SunFounder EzBlock Studio

www.sunfounder.com

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Thanks for choosing our EzBlock Studio.

Note: This document is available in the following languages.

- •
- •
- •
- •

Please click on the respective links to access the document in your preferred language.

EzBlock Studio is a development platform developed by SunFounder designed for beginners to lower the barriers to getting started with Raspberry Pi.

It has two programming languages: Graphical and Python, and available on almost all different types of devices.

With Bluetooth and Wi-Fi support, you can download code, remote control a Raspberry Pi, on EzBlock Studio.

This includes the quick start guide of EzBlock Studio and other basic operations. Later we will add the use of each page and the introduction of related block or python functions.

Please do not hesitate to point out any inconveniences or errors, and any suggestions are welcome.

Here is the Email: cs@sunfounder.com.

Quick Guide :

CHAPTER

QUICK USER GUIDE

The main optimization of EzBlock 3.2 is to switch the online service to offline mode, and add the import and export function of project files. At that time, the channel for new user registration will be closed, and registered users will be prompted after logging in to transfer the project offline. Online services will be closed after a period of time.

Note: The 3.2 update does not need to re-burn the image for the Raspberry Pi.

1.1 Install EzBlock OS

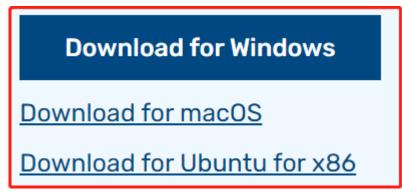
1. Download the Raspberry Pi OS with EzBlock Pre-installed image file here:

https://ezblock.cc/download/v31.html

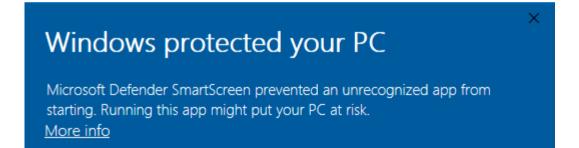
2. Unzip the package downloaded and you will see the \lim file inside.

Note: Do not extract the .img file.

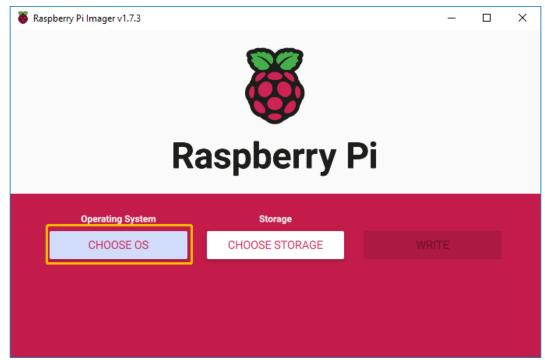
3. Downlaod the tool - **Raspberry Pi Imager** from https://www.raspberrypi.org/software/. Click on the link for the Raspberry Pi Imager that matches your operating system, when the download finishes, click it to launch the installer.



4. When you launch the installer, your operating system may try to block you from running it. For example, on Windows I receive the following message. If this pops up, click on **More info** and then **Run anyway**, then follow the instructions to install the Raspberry Pi Imager.



5. Insert your SD card into the computer or laptop SD card slot. Then open Raspberry Pi Imager and click CHOOSE OS.



6. Go to the bottom of the page and select Use Custom. In the pop-up window, select RaspiOS-xxx_EzBlockOS-xxx.img that you downloaded in Step 1, and click Open.

🕉 Raspberry Pi Imager v1.7.3				×
	Operating System		x	
<u>:</u>	Other specific-purpose OS Thin clients, digital signage and 3D printing operating systems		>	
<u>:</u>	Freemium and paid-for OS Freemium and paid-for operating systems		>	
Ľ	Misc utility images Bootloader EEPROM configuration, etc.		>	
亡	Erase Format card as FAT32			
ing	Use custom Select a custom .img from your computer			

7. Select the SD card you are using.

Raspberry Pi Ima	ger v1.7.3	- 0	×
	Storage	x	
Ŷ	Generic STORAGE DEVICE USB Device - 7.9 GB Mounted as G:\		
-			

8. Press **Ctrl+Shift+X** or click **settings** icon to open the **Advanced options** page to set hostname, enable SSH and set username and password. You can choose to always use this image customization options.

Note: The hostname is set so that when you *How to use EzBlock in a Browser*, you can use the hostname to connect to your product. You can also leave it unset.

🍯 Raspberry Pi Imager v1.7.3	-	×
Advanced options	x	
Image customization options for this session only -		
Set hostname: raspberrypilocal	н	
Enable SSH		
 Use password authentication 		
O Allow public-key authentication only	11	
Set authorized_keys for 'pi': hLO= 1035791926@qq.com		
Set username and password		
Username: pi		
Password:		

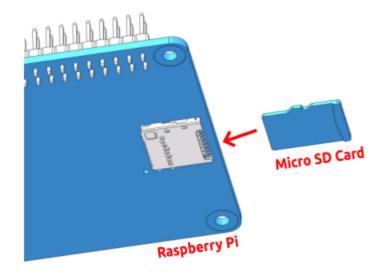
9. Then scroll down to complete the wifi configuration and click **SAVE**.

Note: wifi country should be set the two-letter ISO/IEC alpha2 code for the country in which you are using your Raspberry Pi.

This step is optional, if you do not configure WIFI in this step, you can also use the app to configure it directly later.

ă	Raspberry Pi Imager v	1.7.3			-	
			Advanced options		x	
		Configure wireless L	AN			
		SSID:	MakerStarsHall	_		
		✓ Hidden SSID				
		Password:	•••••	_		
		Show passwo	rd			
		Wireless LAN country	: GB 👻		1	
		Set locale settings				
		Time zone: A	sia/Shanghai 👻			
		Keyboard layout: US	š ▼			
	Per	sistent settings				
			00/5			
			SAVE			
	e WRITE button.					×
	Raspberry Primager	1.5				^
			×			
		Ka	spberry Pi			
	Op	erating System	SD Card	[
	100700	eev PLOS (32-B/T)	MASS STORAGE D	WRITE		

11. After waiting for a while, you will be prompted to tell you that the image has been written to your Micro SD card and you can remove it. Then you can insert it into the Raspberry Pi.

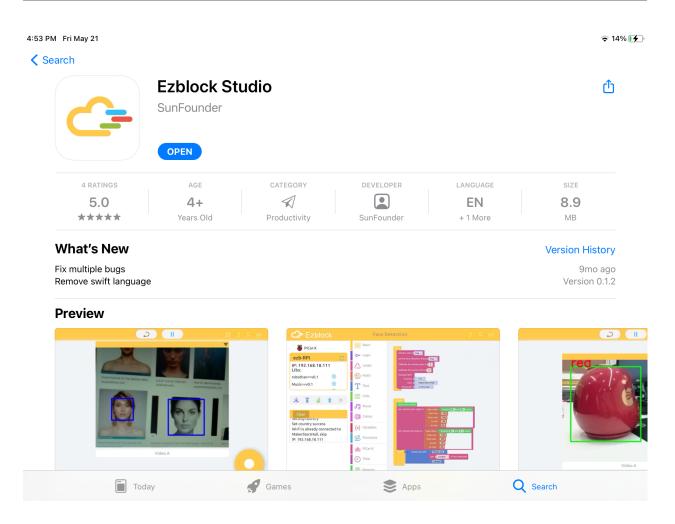


1.2 Install EzBlock Studio

EzBlock Studio is an App for programming and controlling SunFounder Raspberry Pi robots, which allows beginners (students) to quickly get started with Raspberry Pi robot programming. It has built-in TTS, camera recognition, remote control, music/sound effects, and sensor control functions.

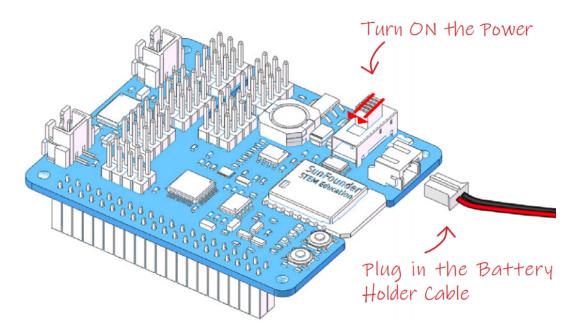
Open App Store (iOS) or Play Store (Android), then search and download EzBlock Studio.

Linux/Mac OS X system/Windows users can use EzBlock Studio in a browser, see *How to use EzBlock in a Browser* for more details.

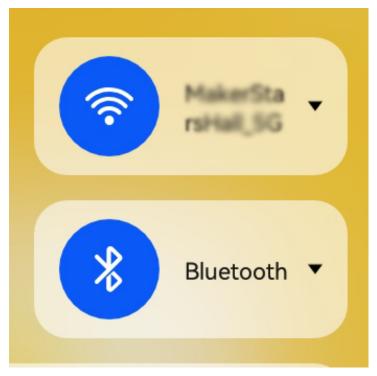


1.3 Connect the Product and EzBlock

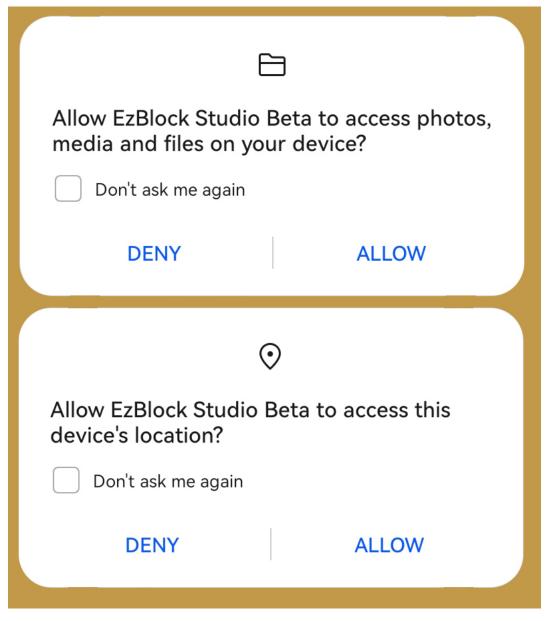
1. Toggle the power switch of the Robot HAT to the ON position. After a while, you will hear a power-on sound, which means the Raspberry Pi has been successfully started.



2. Connect your mobile device (phone/tablet) to WiFi and turn on Bluetooth.



- 3. Now open the APP-EzBlock Studio, you will be prompted to allow EzBlock Studio access to the following 2 permissions.
 - Access photos, media and files on your device: If you are logged in and need to change your avatar, the APP needs access to your device's photos; when you use the product's photo feature, the APP needs this permission to save the photos.
 - Access your device's location: This permission must be selected as **Allow**, otherwise APP will not be able to connect to the product via Bluetooth.



4. Click the Connect icon in the upper left corner.

(∉EzBlock Studio	8
	Examples	Ry Projects	New Project

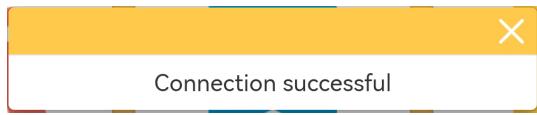
5. On the pop-up page, click Connect.

			\times
	E	🚫 Offline Mode	
e e e e e e e e e e e e e e e e e e e		Product: Change Product	
		Connect	
	a state		

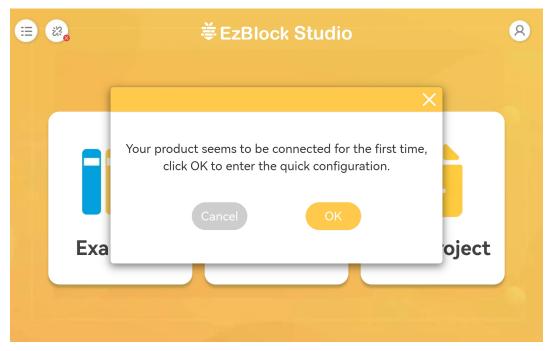
6. Now enter the Bluetooth connection page, it will automatically search for the corresponding Bluetooth, usually the product name is ezb-Raspberry, but the MAC address is different for different products. If you have more than one product, you can identify it by MAC address. Also this Bluetooth name can be changed in the next steps.

Bluetooth Search Results	×
ezb-Raspberry B8:27:EB:66:8A:9E	

7. When the connection is successful, your product will make a "ding dong" sound and the app will prompt that the connection is successful.



8. If this is your first time using this product, you will be prompted for a quick configuration of it.



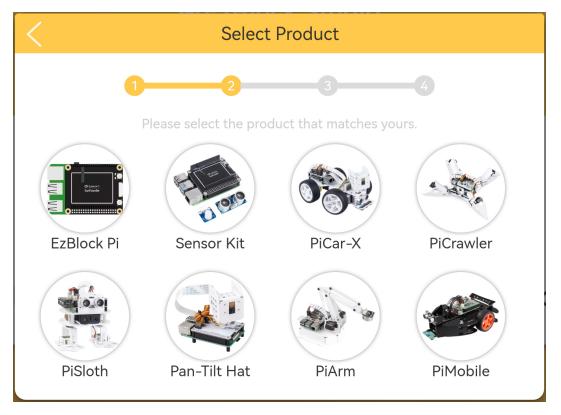
9. Enter your Wi-Fi account and password.

Note:

- If you have already configured Wi-Fi on the **Raspberry Pi Imager**, then this step will not appear and you will go directly to the next step.
- This step is to configure WiFi for the Raspberry Pi, which needs to be the same WiFi network as your mobile device (phone/tablet).

Quick Configuration				
0				
Please enter	the Wi-Fi that your device is connected to.			
Country:				
Network Name:	Please enter the letters of the alphabet in			
Password:				
	Connect			

10. Select the matching product.



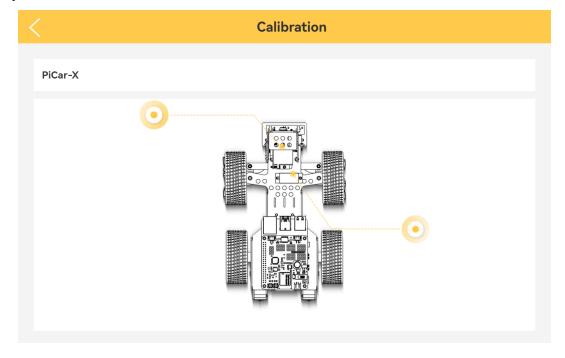
11. Give your product a unique name, which will be your Bluetooth name (takes effect after restarting the product and app) and can also be used as hostname when you use EzBlock on a browser, see *How to use EzBlock in a Browser* for more details.



12. If your product needs to be calibrated, there will be a prompt telling you that you can enter the calibration page by clicking **Calibration Now**. If it is not needed, the pop-up window disappears and returns to the home page.

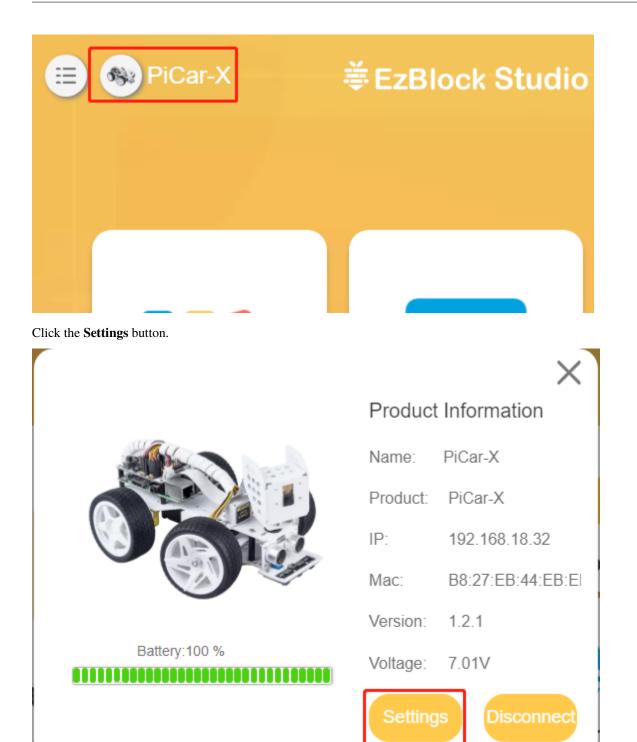


13. The calibration page of each product is different, but there is a reminder which part needs to be calibrated. You can click the corresponding part, and then refer to the **Calibration Help** to calibrate. After the calibration is completed, click **Comfirm**.



Note: If you want to recalibrate the robot during use, please follow the steps below.

You can open the product detail page by clicking the connect icon in the upper left corner.



On this page, you can change the product name, product type, view the app version or calibrate the robot. Once you click on **Calibrate** you can go to the calibration page.

	Product Information	n ×
	Settings	×
Edit Name PiCar-X Change Product P Check for Updates Calibrate		-1
	Settings Discor	nnect

1.4 Open and Run Examples

1. On the homepage, click **Examples** to enter the Examples page. If you just need to simply test these examples, you only need to click **Run** to make your product work.

PiCar-X exan	nples			Block	Python	
6	Move			Remote Contro	\mathfrak{E}	
0	Here, we let it perfor of "forward", "backw "turn right", and "sto	rm the five actions vard", "turn left", op" in order. More		Let us control the PiCar-X with a table M		
8	Run	Edit		Run	Edit	
	Ultrasonic_sensor_test			Grayscale_sensor_test		
Distance: 2cm	Here we use Ultraso the distance (unit: c		[900 200 900]	Here we use Graysca the grayscale value.	ale module to read More	
	Run	Edit		Run	Edit	
Code : red	Color Detection			Human Face De	tection 😥	
	PiCar-X is a camera Robot used to detect a specific color or face numbers, the position and size of the captured… More			In addition to color also provides face d	detection, PiCar-X etection. More	
	Run	Fdit		Run	Edit	

2. If you want to view and modify the code inside, then you need to click **Edit**. The following picture is the programming page.

< 🐵	MovelName	? ≣
E	Start	
Logic		
Remote Controloops	Forever forward at 50 % speed	
↔ Math T Text	delay 1000 backward at 50 % speed	
Lists	delay 1000 forward at 50 % speed Programming Area	
Music	turn steering angle to 4 -30 delay 1000 forward at 50 % speed	
{X} Variables	turn steering angle to 30	
s Functions	turn steering angle to	
PiCar-X	delay 2000	
Henrich Modules	lock Categories	
Debug Monitor		& Run 🕖

1.5 Import or Export Projects or Libraries

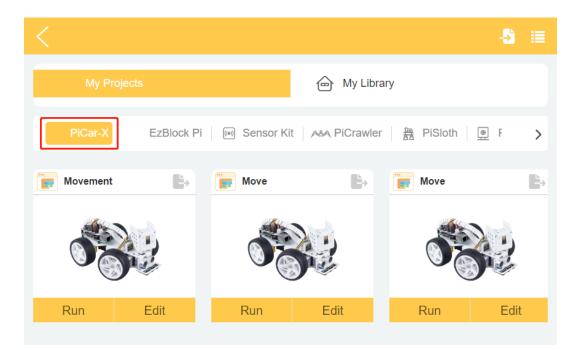
Since it is now offline mode, you must know how to export and import the project to transfer it to other devices or share it through APPs.

1.5.1 Export Projects/Libraries

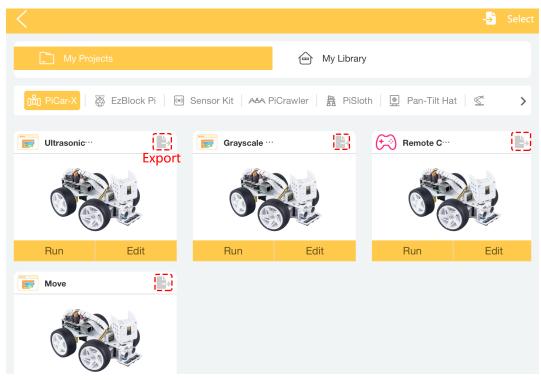
1. When you have created new projects and selected Save, you will see them in My Projects.

=	≡ 🧠 ĕ EzBlock Studio			
	Examples	Ry Projects	New Project	
	Litamples	wy Frojects	Import Project	

2. Your saved projects are sorted by product on the My Projects page, and you need to view them according to your product type.



3. In the top right corner of each project there is an export icon that allows you to export them individually.



4. After clicking on it, a pop-up window will appear and you can choose to share the exported project file (.ezbpro) through different APPs. Or choose **Save to Files** to export the project to your device.

🛗 PiCar-X 🛛 员 EzBloc	k Pi	ا ان مع من ا	Pan-Tilt Hat	< ک
Ultrasonic…	b *	Œ	Remote C…	₽
02	AirDrop Messages Mail	DingTalk	02	
	Сору	ß		
Run Ed	t Save to Files		Run	Edit
Move	SAVE TO ES File Explorer	(j)		
	Edit Actions			

5. If you want to export multiple items at once, you can click the **Select** option.

				- <mark>→</mark> Se	lect
	💮 My Libra	ary			
Sensor Kit 🛛 🗚 P	iCrawler 日 <u>器</u> PiS	iloth 🛛 🧕	Pan-Tilt Hat	<u>S</u>	>
Grayscale ···	Ē,	(J .)	Remote C…		¢,
Run	Edit		Run	Edit	

6. Now select the projects you want to export, or use the Select All button.

<	Export 💽 🔀 🗂 Delete Select All
My Projects	🗁 My Library
🋍 PiCar-X 🎆 EzBlock Pi	🕪 Sensor Kit 🛛 🙈 PiCrawler 🛛 語 PiSloth 🛛 🧕 Pan-Tilt Hat 🛛 🗲 🔹 🗲
Ultrasonic	Grayscale ··· S Remote C···
Terror Move	

7. Once you've made your selection, click the **Export** icon to share the package (.zip) with different APPs, or select **Save to Files** to export them to your device.

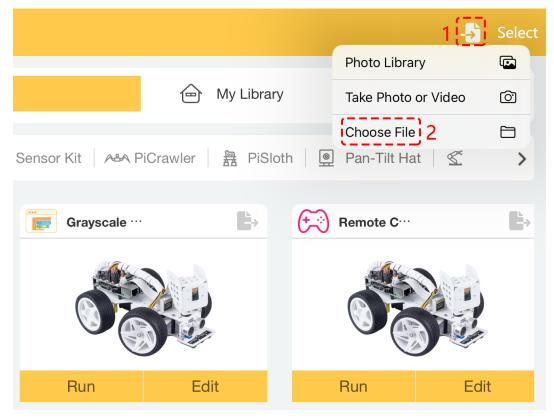
PiCar-X 🛛 🎆 EzBlock Pi 🗍 🖗	Zip PiCarMini Zip Zir Archive - 9 KB	🖻 ກາວ "າ 📄 Pan-Tilt Hat 🖉
Ultrasonic····	·	, 💬 Remote C…
	AirDrop Messages Mail	DingTalk
	Сору	
Move	Save to Files	
	SAVE TO ES File Explorer	
	Edit Actions	

8. Library exports are done in the same way, but are exported individually in .ezblib format and in multiple files in .zip format.

1.5.2 Import Projects/Libraries

Now let's learn how to import projects or libraries into EzBlock Studio.

1. Open the **My Projects** page, click the **Import** icon and select **Choose File**. The **Import Project** button on the home page is the same function.



2. In EzBlock Studio, you can only import .ezbpro, .ezblib and batch exported .zip format files from EzBlock Studio. Other files cannot be imported.

<	Browse	On My i	Pad		Cancel	-
My Pro	Q Search					
哈 PiCar-X	Excel	zip PiCarMini.zip	QQ	SpiderFor	Pi	: £
Move	2 items	Today, 10:22 12 KB	7 items	5 items		
Run	Today, 10:19 18 KB	2022/11/10, 15:55 2 KB				Ed

3. If the project or library you are importing has the same contents as the project in EzBlock Studio, there will be a pop-up window reminding you to **Keep both**, **Skip** or **Replace**.

<		-\$
My Projects	🙆 My Library	
🏦 PiCar-X 🛛 🖉 F	Imported libraries/projects conflict with local ones.	≺ilt Hat 🛛 🖉
Ultrasonic…	Name: Ultrasonic Sensor Test Date: 2022/12/08 Length: 1424 Local Name: Ultrasonic Sensor Test Date: 2022/12/08 Length: 1424 Langth: 1424	с
Run	 Apply to all duplicate projects/libraries 	Ed
Move	Keep Both Skip Replace	

4. Then they will be imported into different product categories depending on your files.

How to ... :

CHAPTER

TWO

HOW TO SAVE PROJECTS OR LIBRARIES(FOR OLD USERS)

EzBlock Studio will switch to offline mode starting with version 3.2, which means new users no longer need to register an account to save and transfer projects.

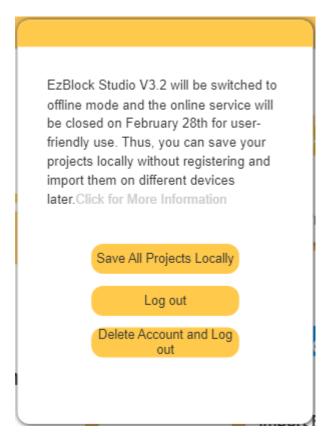
If you are an old user, you can still login to your account until February 28, 2023. However, it is recommended that you download the projects and libraries inside your account as soon as possible. Otherwise, all data cannot be retrieved.

Now let's see how to save the projects or libraries.

1. Click on the icon in the top right corner to login to your account.



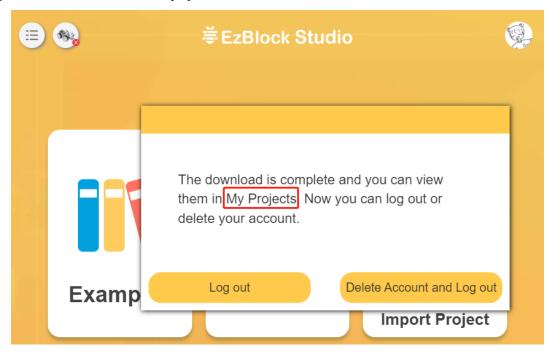
2. When you log into your account, you will see a pop-up prompt.



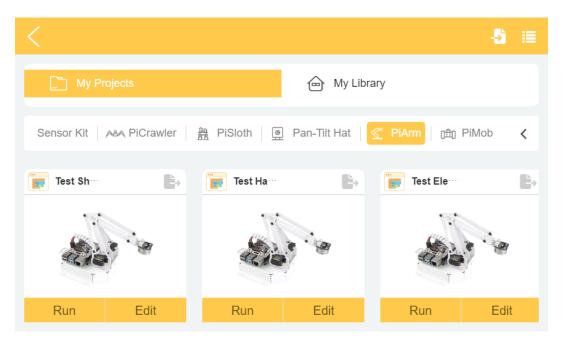
- If you want to save your project locally, please click Save All Project Locally, it will take you a minute, and then you will be able to access your project directly without logging in.
- Click Log out if you do not want to transfer items saved to the online service at this time. You can still transfer your items the next time you log in.
- If you no longer need the items saved to the online service, you can click Delete Account and Log out.
- 3. After clicking **Save All Porjects Locally**, you will see that it will detect all the projects and libraries in your account and download them all. The download here is not to a folder in your device, but to the **My Projects** page of the app.

	ë EzBlock Studio		
Geting the lis	t of projects: 3/10	∍ct	
Examples	My Projects	CC Import Project	

4. Once the download is complete, you will be prompted to go to the **My Projects** page to view the downloaded items. At this point, you can delete your account and logout, or if you are not very confident, you can just click Logout, and check the downloaded projects first.



5. Now come to the **My Projects** page to see the downloaded projects. If you have multiple products, you can go to different product pages to view the projects.



6. At this point if you want to export your project to your mobile device or share it through other APP, you can refer to *Import or Export Projects or Libraries*.

CHAPTER

THREE

HOW TO USE EZBLOCK IN A BROWSER

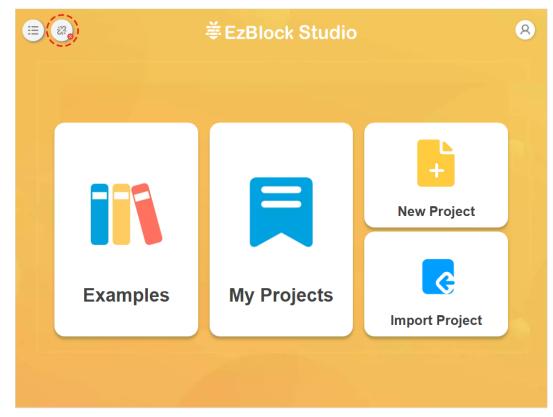
In addition to using EzBlock Studio on a mobile device, you can also use it in a browser.

The steps are as follows:

- 1. First, you need to *Install EzBlock OS*. During this time you can set a hostname to connect to your Raspberry Pi in the browser.
- 2. Open the browser and enter the following URL. Google Chrome is recommended.

http://ezblock.cc/ezblock-studio

3. Then click the **connect** icon in the upper left corner.



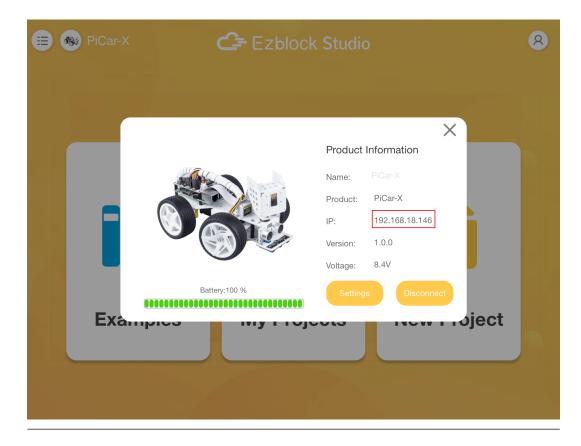
4. And click Connect.

×
 Offline Mode Product: PiCar-X Change Product Connect

5. Enter the IP/Hostname, or enter the name you have given to the product.

Connect to Your Product	
192.168.18.146	
Confirm	

Note: If you have already connected your product on your mobile device, you can click the product icon in the upper left corner to get the IP.



6. When prompted that the connection is successful, you can run the examples or create your own porjects.

CHAPTER

FOUR

HOW TO CREATE A NEW PROJECT?

- <image><image>
- 1. Click **New Project** on the homepage.

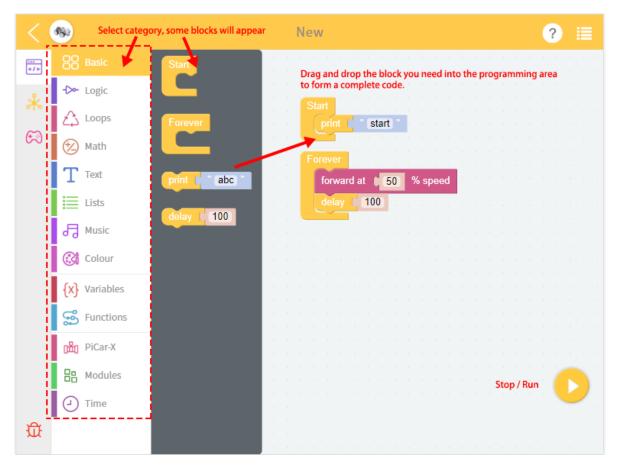
2. Enter the project name, select the programming mode (for novices, Block is recommended), and Confirm.

New project	×
Project Name:	
Block Python	
Confirm	

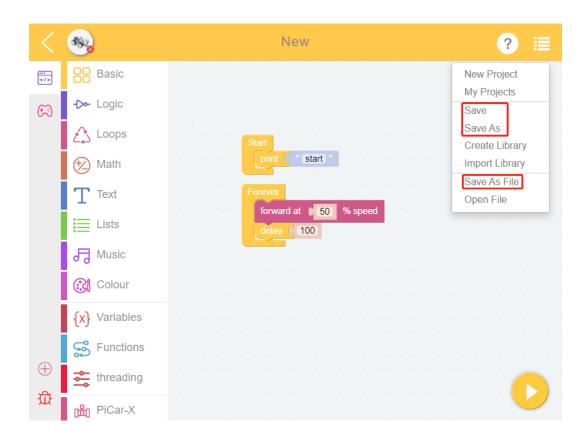
3. Now we get to the programming page.

	1 32	New	? ≣
 >	Basic		
÷	-D⊶ Logic	Start	
*	🛆 Loops	. 🖵	
3	😥 Math	Forever	
	T Text		
	Lists		
	Husic		
	🕃 Colour		
	{X} Variables		
	S Functions		
	PiCar-X		
	He Modules		
	Time		
ŵ			

4. Drag and drop **block** to program. Then click the icon at the bottom right to run.



- 5. After you're done programming, you can simply exit and click Save. For more options, click the menu in the upper right corner.
 - Save: Saves the current project to the My Projects page.
 - Save As: Saves this project to My Projects with a new name.
 - Save As File: Save to the device's folder. The project (.ezbpro) is downloaded to your computer if you are using Web access to EzBlock Studio. With a mobile device, you can save the project (.ezbpro) to the device folder or share it with the app.

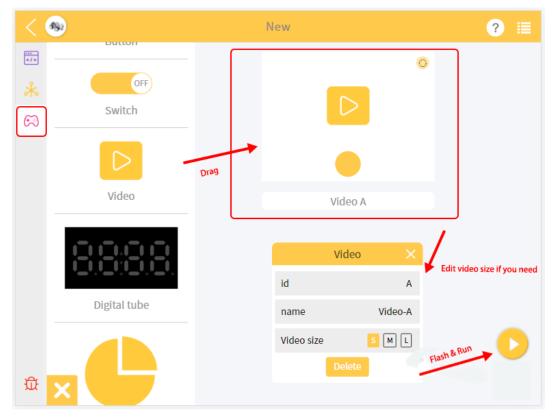


HOW TO USE THE VIDEO FUNCTION?

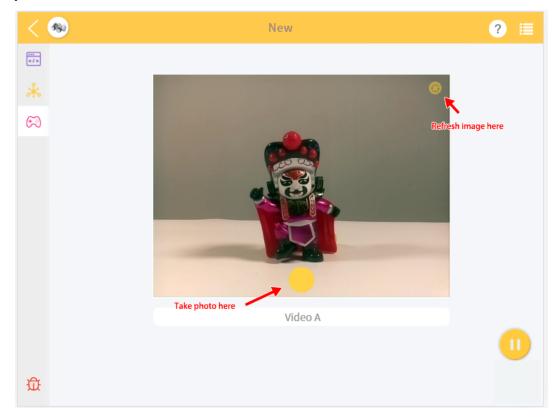
1. Drag the **camera monitor on** block to **Start**.

	1	New	?	
*** 	Basic	stop		
*	-⊅- Logic	Camera		
~~~~	🛆 Loops	camera monitor for Ton Drag Feamera monitor on to Estanty		
e?	😥 Math	Start		
	T Text	color detection Close		
	E Lists	face detection on v		
	Husic	Forever		
	🕃 Colour	gesture detection tion		
	{X} Variables	gesture calibration for T		
	Section Functions			
	மீற PiCar-X	turn traffic sign detection		
	Band Moln Robot cate			
	<ul> <li>Time</li> </ul>	QR code scanner of on v		
£	Remote	QR code decoding result		

2. In Remote Control Page , drag the Video widget and run the project.



3. Now you can see the video.



# HOW TO USE THE REMOTE CONTROL FUNCTION?

1. Enter the **Remote Control Page**.

	<b>1</b>	New	? ≣
••• >	Basic		
*	<b>-≫-</b> Logic	Start	
	🛆 Loops	a da <mark>la Car</mark> te de la centra de la	
60	Math		
1	Text	Forever a second s	
	🗮 Lise		
	Husic Er	ter the remote control interface from here	
	🕃 Colour		
	{X} Variables		
	Section Functions		
	PiCar-X		
	B Modules		
	<ul> <li>Time</li> </ul>		a a 🥑 a
ŵ			

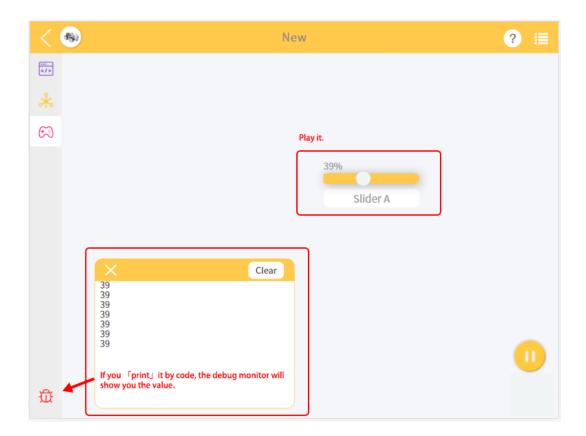
2. Drag the **widget** you want, the configuration will also pop up.



3. Go back to Programming Page, you can see the new block appears. Complete your code please.

	<b>19</b> 2		N	ew		?	
*** 	Basic	Slider 🗛 🕶 g	et value				
*	-D⊶ Logic				Drag the block into the code		
	🛆 Loops			Start			
R	Math						
	T Text			Forev	er i i i i i i i i i i		
	Lists			rii	nt 🕻 Slider 🗛 🔽 get value		
	Husic						
	🚷 Colour						
	{X} Variables						
	Sunctions						
	மீ PiCar-X						
	B Modules				Flash & Run the code after comp	letion 🧹	
	J Time				· · · · · · · ·	<b>→</b> (	
₩	Remote	The new category 「	Remotej app	ears			

4. After you run the code, go back to the **Remote Control Page**, play it.



CHAPTER

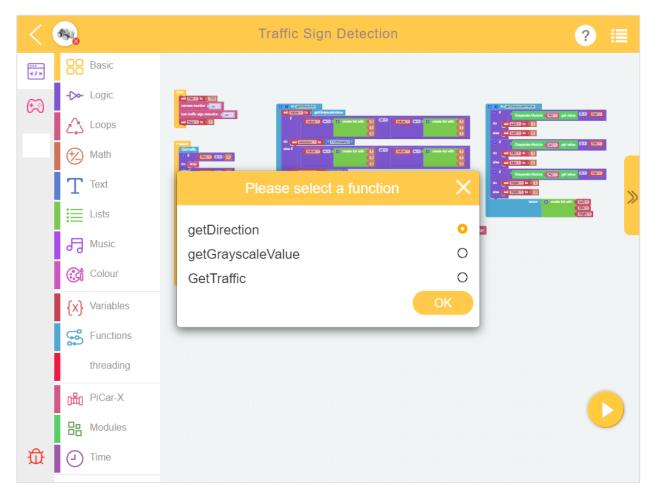
## **SEVEN**

# HOW TO USE LIBRARY FUNCTION?

When you need to reuse the same code in multiple projects, you can use the library function in the menu.

<	<b>*</b>	Traffic Sign Detection	? 🔳
··· >	Basic	C O to GetTraffic set Traffic to b type i of detected traffic sign	New Project
	-De Logic	print 🖡 Traffic 🔹	My Projects
( <del>L</del> ev)	Logic	C if Traffic = • • stop • do set (Key • to   0	Save
	🛆 Loops	else if ( Traffic T = ) ( forward *	Save As
		do set Key to	Create Library
	😥 Math		Import Library
	T Text	Start set Ref to 0 700	Save As File
	-	camera monitor t on v	Open File
	Lists	tum traffic sign detecton tion v set Values to tion v set Values to tion v set Keym to ti	Orv (value v) = v ( 😧 create list with
	🕞 Music	Torever do set Girection To C FORWARD	
		Gettrattic	or • ( value • ) =• ( 😧 create list with
	ᢗ Colour	C II Keys == 0 c stop 0	
	62.000		
	X Variables	do set Status 1 o getDirection else if value 2 = 0 create list with 0	Or 🔨 🛛 📢 🖘 🖙 🖓 😋 create list with
	S Functions	do turn steering angle to t O	

After writing the function, click create library in the Menu and select the function you want.



Fill in a description for your library.

< (	<u>*</u>		Traffic Sign Detection	? ≣
··· >	Basic			
*	-D- Logic	Dat At Stan to 1000		
	🛆 Loops	tem funde sign deletion () on +		C C Copulation (ED private CD CE) C C C C C C C C C C C C C C C C C C C
R	🕁 Math	Please a	add a name and description $X$	Concentration (2) per una con com an el 1220 b ( 2) an el 1220 b ( 2) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (
	T Text			
	Eists	Name:	MyLineTrackMethod	
	Husic		To Use PiCar-X grayscale module easily	
	Colour	Description:	casily	
	<pre>{X} Variables</pre>	, , , , , , , , , , , , , , , , , , ,	ОК	
	Functions		ON	
	threading			
	PiCar-X			
	B Modules			
ŵ	Time			

When using it, click Import Library in the Menu. Find the one you want and click on Import.

<u>Mylib</u> Syslib		
MyLineTrackMethod To Use PiCar-X grayscale module easily	2022/12/21	Import
arm_control Use D-pad and 2 buttons to control the arm.	Daisy 2022/03/22	Import

The results are as follows. You can click Expand Block to see the content of the function.

to (	Get	Tra	ffic	2 s	et	Tra	ffic.	Duplicate
								Expand Block
								Disable Block
								Delete 17 Blocks
								Help
								Create 'GetTraffic2'

Interface:

### CHAPTER

## EIGHT

# HOME PAGE

When we open EzBlock, we can see the homepage, as shown below:



- 1. Menu: After clicking, a menu window will pop up.
- 2. Product: Connect your robot from here, please see Quick User Guide and How to use EzBlock in a Browser for specific operations.
- **3. Profile**: After version 3.2, you will no longer need to register or log in to your account, and this icon will be removed.
- *4. Examples*: You can view the preset examples here to let you play quickly.
- 5. My Projects: Your personal project or library will be saved here.
- 6. New Project: Create a new project.
- Import Projects/Libraries: Used to import projects or libraries.

# 8.1 1. Menu

(***) ×	ë EzBlock Studio	8
Language		
Version		
Contact Us		
About Us		
Localization		+
Help		
		New Project
	My Projects	G
		Import Project

- Language: Chinese and English are included.
- Version: View the current version.
- Contact us: If you have any questions, you can ask for help here.
- About Us: Introduction to SunFounder.
- Help: When selected, EzBlock related tutorials will pop up, including FAQ, get started and reference.

## 8.2 2. Product

**Product Information** 

🤫 PiCar-X	ë EzBlock \$	Studio	8
		Product InformationName:PiCar-XProduct:PiCar-XIP:192.168.18.111	
Exa	Battery:100 %	Version: 1.1.0_Beta Voltage: 8.90V Settings Disconnect	

This is the product information page, which contains the product name (you name it), product type, Raspberry Pi IP, APP version, operating voltage and the current power of the product.

### Settings

😑 🛞 PiCar-X	<b>₩ EzBlock Studio</b>	3
	Product Information Settings	
	Edit Name PiCar-X Change Product PiCar-X Check for Updates 1.1.0_Beta Already the latest version Calibrate	
Exa	Battery:100 % Disconnect	

- Edit Name: If you are not satisfied with the name you gave before, you can change it here.
- Change Product: Change to another product.
- Check for Updates: Check the current version of the app, and check if there is a newer version.
- **Calibrate**: If you think your product is still a bit deviated during use, you can use this button to recalibrate it to the right position.

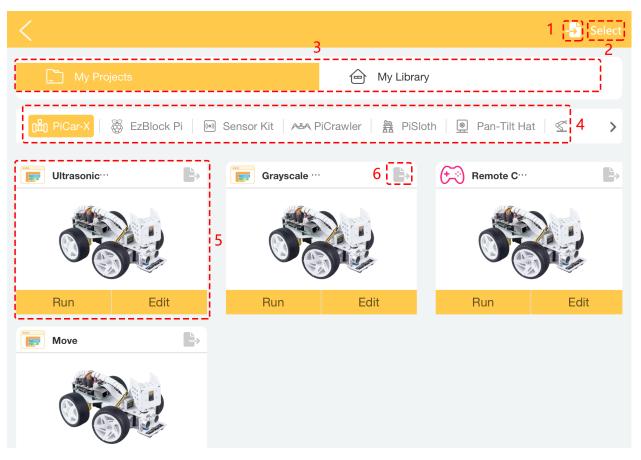
## 8.3 4. Examples

<0						
PiCar-X exar	nples			3 Block	Python	
	Move			Remote Control	£	
	Here, we let it perform the five actions of "forward", "backward", "turn left", "turn right", and "stop" in order.			Let us control the PiCar-X with a tablet.		
	Run	Edit	00	Run	Edit	
	Ultrasonic Sensor Test			Grayscale Sensor	Grayscale Sensor Test	
Distance: 2cm	Here we use Ultrasonic module to read the distance (unit: cm).		[900 200 900]	Here we use Grayscale module to read the grayscale value.		
	Run	Edit		Run	Edit	
Code red	Color Detection	$\mathfrak{S}$		Human Face Detec	tion 😥	
	PiCar-X is a camera Robot used to detect a specific color or face numbers, the position and size of the captured image.			In addition to color dete provides face detection		
	Run	Edit		Run	Edit	

- 1. Back to home page
- 2. Choose an example. Click Run to flash and run the program directly, and click Edit to enter the programming interface.
- 3. To choose a programming language, there are two options: Blockly and Python.

Note: Before entering the Examples page, you need to select the correct product first.

# 8.4 5. My Projects



- 1. Import projects or libraries.
- 2. Select button: After clicking it, you can choose to select multiple projects or libraries at once, or select all to export or delete.
- 3. Here are two categories My Projects or My Library.
- 4. Your project will be saved under the corresponding product category.
- 5. Select your personal project here. You can click **Run** to flash and run the program directly (if the project uses remote control, it will also take you to the remote control page), and click **Edit** to enter the programming page.
- 6. The export icon is located in the upper right corner of each project or library.

# 8.5 6. New Project

😑 👧 PiCar-X	C= Ezblock Studio	
	New Project	
	New Project Xame: Project Name: Test Test Block Python	
E	ect	

- 1. Enter the name of the project.
- 2. To choose a programming language, there are two options: Blockly and Python.
- 3. Click to enter the programming interface.

### CHAPTER

## NINE

# **PROGRAMMING PAGE**

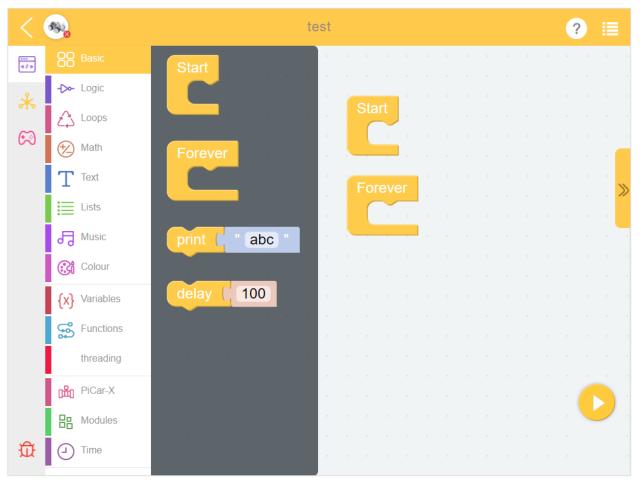
When you write code (create new project, edit example, edit your personal project), you will enter the Programming Page. Shown here is the programming interface in blockly language. For programming in python language, please see *Python Programming Page*.

	2		?₄ ≣₅
6 <u></u> «/»	88 Basic		
8	<b>-⊳-</b> Logic	Start Start	
900 1	🛆 Loops		
	↔ Math	Forever	
	Text		
	Lists		
	Music		
	Colour		
	<pre>{X} Variables</pre>		
	Functions		
	threading		
	Ezblock Pi		
	PiCar-X		
9 <del>0</del>	B Modules		
~			

- 1. Return to the home page
- 2. Choose a product
- 3. Project name
- 4. Help
- 5. Menu

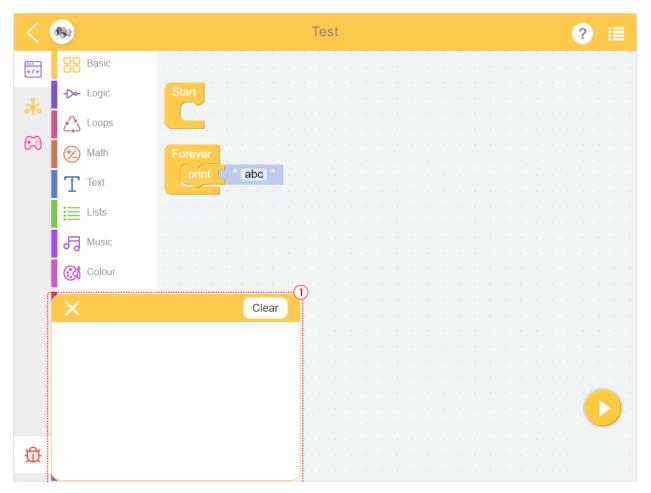
- 6. Programming interface
- 7. Remote control interface
- 8. Debug Monitor
- A. Block Categories
- B. Programming Area
- C. Run
- D. Flash & Run

### **Block Categories**



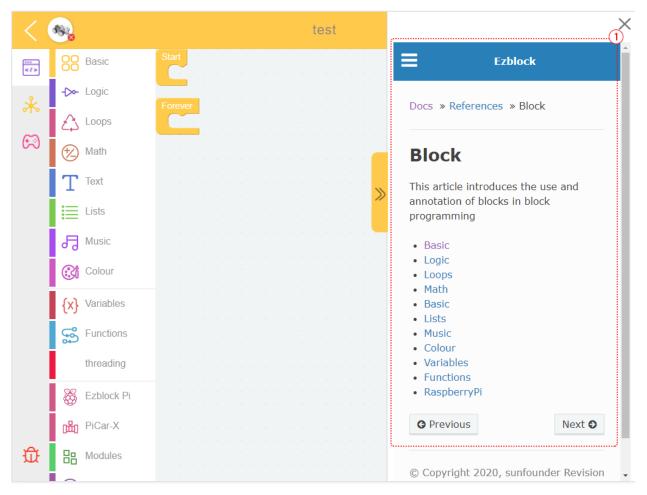
Find the code block from here, and drag the code block into the Programming Area for programming. Please check the specific usage in Block Reference.

### **Debug Monitor**



Click the debug icon in the lower right corner, and a movable debug monitor will appear. The text of the **print** block will be displayed here.

Help



After selection, ezblock tutorials will pop up, including FAQ, get started and reference.

Menu

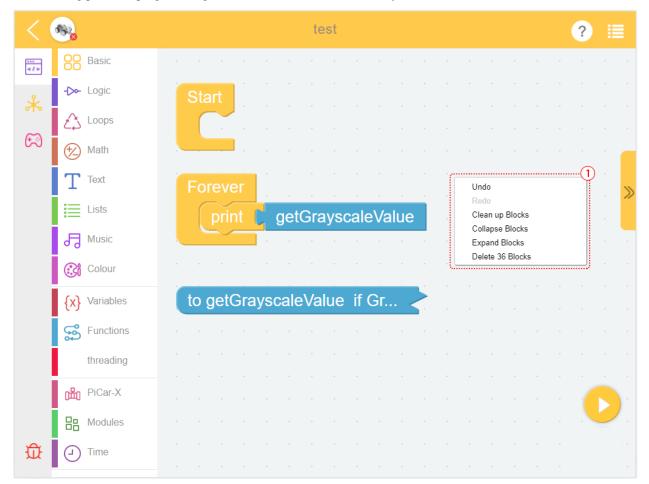
<	<b>*</b>	test	? ≣
··· >	Basic		New Project
$\sim$	<b>-⊳-</b> Logic	Start Andreas Start	My Projects Save
( <del>F</del> .)	🔥 Loops		Save As
	Math		Create Library Import Library
	T Text	Forever	Save As File
	Lists	· · · · · · · · · · · · · · · · · · ·	· · · · · · · ·
		· · · · · · · · · · · · · · · · · · ·	
	🕃 Colour		

- New Project: Use to create a new project.
- My Projects: Use this button to go to the My Projects page to view, export or import projects or libraries.

- Save: Adds the project to My Projects.
- Save As: The project is saved to the My Projects page as a new file name.
- **Create Library**: To create a library by selecting the functions in the project. For a detailed tutorial, please refer to: *How to Use Library Function*?.
- Import Library: Import the saved library.
- Save As File: Save to the device's folder. The project (.ezbpro) is downloaded to your computer if you are using Web access to EzBlock Studio. With a mobile device, you can save the project (.ezbpro) to the device folder or share it with the app.

### TIPS

You can long press the programming area or block to use some auxiliary functions.



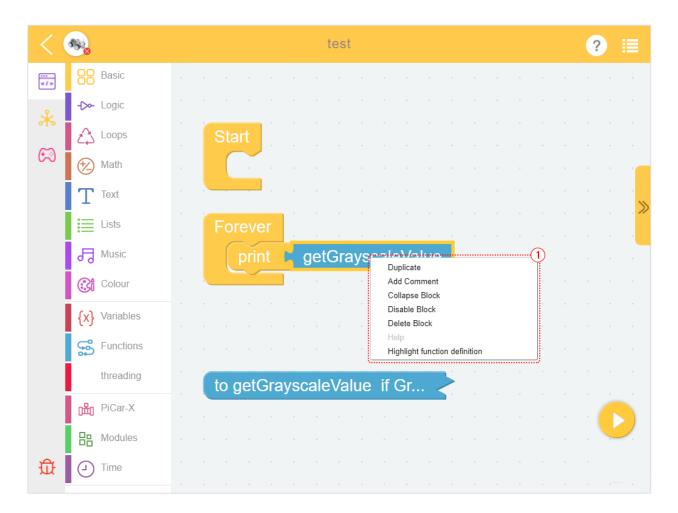


Table 1: Menu of Block

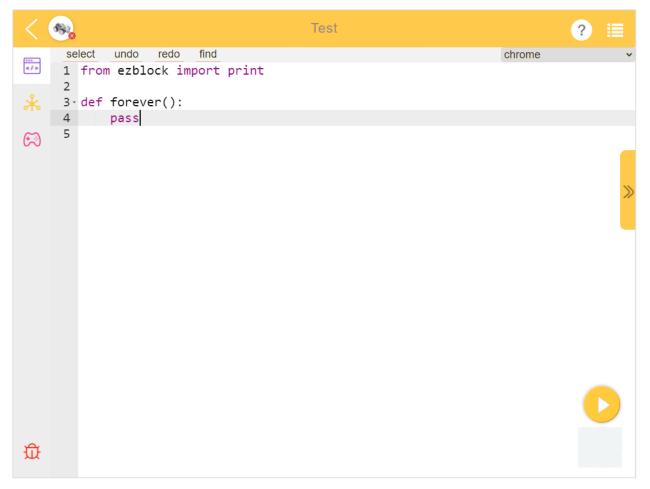
Option	Description
Duplicate	Copy selected (and dominated by) blocks.
Add/Remove	After clicking, a ? icon will appear at the top right of the block, which is used to write text that
Comment	is helpful for reading the code. These texts will not be executed by the program.
Ex-	When your code has more blocks, you can collapse them and expand them when necessary.
pand/Conllapse	
Block	
Disable/Enable	This function disables specific blocks without changing the program.
Block	
Delete xxx	Remove selected (and dominated by) blocks.
Blocks	
Help	
Create <i>xxx</i>	Used in Vibration or Function blocks. It enables you to quickly create a block paired with the
	selected block (click create from the Function block, the call block appears).
Hightlight Func-	Used in the call block of funtion, allows you to find the funtion definition
tion Definition	

	0 0 0
Option	Description
Undo	
Redo	Cancel Undo
Clean up Blocks	Align the blocks
Conllapse Blocks	Collapse all blocks
Expand Blocks	Expand all blocks
Delete xxx Blocks	Delete all blocks

Table 2: Menu of Programming Page

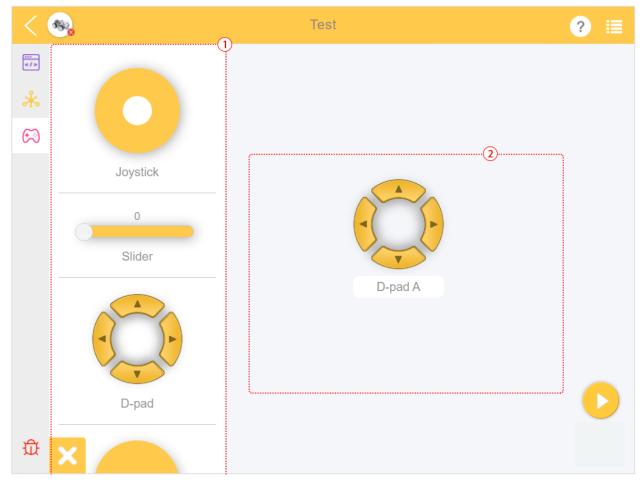
# 9.1 Python Programming Page

If you use python language when creating a project, you can enter the Python Programming Page.



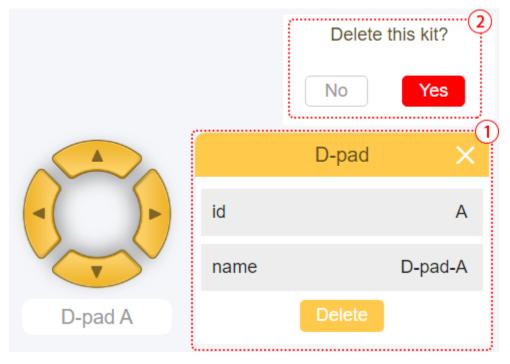
You will need to refer to Python Reference to complete your project.

# 9.2 Remote Control Interface



For how to use it, please see *How to Use the Remote Control Function?* 

- 1. Widget Categories
- 2. Remote Control Area



Click on the widget to display the message box, long press the widget or click the delete button to delete the widget.

Wid-	Description
get	
Joy-	The white dot is centered, and both X and Y values are 0. Drag the white point to the right to increase the
stick	X value; drag it upwards to increase the Y value. The ranges of X and Y are both (-100, 100).
Slider	When the white point is on the far left, the value is 0. Drag the white point to the right to increase the
	value. The range is (0, 100).
D-Pad	This is a control composed of 4 Buttons, each button is independent of each other. The value of the Button
	is 1 when it is pressed and 0 when it is released.
But-	The value is 1 when pressed and 0 when released.
ton	
Switch	When ON, the value is 1; when OFF, the value is 0.
Video	Please check How to Use the Video Function?
Dig-	It can display NUMBER (such as 123.3) or TIME (such as 11:55) like a real four-digit digital tube.
ital	
Tube	
Pie	It is used to indicate the proportion of the part and the whole in the data series. Each set of data should
Chart	include a name and value.
Bar	The data of multiple objects can be displayed intuitively for comparative analysis. Each object should
Chart	include a name and value.
Line	Continuous data of multiple objects can be displayed. Each object should include a name and value.
Chart	Continuous data generation is based on multiple calls (usually, using loops).
Bulb	Like the actual LED, it lights up when 1 is written, and turns off when 0 is written.

Table 3:	Widget of Remote Control
----------	--------------------------

### **Release Note**

### CHAPTER

# **EZBLOCK STUDIO RELEASE NOTES**

# 10.1 EzBlock Studio 3.2

EzBlock Studio will be switched to offline mode from version 3.2 and the online service will be closed on 2023/2/28 for user-friendly use. Thus, you can save your projects locally without registering and import them on different devices later.

### **Detailed Information**

- After EzBlock Studio goes to offline mode, old users can continue to log in and save cloud projects to local, but all new projects will be saved locally.
- Registration portal is closed. New users are no longer required to register an account to use EzBlock's project saving feature.
- Add project import and export function in .ezbpro format, which allows you to transfer projects between devices or share projects with others.
- Libraries can also be imported and exported in .ezblib format for transfer and sharing.

### FAQ

• What happens to my account?

You have until February 28, 2023 to save all your projects in the cloud locally. Here's how to do it: Sign in to your account on EzBlock Studio and select "Save all projects locally" in the pop-up window to save all your cloud projects to My Projects page in one click, then export to your device's folder or share them through the app using the Export button.

After that, EzBlock Studio will close the online service and clear all online data. You can also delete all your data by clicking the "Delete Account and Log out" button after you have saved all your projects and libraries.

• How is the web version of EzBlock Studio?

You can still access EzBlock Studio via the web page at http://ezblock.cc/ezblock-studio after upgrading to version 3.2.

Data will be saved in your browser, so be sure to clear your browser data. Of course, you can export your project or library to your computer for sharing.

• How to transfer projects and libraries between devices?

After exporting projects to .ezbpro format and libraries to .ezblib format, you can transfer them to other devices and then import them.

• How to export libraries/projects?

For a detailed tutorial, please refer to: *Export Projects/Libraries*.

• How to import libraries/projects?

For a detailed tutorial, please refer to: Import Projects/Libraries.

# 10.2 EzBlock Studio 3.1

### **Main Optimization**

The main optimization of EzBlock 3.1 is the compatibility with the built-in Bluetooth of the Raspberry Pi, no need to use an expansion board with Bluetooth module.

#### Note:

- The old version of the robot can also be used normally after burning the new image. The bluetooth module on the original robot hat will not conflict with the new system.
- The EzBlock Studio 3.1 version should be used with the EBlock 3.1 image (https://ezblock.cc/download/v31. html).

#### Add

- A custom Bluetooth name function has been added to the app to avoid the problem that multiple devices are indistinguishable. (Reboot to take effect.)
- Added three sound effects for boot, successful connection, and disconnection, which gives more feedback.
- The LED next to the power indicator will be used as a bluetooth indicator, which is always on when connected and flashes slowly when not connected.
- (Android) Add a full-screen input box to prevent the input box from being blocked.

#### Optimization

- Optimize the battery display, now you can see more accurate information on the APP.
- Optimize the display of product example images and personal information icons.

#### Fix

- Fix a series of problems of Bluetooth search and Bluetooth connection.
- Fix the problem that the product name is not displayed after the wifi configuration.
- Fix the problem of product information not being saved after modification.
- Fix the problem that the picture cannot be saved after taking pictures in the remote control page.

## 10.3 EzBlock Studio 3 2021.06.08

#### Improve the product connection

- Improve the connection method: Compared with the Bluetooth communication of EzBlock 2, EzBlock 3 uses Websocket to communicate, which is much faster.
- Improve the connection process: EzBlock 3 uses Bluetooth to assist with the product's fast Wi-Fi connection.

#### **Home Page**

· Remove the carousel.

- Remove the product selection page and change it to a pop-up window.
- Remove the way you must log in to get to the home page.
- Add My Project entry.
- Add Product Information pop-up window button. This Product Information pop-up window is used to show the product name, product type, IP, version, working voltage, and power.
- Add online update function of product image.
- Add product calibration function.
- Add product name modification function.
- Add the Menu function in the upper left corner.
- Optimize the pop-up window for New Project button.

### **Examples Page**

- Beautify the UI.
- Add quick run/edit button.
- Add remote control or IoT prompt icon.

### **Programming Page**

- Optimize the arrangement of Programming, IoT, Remote Control and Debug Monitor buttons.
- Add product connect button in the top left corner.
- Add Stop/Run program button.
- To save the project and enter the IoT page, make sure that you have logged in to your account.

#### **Personal Info Page**

- Remove the settings page.
- Add product category function to My Project page.

#### Other

- Change the font of all pages.
- Add the function of entering IP or hostname on the web to connect to the product.

### CHAPTER

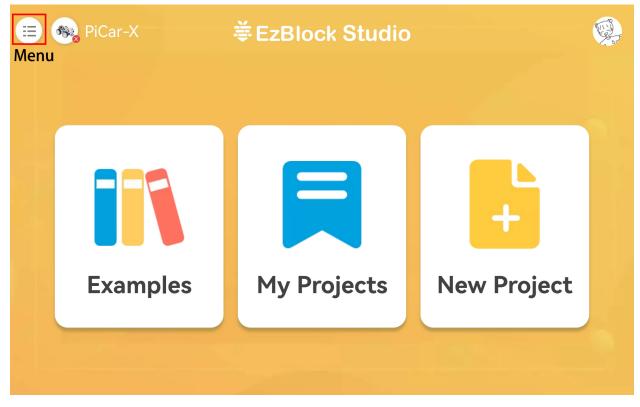
### **ELEVEN**

FAQ

# **11.1 Check the APP Version**

Confirm the app version by the following method, and then go to the FAQ of different versions.

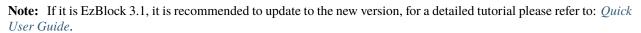
Click the **Menu** button in the upper left corner.



Then click the **Version** button.

PiCar-X	×		
Language			
😂 Version			
🗟 Contact Us			
😤 About Us			
⑦ Help			+
		My Projects	New Project

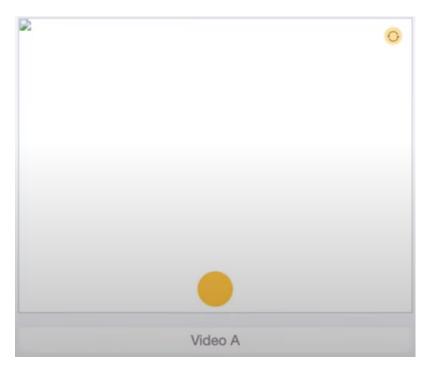
Now you can view the version.



	About	×				
Version: v3.2. Update time: 2022-						
Version: V3.2. Update time: 2022-						
Examples	My Projects					
		Import Project				

## 11.2 EzBlock Studio 3.1

- 1. APP can't search Bluetooth
  - Power on the product and see if there is pleasant music (not only current "zi~" sound). If not, please *Install EzBlock OS* again.
  - whether the Bluetooth of your mobile device is turned on or not.
  - Whether the app is allowed to access the device's location.
  - Some mobile devices also require location services to be turned on.
  - Check the power level. If both power indicators are off, or only one is blinking; the power level is low, please charge the batteries.
  - If all the above methods have been tried, try to press RST button, or restart the product and APP.
- 2. The APP searches for Bluetooth, but cannot connect.
  - Power on the product and see if there is pleasant music (not only current "zi~" sound). If not, please *Install EzBlock OS* again.
  - Check if the BLE or USR light on ROBOT HAT is always on (which means the product is connected by other devices), if yes, disconnect the other devices or restart the product.
  - If all the above methods have been tried, try to press RST button, or restart the product and APP.
- 3. APP can't connect after configuring WIFI.
  - Check if the country, SSID and PSK are correct.
  - Check the network status of this WIFI.
  - Check the power level. If both power indicators are off or only one power indicator is blinking; the power level is low, please charge the batteries.
  - Check whether the configured WiFi and the Wi-Fi connected by the mobile device are the same.
- 4. The Video block doesn't work?



When using the video function on the web page, if your code does not report an error and has run successfully, but you do not see the shot on the remote control page, you need to check the following 2 situations:.

- Check the network status and retry.
- For the latest version of Google Chrome, you need to set it manually.

Open Google Chrome and go to: chrome://flags/page.

	Q Search flags	
	Experiments	
	WARNING: EXPERIMENTAL FEATURES AHEAD! By enab compromise your security or privacy. Enabled features a admin you should not be using these flags in production	apply to all users of this browser. If
	Interested in cool new Chrome features? Try our beta channel.	
	Available	Unavailable
	Available	onavailable
	Available	
Search for: Block insecure private		
Search for: Block insecure private		
Search for: Block insecure private Chrome   chrome://flags/%20page		

Q Block insecure private network requests	0	Reset all	
Experiments		99.0.4844.5	1
Available	Unavail	able	
Block insecure private network requests. Prevents non-secure contexts from making sub-resource requests t dardenses. A. IP address IP1 is inore private than IP2 (11) IP1 is loc 2) IP1 is private and IP2 is public. This is a first step towards full ent RFC1918: https://wicg.github.io/cors-fic1918 - Mac, Windows, Link Fubchain #block-insecure-private-network-requests	alhost and IP2 is not, or orcement of CORS-	Disabled Default Enabled Disabled	

Set it to **Disabled** and then click **Relaunch**.