

Industrial Robotics Mechanic

V1.4.5

User and Customer Support Guide

Jiangxi KMAX Industrial Co., Ltd.

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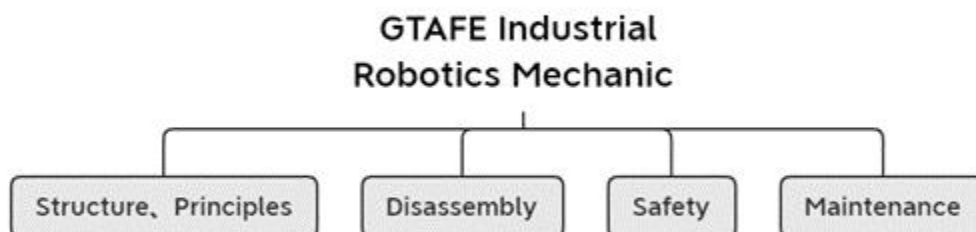
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Introduction

Objective

This manual is the user and customer support guide, intended to providing installation and operating guidance for users of Industrial Robotics Mechanic V1.4.5 .

Functional Structure Diagram



Definition

Term	Definition or description
	Jiangxi KMAX Industrial Co., Ltd.
VR Training System for Robotic Installation, Debugging and Maintenance	With industrial robot model for training based on VR hardware, the software vividly simulates industrial applications, offers indefinitely repeated practical operations without damage to components, and provides a new teaching model for academic majors related to industrial robots.
3D	Digital three dimensional / stereoscopic technology based on computer / internet, i.e. three-dimensional digitalization
VR	Virtual reality, a computer simulation system which can create and experience virtual world. The simulation environment generated

	integrates multiple resources and offers interactive dynamic views in 3D and systematic simulation of real world behaviors, which giving users immersive experiences.
zSpace 300	Interactive zSpace Table-based VR product based on 3D virtual display, launched by zSpace in 2015.

References

None

Operating Environment

Hardware Environment

VR terminal (zSpace 300)

Parameter	Description		Specifications
Hardware Configuration	CPU	Intel(R) Core(TM) i3-4370 CPU @ 3.80 GHz 3.80 GHz	
	Hard Disk	500GB	
	Memory	8.00GB	
	Monitor	24-inch, resolution: 1920 x 1080; supporting 2D and 3D Brightness: 2D $\geq 250\text{cd} / \text{m}^2$; 3D $\geq 150\text{cd} / \text{m}^2$, Horizontal visual angle $\geq 170^\circ$, Vertical visual angle $\geq 160^\circ$ Contrast: 800: 1 or above; Color ≥ 16700000 Pixel defect: ≤ 7 .	
	Capture Locator	Equipped in the monitor, the locator can achieve a 3D effect and localization by means of 3D glasses. Available capture range: 1.2m in length, 1.5m in width, and 1m in height based on the center of the motor	
Tracking 3D Glasses	The 3D glasses can be used to view the 3D scenario. There are five		

		tracking points, so that the capture locator can accurately achieve a 3D effect and localization. A set of tracking 3D glasses includes complete tracking glasses and legless tracking clip-ons.	
	Stylus	<p>It can move, rotate, and split the objects in the 3D scenario. It offers movement and rotation data in 3 degrees of freedom coordinate axes, and the related resolution, accuracy and refresh rate are required as follows:</p> <p>3D axial resolution: X axis $\leq 2\text{mm}$, Y axis $\leq 2\text{mm}$, Z axis $\leq 2\text{mm}$.</p> <p>Accuracy: spacing accuracy $\leq 2\text{deg}$, swing accuracy $\leq 2\text{deg}$, deflection accuracy $\leq 2\text{deg}$.</p> <p>3D axial accuracy: X axis $\leq \pm 3\text{mm}$, Y axis $\leq \pm 3\text{mm}$, Z axis $\leq \pm 3\text{mm}$.</p> <p>3D axial refresh rate: X axis $\geq 100\text{Hz}$, Y axis $\geq 100\text{Hz}$, Z axis $\geq 100\text{Hz}$.</p>	
	Model	zSpace300	
	Port	Display Port (1.2): ≥ 1 ; DVI port: ≥ 1 ; positioning processing unit interface	
3D Application software System	<p>3D Application software System includes three parts: desktop VR system drive platform, 3D desktop system software platform, and desktop VR interaction system.</p> <p>Desktop VR system drive platform: offering basic VR application architecture, system parameter adjustment based on control panel, as well as management, including function detection, firmware upgrade of auxiliary hardware system, and diagnostic information export.</p> <p>3D desktop system software platform: offering 3D desktop functions, including addition, deletion, change, and arrangement of desktop icon, as well as lockup and property change.</p> <p>Desktop VR interaction system: 3D display platform, offering real-world virtual 3D environment in combination with Capture Locator; zooming in / out, rotating, and disassembling virtual objects in combination with the stylus; as well as offering various tools for 3D interaction, and multi-view functions such as</p>		

	multi-angle view, and composite view.	
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Common PC:

Parameter	Description	
Hardware configuration	CPU	3.6 GB
	Memory	8 GB
	Graphics Card	4 GB
		Enabling the Direct3D
Operating System	Windows 7 and Windows 10	
Port	HDMI, audio	
Display	Available resolution: 1920*1080	

Software Environment

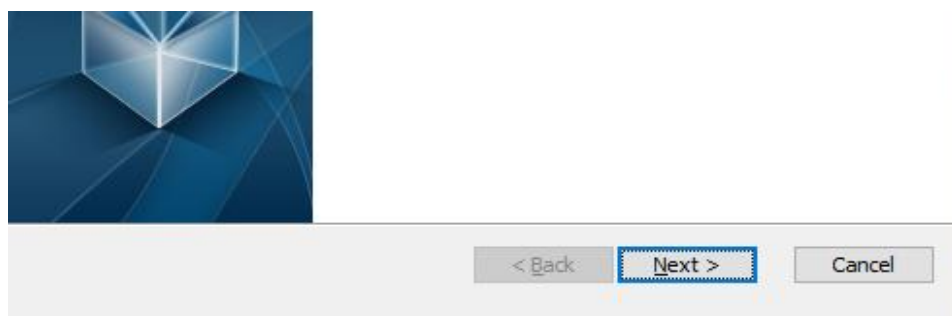
Windows 10 Pro 64-bit

Operating Instructions

Installation and Initialization



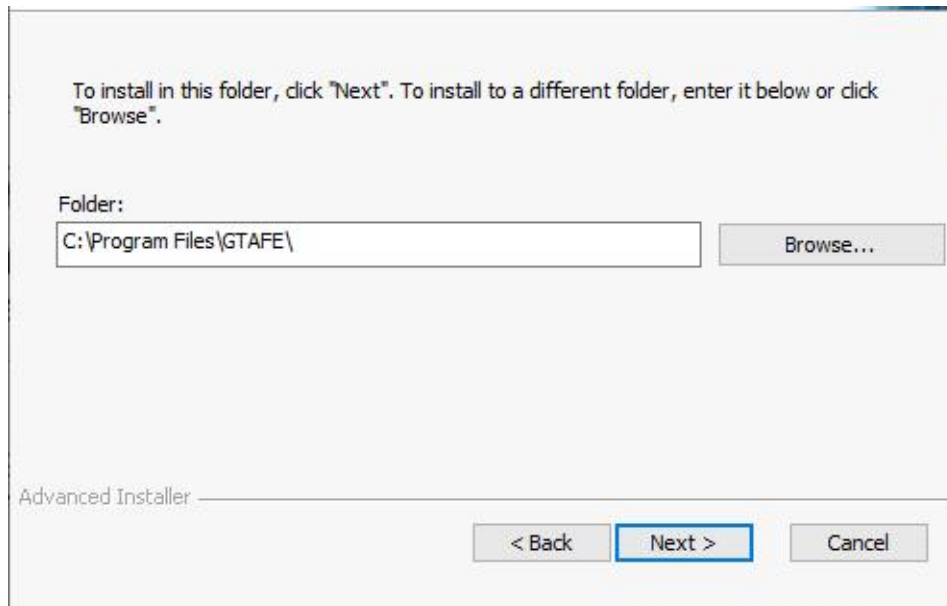
Double click on the setup program to start installing the software, as below



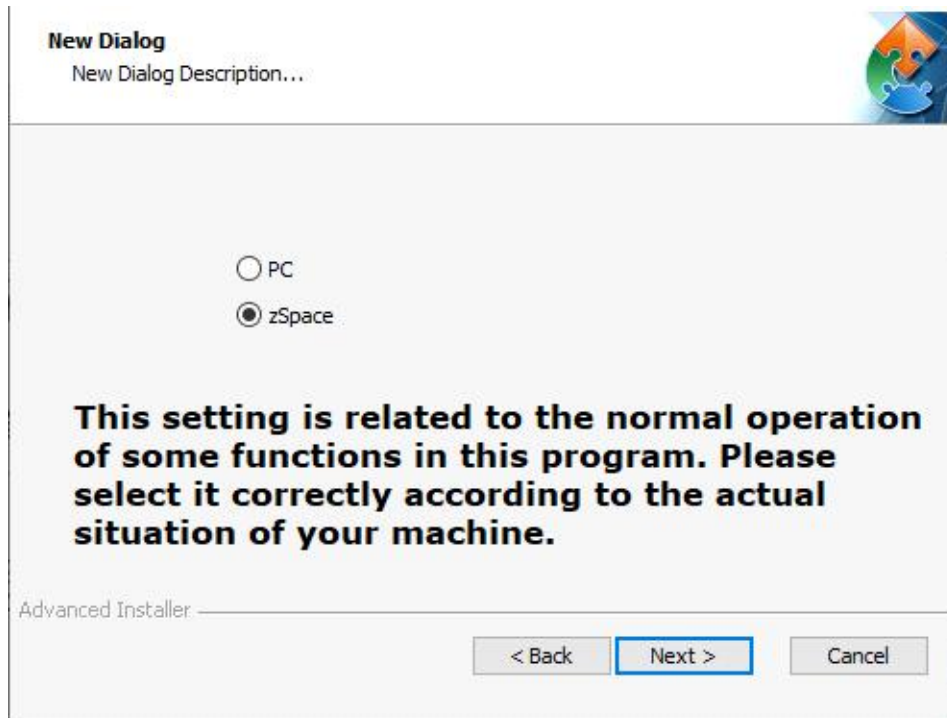
Click on the “Next” to bring up the license agreement interface,



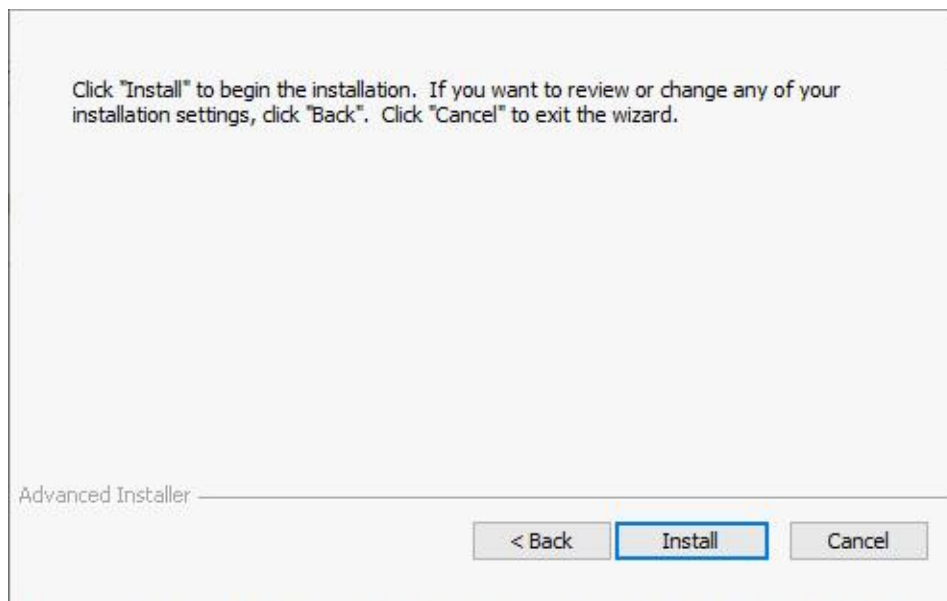
After accepting the terms, select 'Next' to bring up the below interface,



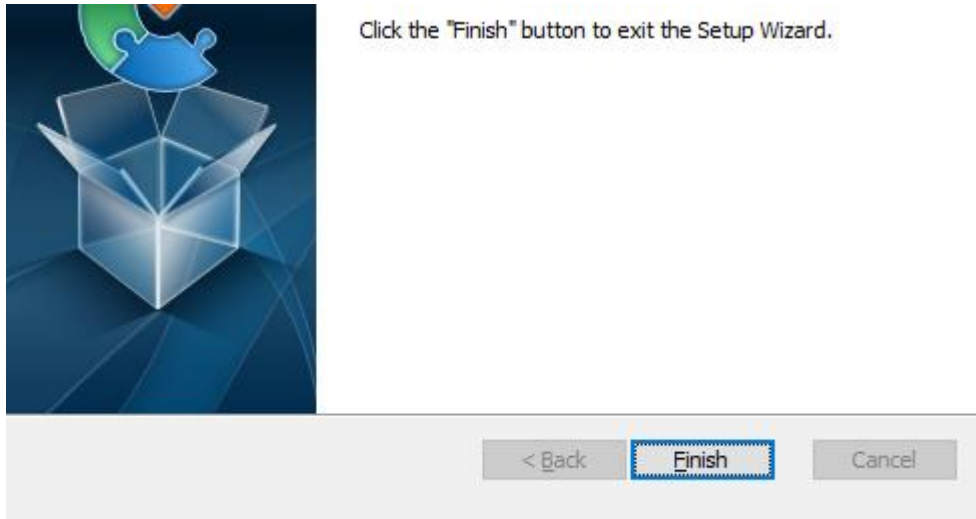
The default installation directory is "C:\Program Files\". Click on the "Browse" to select a new directory, otherwise the default directory will be used. Click on the "Next" to bring up the below interface,



Select the installation device, and click on the “Next” to bring up the installation interface,



Click on the “Install” to start the installation.



Click on the "Finish" to exit.

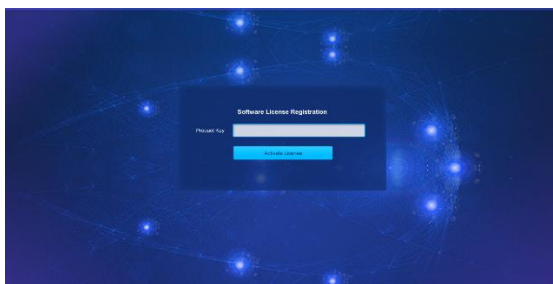
A desktop shortcut will be generated.



Operation Description

Client login

Login interface



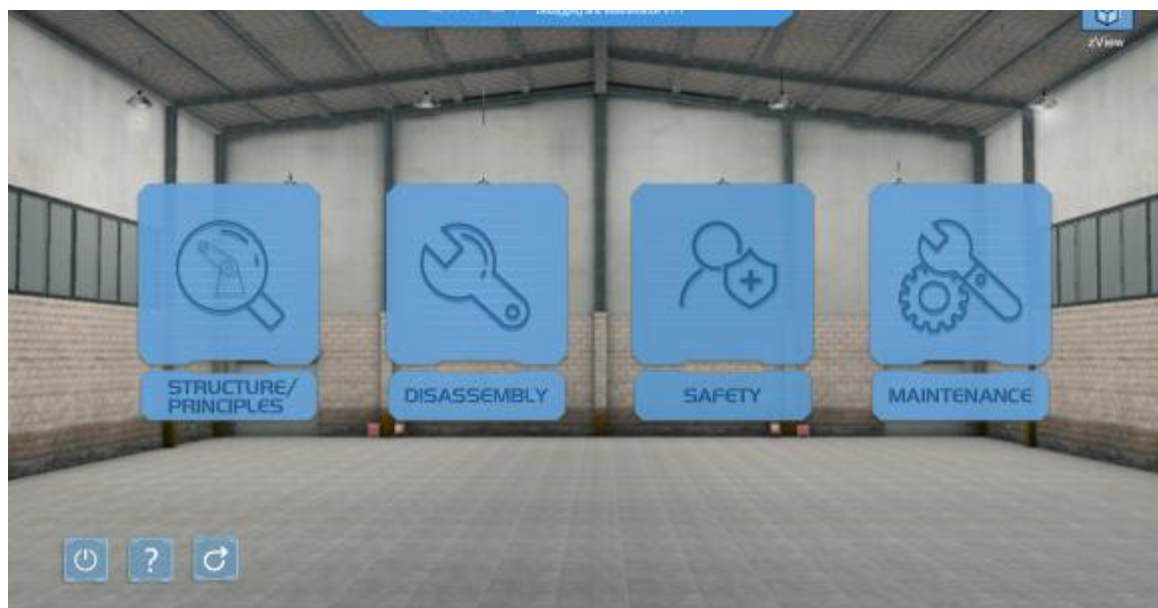
Instruction:

- After the software is installed, enter the corresponding product key, click the activation button, and then log in successfully .




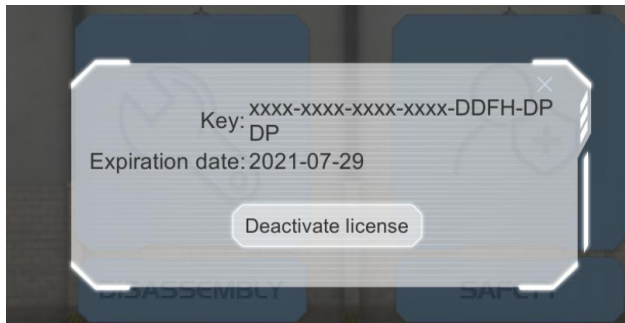
Operator interface

The main interface is as below,



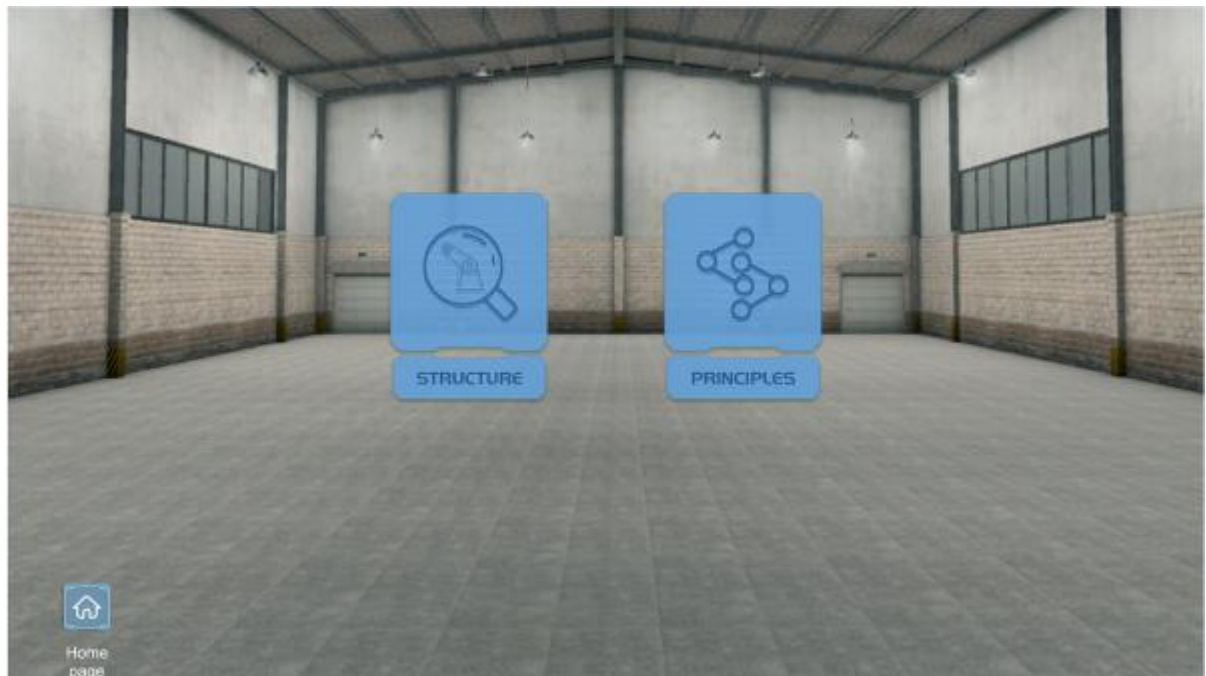
Deactivate licence,

click , a screenshot pop-up will appear



Click the button to exit the current device. The activation code can be logged in on another device.

The Structure / Principles interface is as below,



Exit the software.



Instruction:

1. After entering the home page, click on the Disassembly principles to bring up the disassembly principles interface;



2. Click on the button to exit the software;



3. Click on the button to go back to the main interface;

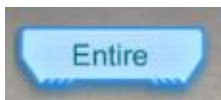
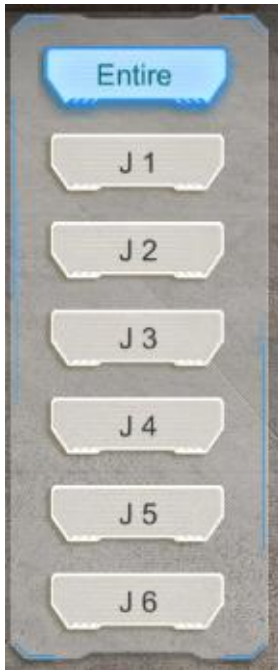


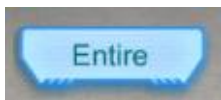
4. Click on the “Back” button to go back to the previous menu.

Structural display interface



Select a module on the navigation bar. There are seven modules: entire, J1, J2, J3, J4, J5, and J6.



Click on the  button to show the entire robot model, as below



Click on the  button to show the J1 model.



In J1 module, click on the “Exploded view” button to play the explosion animation. (“Exploded view” button will change into “Reset” button, and the grayed out disabled “Individual” button will become clickable.





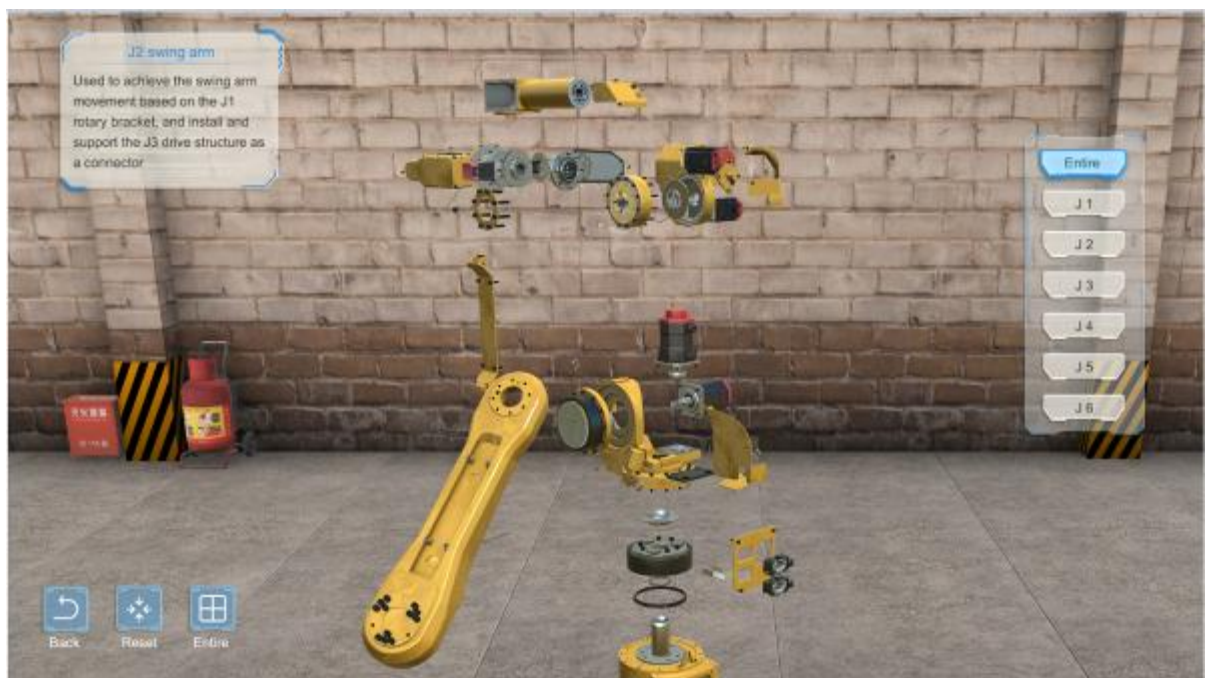
In Entire module, click on the “Exploded view” button to play the explosion animation. (“Exploded view” button will change into “Reset” button, and the grayed out disabled “Individual” button will become clickable.



Click on the “Reset” button to reset the robot back to its original state;



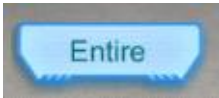
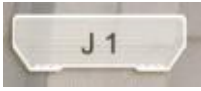



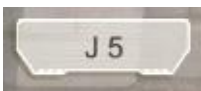


Click on the “Individual” button to operate the individual robot models (the button will switch into “Entire”). The individual models can be dragged.



Click on the “Entire” button to operate the entire robot model (the button will switch into “Individual”). All models can be dragged as a whole.



Instruction:

- Click on the  button to show the entire robot body model;
- Click on the  button to show the J1 model;
- Click on the  button to show the J2 model;
- Click on the  button to show the J3 model;
- Click on the  button to show the J4 model;
- Click on the  button to show the J5 model;
- Click on the  button to show the J6 model;
- Click on the “Exploded view”  button to play the explosion animation;

(“Exploded view” button will change into “Reset”



disabled “Individual” button will become clickable, as



• Click on the “Reset”



button to reset the exploded model back to its

original state; (“Reset” button will change into “Exploded view”



button, and the

clickable “Individual” button will become grayed out disabled, as



• The explosion animation of the current model will be played. Click on the

“Individual”



button to drag individual model (the “Individual” button will

switch into “Entire”



• The animation has been played. Click on the “Entire”



button to drag the

entire robot (the “Entire” button will switch into “Individual”

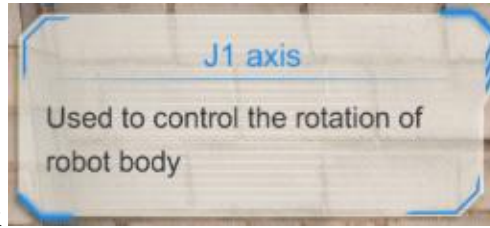


button);

• Click on the “Back”



button to go back to the disassembly principles interface;



- Click and hold to drag the tips box ;
- Click the left button of the stylus to reset all models to their original positions;
- After selecting the model, press the right button of the stylus and move it forward and backward vertically to the screen, to zoom in or out the model.

Disassembly

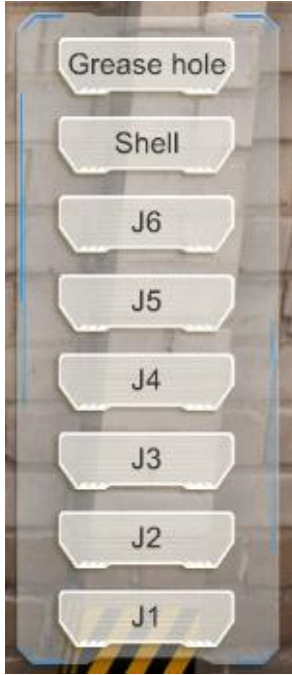
“Select disassembly task” is the default interface in “Disassembly”.

3.2.4.1 Select disassembly task

“Select disassembly task” interface is as below,



Select a module on the navigation bar. There are eight modules: grease hole, shell, J6, J5, J4, J3, J2, and J1.

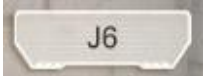


Hover the stylus beam over a module on the navigation bar, then the module will be highlighted. Its previous module(s) will become transparent, regarded as removed. As below, the beam is hovered over J6, then the grease hole and shell become transparent, and J6 is highlighted.

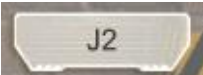


As below, the beam is hovered over J3, then the grease hole, shell, J4, J5, and J6 become transparent, and J3 is highlighted.




Click on the  button on the navigation bar to bring up the J6 disassembly interface. The grease hole and shell are regarded as automatically removed, as below




Click on the  on the navigation bar to bring up the J2 disassembly interface.

The grease hole, shell, J6, J5, J4, and J3 are regarded as automatically removed, as below




Click on the “Tips”  button, then the model will rotate to the best angle, and the tool and position that need to be operated will be highlighted, as below



Before the disassembly operation, the Undo button is grayed out as  in default.



Upon the removal operation, the button becomes clickable as . Click on the Undo button to go back to the previous step;

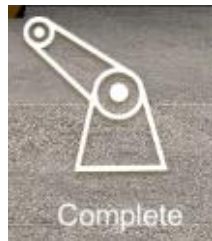
According to the tips, click the stylus to select the tool in the toolbar, as below,

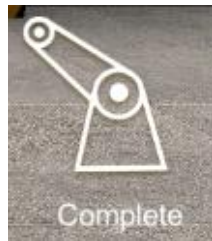


Removed parts can be checked in the tool bar, as below,



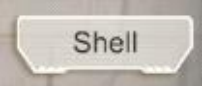
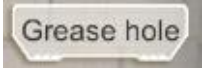

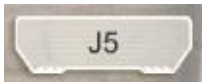
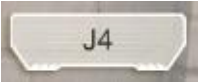

3.2.4.2 Complete disassembly




Click on the  button to bring up the complete disassembly interface, as below




Instruction:

1. Click on the  to show the robot model;
2. Click on the  to show the model without grease hole (the grease hole is regarded as removed);
3. Click on the  to show the model without grease hole and shell (the grease hole and shell are regarded as removed);
4. Click on the  to show the model without grease hole, shell, and J6 (the grease hole, shell, and J6 are regarded as removed);
5. Click on the  to show the model without grease hole, shell, J6, and J5 (the grease hole, shell, J6, and J5 are regarded as removed);
6. Click on the  to show the model without grease hole, shell, J6, J5, and J4 (the grease hole, shell, J6, J5, and J4 are regarded as removed);




7. Click on the  to show the model without grease hole, shell, J6, J5, J4, and J3 (the grease hole, shell, J6, J5, J4, and J3 are regarded as removed);




8. Click on the  to show the model without grease hole, shell, J6, J5, J4, J3, and J2 (the grease hole, shell, J6, J5, J4, J3, and J2 are regarded as removed);




9. Click on the “Tips”  button, then the removed model will rotate to the best angle, and the tool and position that need to be operated will be highlighted




10. Before the disassembly operation, the Undo button is grayed out as  in default.




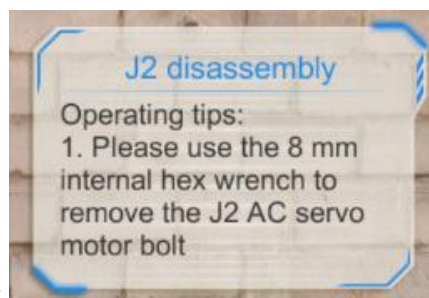
Upon the removal operation, the button becomes clickable as . Click on the Undo button to go back to the previous step;



11. Click on the  button to bring up the complete disassembly interface;



12. Click on the “Back”  button to go back to the disassembly principles interface;



13. Click and hold to drag the tips box ;



14. Click and hold to drag the tool bar



15. Click and hold to drag the part box

16. Click the left button of the stylus to reset all models to their original positions.

Safety

Safety module includes Employees (Definition and Operating range), Offsite preparation (Safety instructions and Safety dressing), Safety of employees (Safety barrier / door, and Power-off safety training), Operator safety (Operator's rights and External emergency stop), and Programmer safety (Automatic / demo mode, and Power-on safety training – automatic / demo mode).



Only after completing the training of “Employees” and “Offsite preparation”, user can start the following training.

Maintenance

Maintenance module includes Daily maintenance, Quarterly maintenance, and Annual maintenance.



Application notes

If license request failed, or other problem happened, please contact R&D Center.

Appendix

None