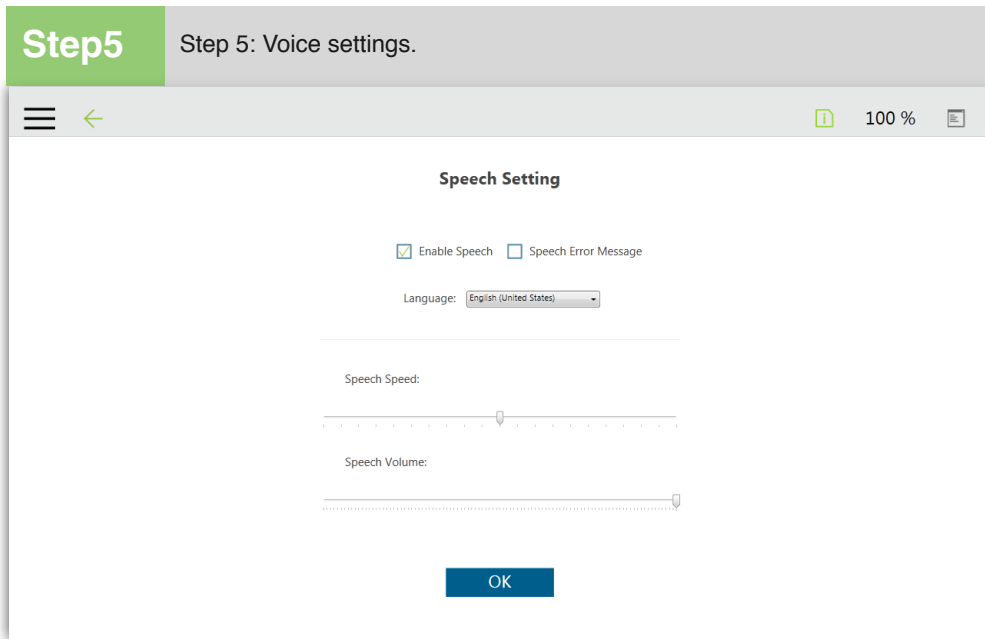
### 2.4.5 Initial Settings

When your device is connected to TM Robot for the first time, follow the wizard to finish the following settings:





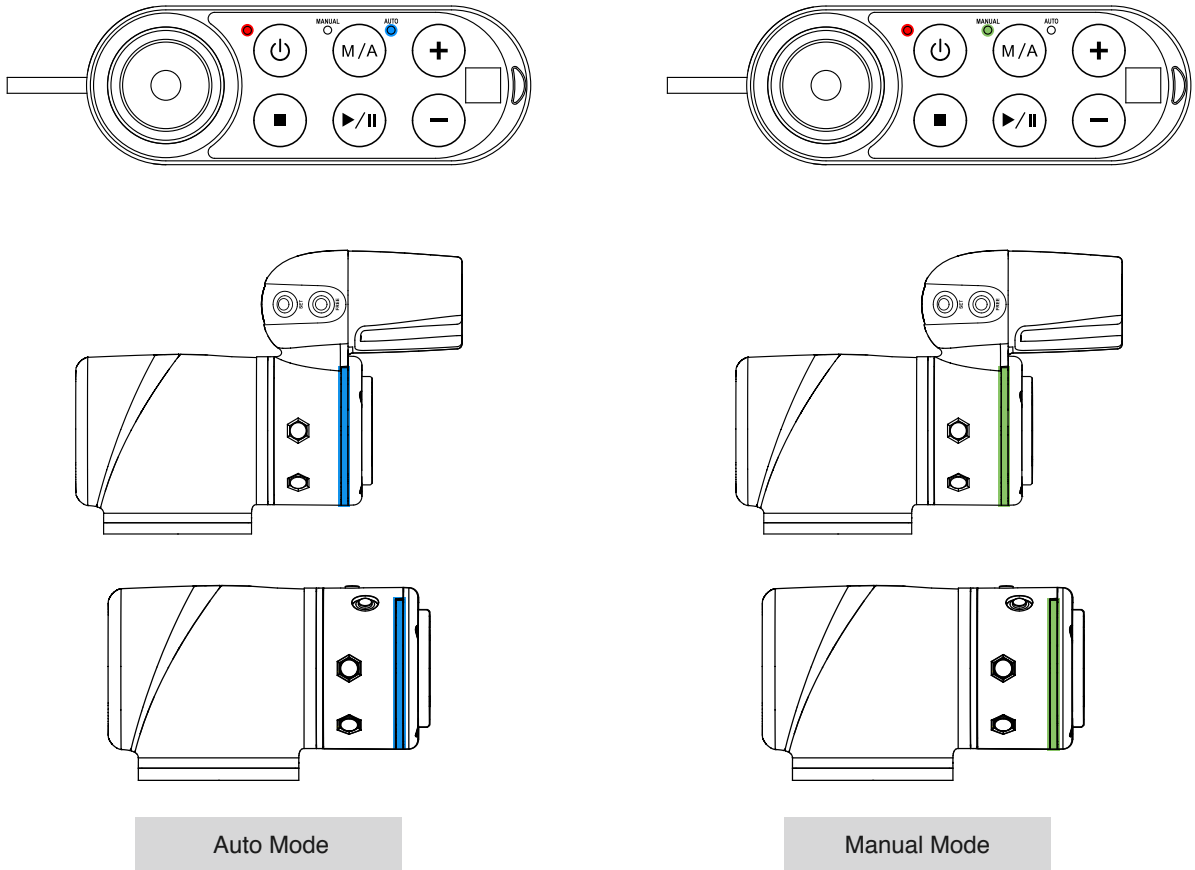




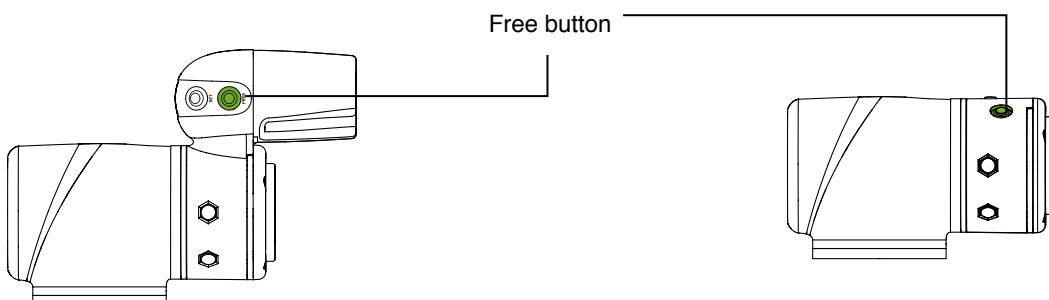
To change the settings later, go to Menu > Settings > Wizard.

## 2.5 M/A Mode and Hand Guide

When you want to switch from Auto Mode to Manual Mode, Press the Mode Switch Button on the robot stick to switch to Manual Mode, When the indicator of the Mode Switch Button is lit green and the indication light ring of the robot shows green, that is Manual Mode.



In Manual Mode, hold down the FREE button to guide the robot by hand. Guiding the robot by hand is only possible in Manual mode.



## 2.6 Create and Run Your First Project

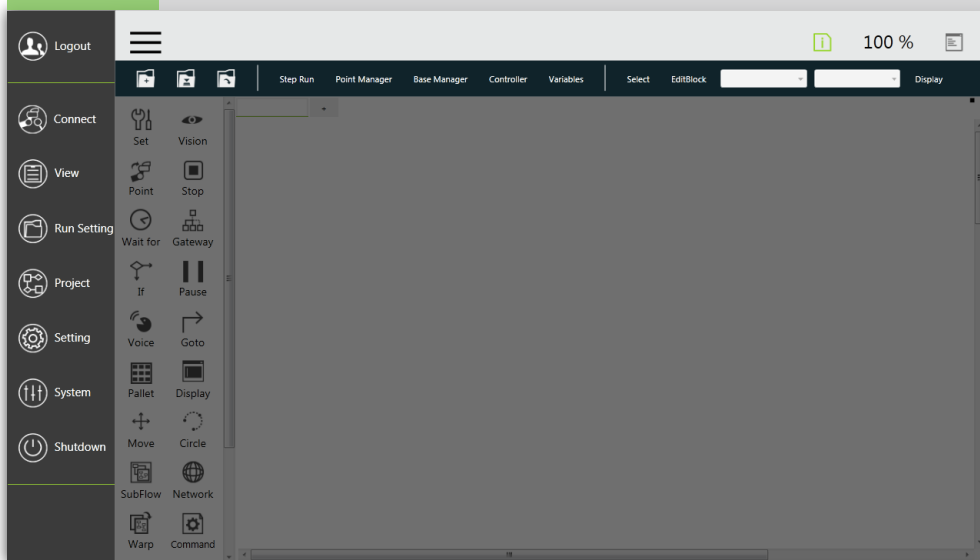
If it is your first time using Techman Robot, there will be no projects in your robot. You can create your first project based on the instructions of this section. However, you have to completely observe this section. The project objective is to move back and forth between 2 points (P1 and P2). The following shows the settings:

### Step1

Please check operating mode of the robot, if it is not the Manual Mode, please reference "2.5 M/A Mode and Hand Guide" to switch to Manual Mode.

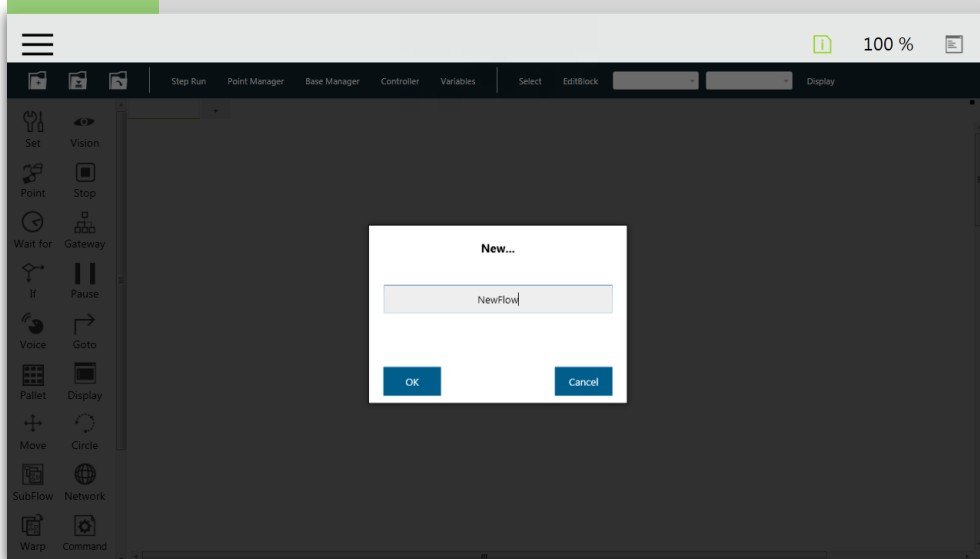
### Step2

Click Project in the menu and go to the project editing screen



### Step3

Select "Create a new project" and enter your project name

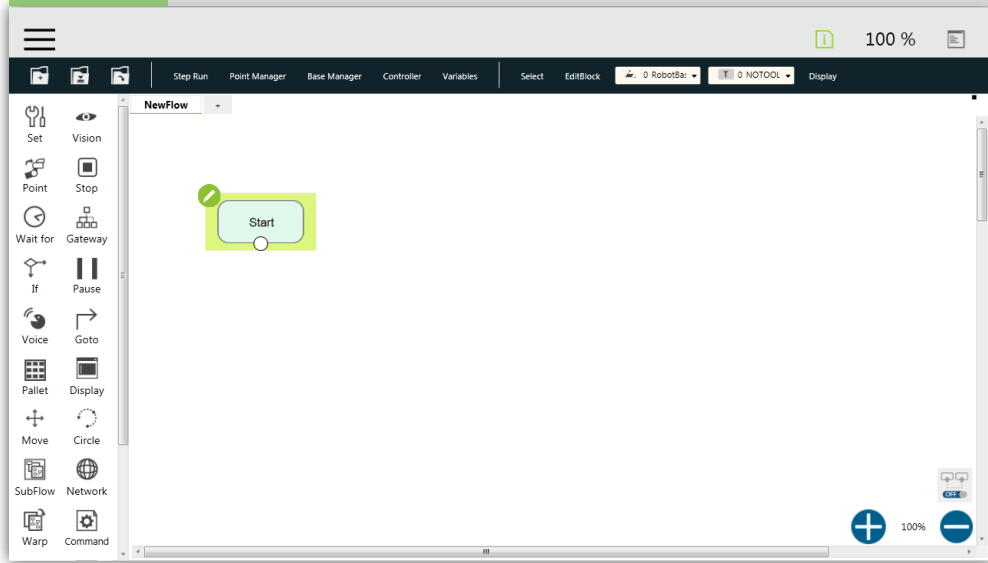


**Note**

The project name can only consist of the alphabet in upper/lower-case (A~Z), numbers (0~9) and underscore \_.

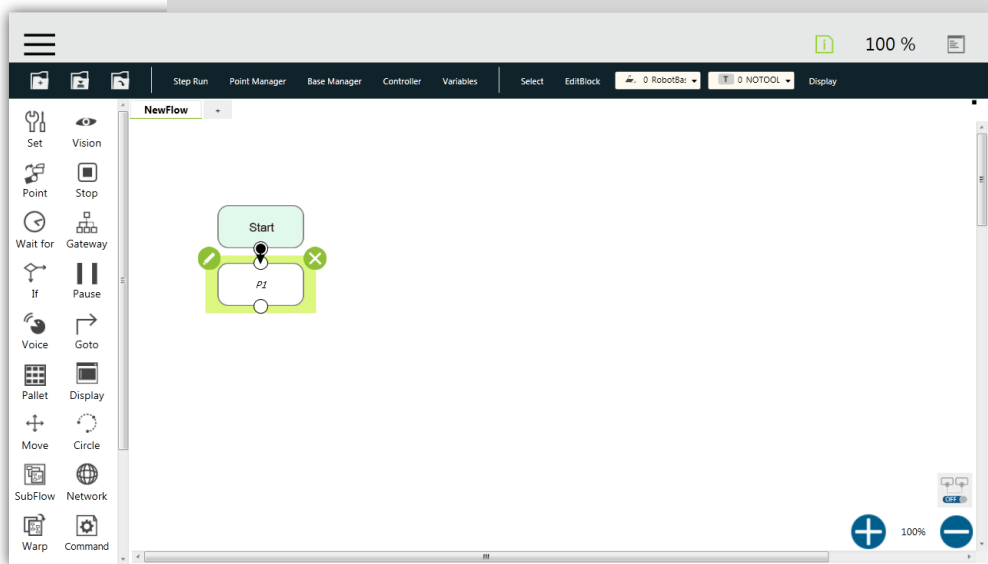
### Step4

After a project name is entered, it goes to the project editing screen



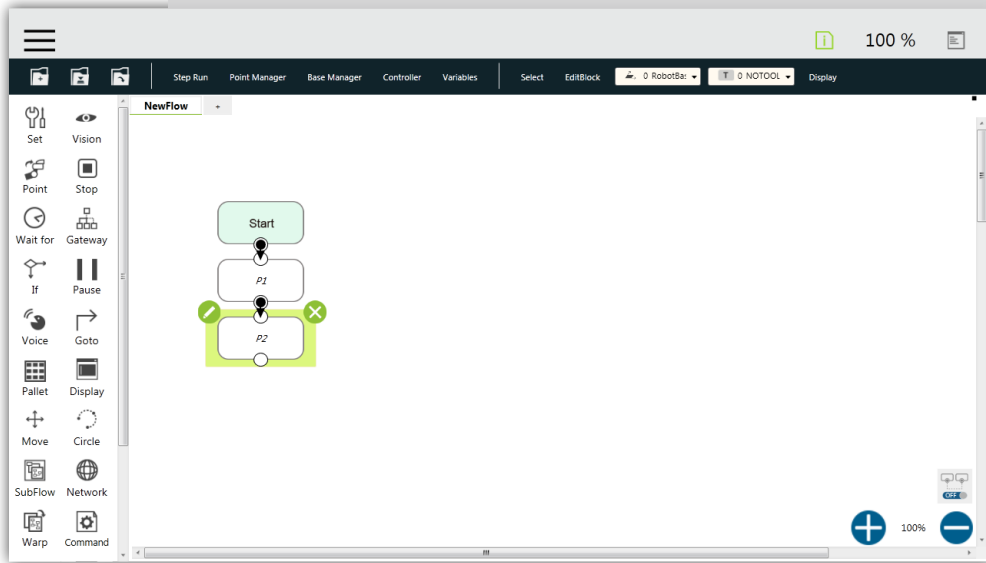
### Step5

Hold down the FREE button, guide the hand of the robot to any point, and press the POINT button. This point is now recorded by Project Flow. You can see that the robot automatically names this point P1 and adds it after the Start node. The P1 node is highlighted automatically at this time.



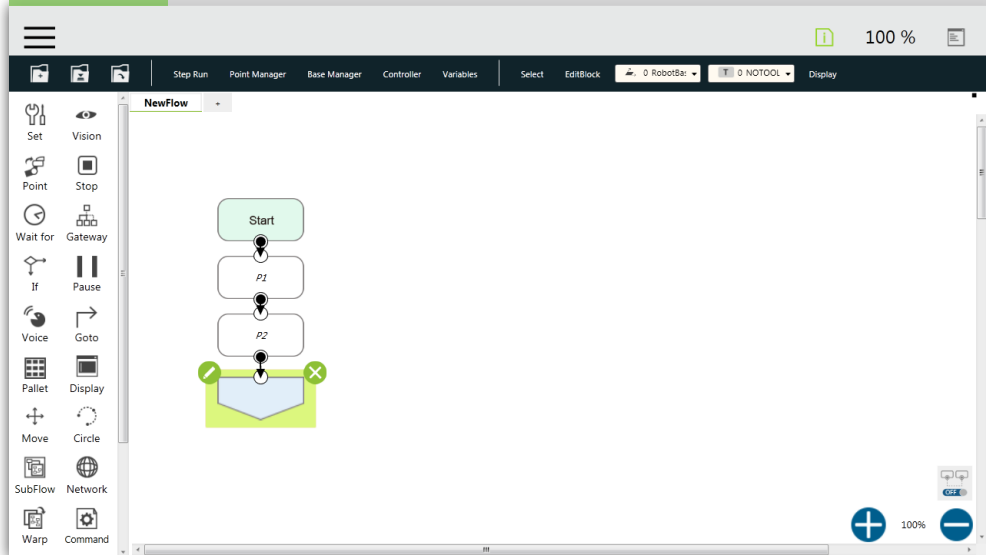
### Step6

Hold down the FREE button, guide the hand of the robot to another point, and press the POINT button to record this point as P2.



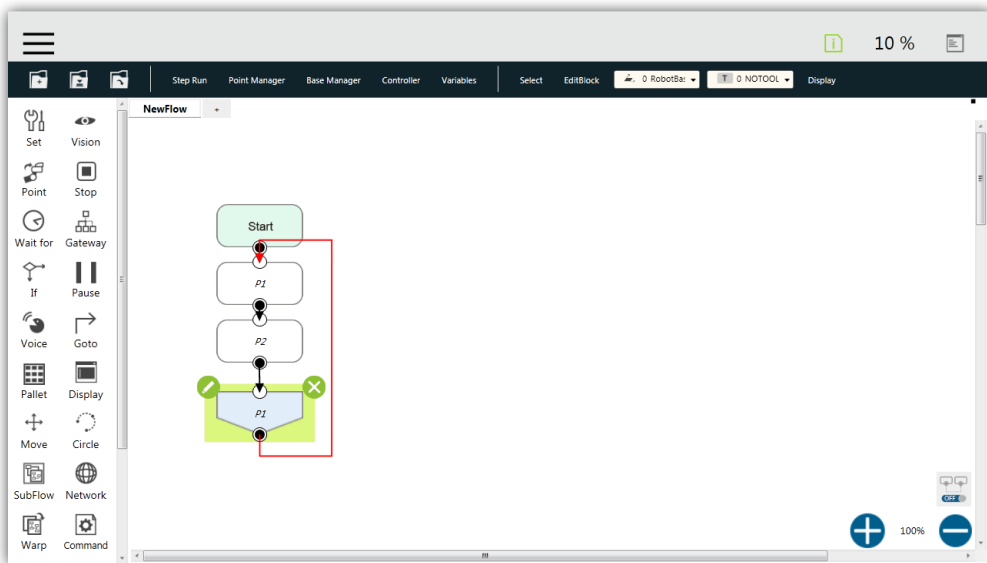
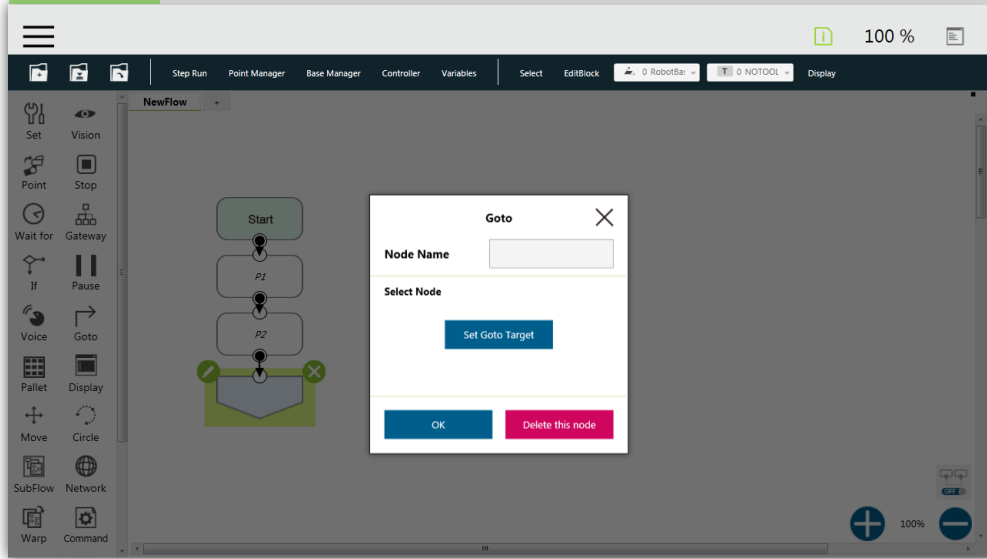
### Step7

Drag and drop the Goto node on the left to the flow chart.



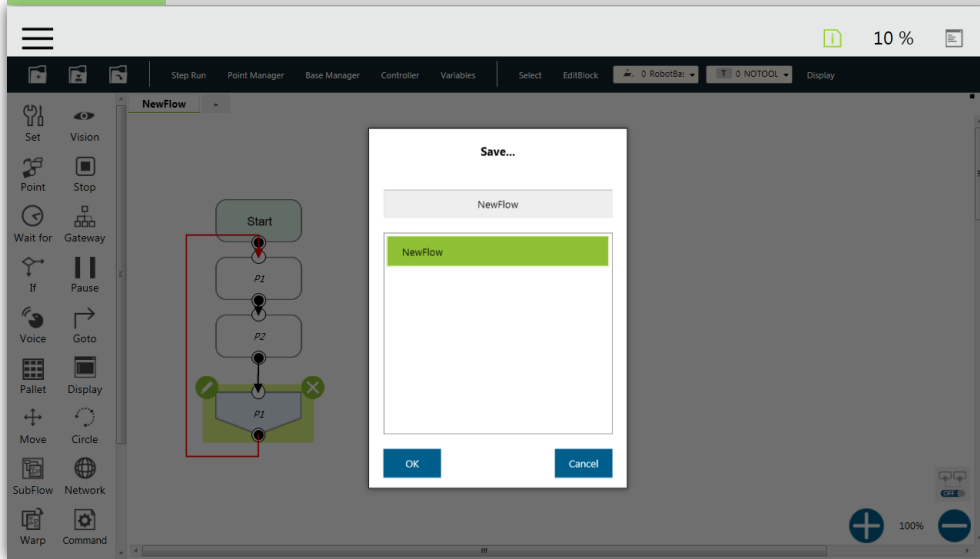
**Step8**

Set the target point of Goto. Select P1 at this point. Once confirmed, flow is now as follows:



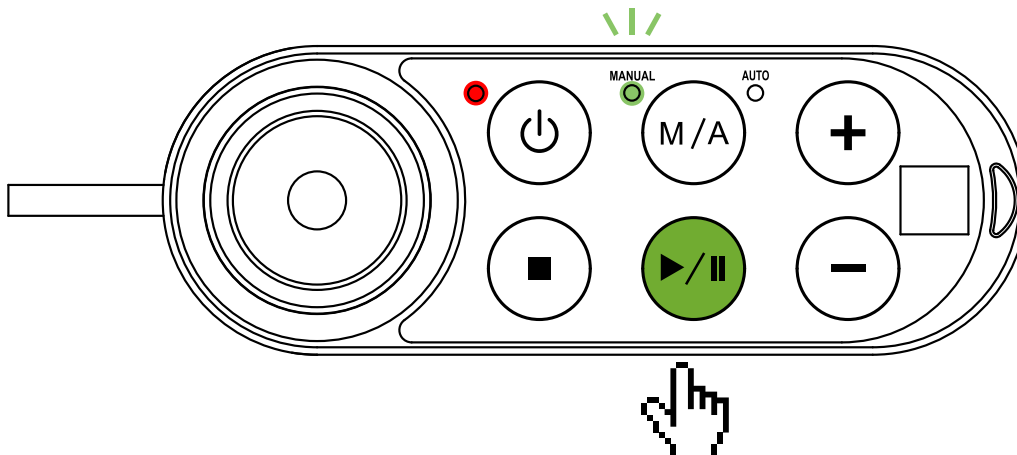
### Step 9

Click Save to finish editing the project.

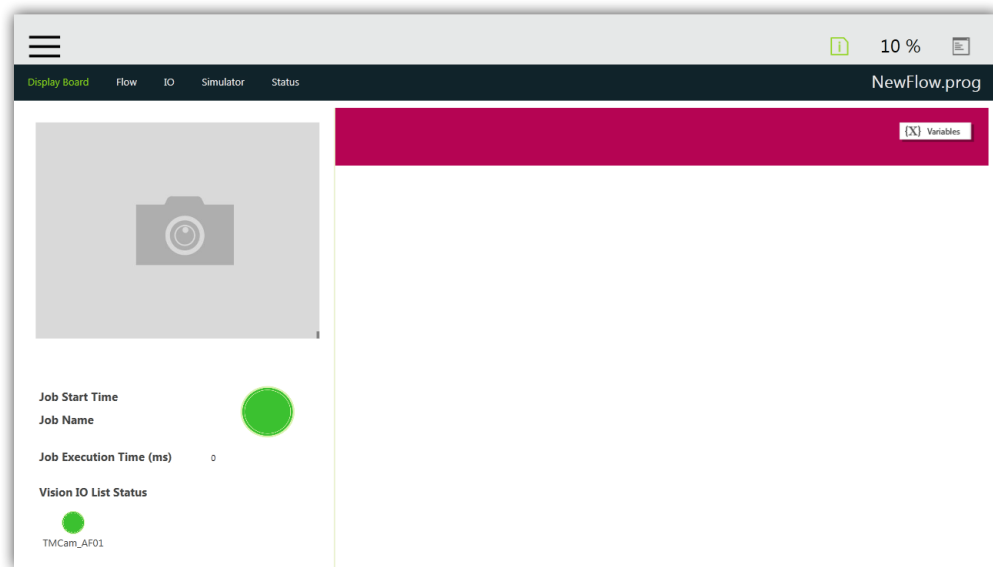


### Step 10

At the project editing page hold down the Play button on the Robot Stick to begin running the project. The status light will now flash green. Projects run in Manual Mode are considered a Trial Run. Project run speed will also be reduced to 10% for safety.



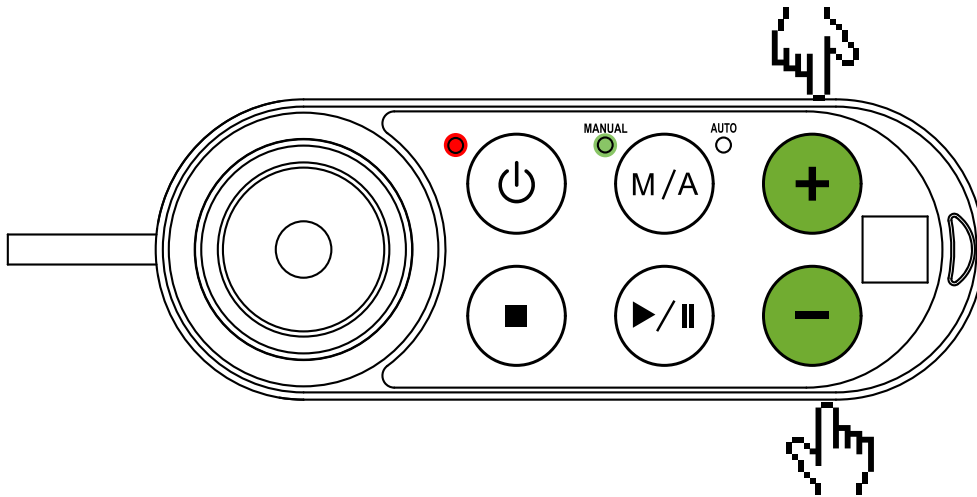




### Step11

Press the + button (increase run speed) / - button (decrease run speed) on the Robot Stick.

increase or decrease the project speed. This step is used to set the robot to an appropriate speed (the current project run speed is shown by the percentage value displayed in the top right of the HMI).

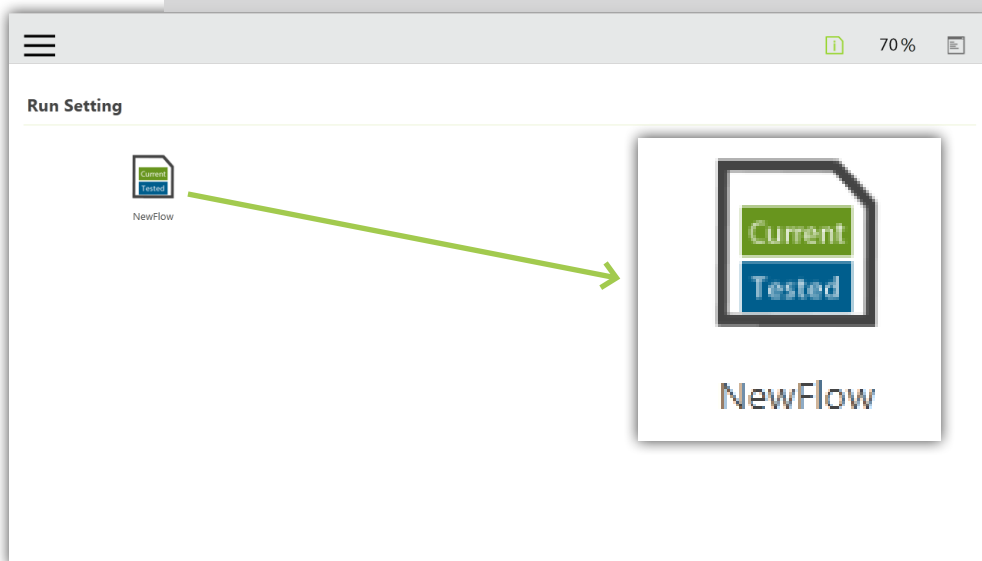


### Step12

After adjusting the speed of the project, press and hold down the M / A button until the robot stick indicator light changes to double flashing state, press the robot stick add / subtract buttons following "add subtract add add subtract" sequence for switching to Auto Mode and complete the trial run. The robot will take it as the running speed of project in auto mode. Please be noted that if you re-enter the manual mode for trial run, the project running speed will be forced back to 10%, you must re-operate this step to set the speed of project in auto mode.

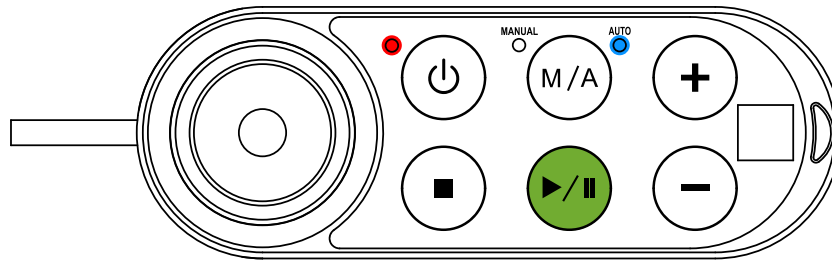
### Step13

When you press the Stop button on the robot stick, the speed is kept at 70%. The project will also be marked as "Tested."



**Step14**

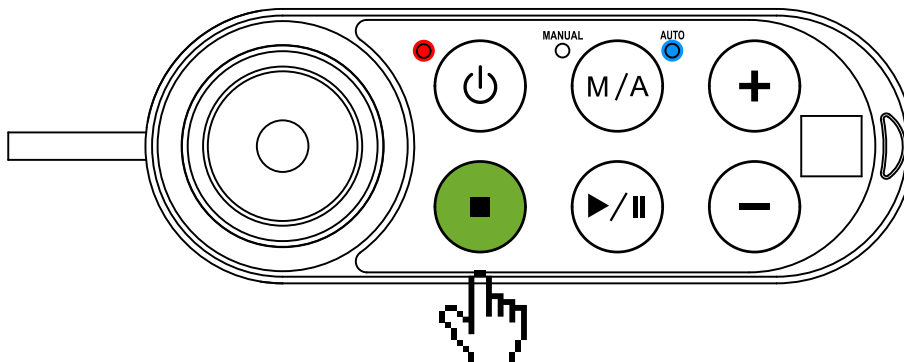
When you press the Play/Pause Button button again, the speed is still kept at 70% and cannot be changed.



Congratulations! You have successfully finished project editing and running.

**Step15**

Press the Stop button on the robot stick to stop the project.



Warning

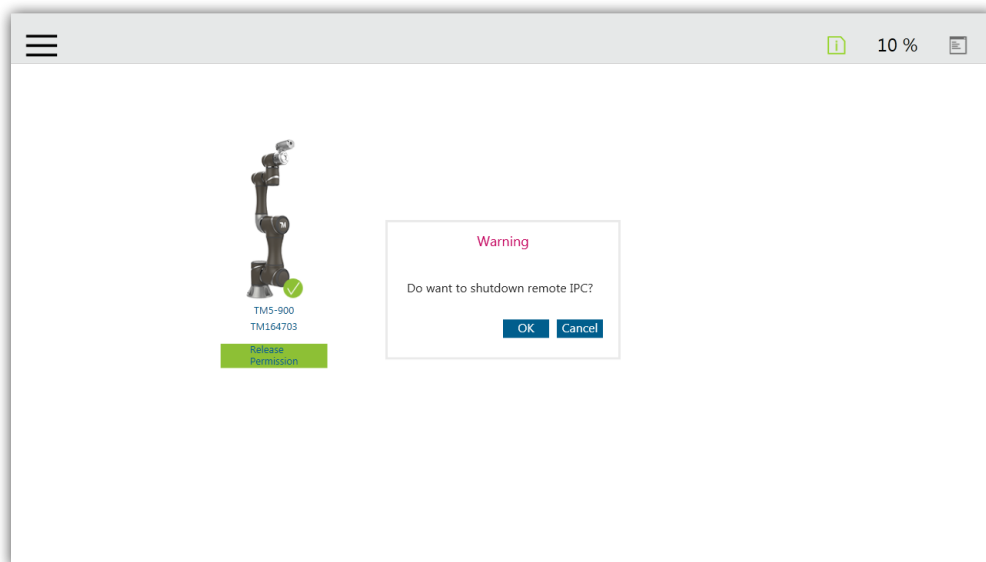
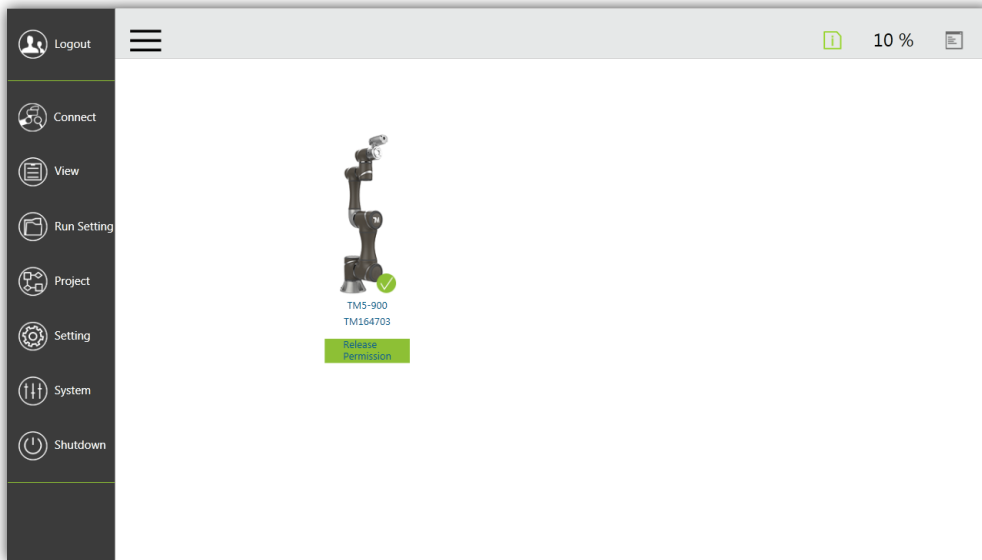
Trying to create and run your own project before proper training may result in injuries due to robot collision or unexpected motion.

## 2.7 Shutdown

There are two shutdown methods:

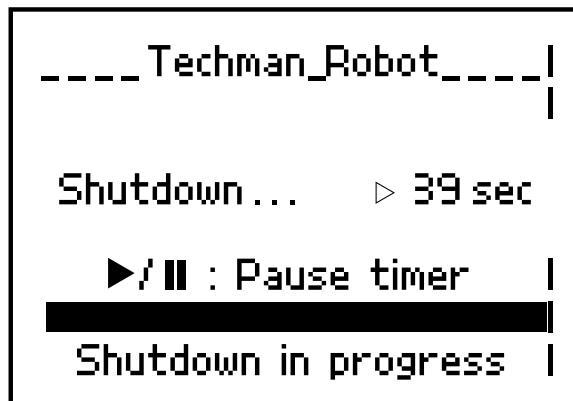
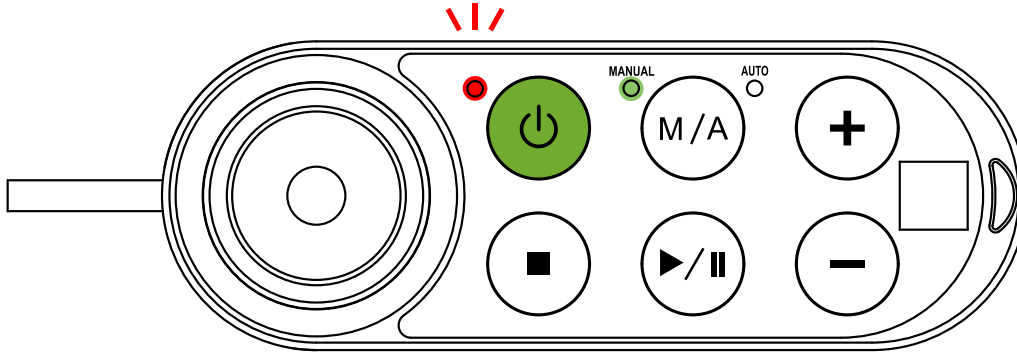
Method 1:

Press "Shutdown" in the bottom left corner of the HMI. The warning window "Do you want to shut down the remote arm?" will appear. Press "OK" to shutdown normally.



Method 2:

Press and hold the Power button on the robot stick. When you hear a "beeping" sound, release the button. The power indicator of the robot stick flashes red for shutdown.



**Danger**

Do not perform shutdown in the following ways:

1. Disconnecting the power plug directly
2. Disconnecting the power cable from the control box directly
3. Disconnecting the robot from the power supply directly

