

# Credimension Viewer User Guide

Revision Notes			
Data	Version	Description	Author
2021/12/03	V1.0.0	First release	Daisy
2022/07/26	V2.0.0	SDK V3.0 & RGBD function added	Daisy
2022/12/01	V3.0.0	The GUI supports enabling CS30 dual-band or single-band products, and optimizes and updates related functions	Daisy
2023/09/11	V4.1.0	GUI4.1.0 corresponds to the update and optimization content Support multi-machine connection	Daisy
20240229	V4.1.3	GUI4.1.3 corresponds to the update and optimization content	Daisy

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## 1. Introduction to the tool

Tool name: Credimension Viewer v4.1.3

Tool description: "Credimension Viewer v4.x" is a Windows multi-machine presentation GUI tool that supports CS20, CS30, CS20-P, CS40 and other products, the tool is mainly used to obtain, display or save Pointcloud, Depth, IR, RGB, RGBD and other information, and support to view the basic information of the device, set the resolution, set the integration time, and support multiple products to be connected at the same time.

## 2. Installation instructions

### 2.1. System Requirements:

The current version supports Windows 10 and Windows 11;

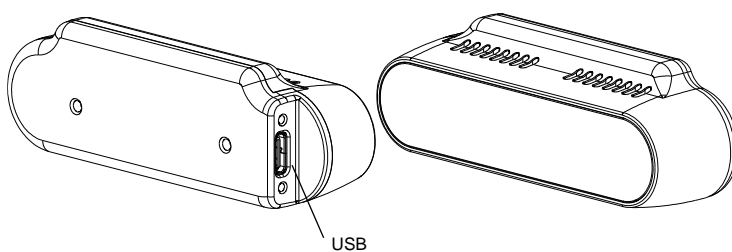
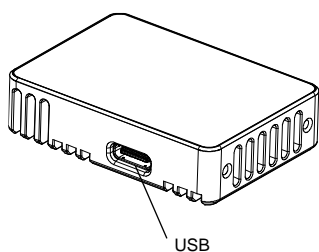
### 2.2. Credimension Viewer installation method

The software is a green version, double-click the "Credimension.exe" file under the software package, you can use it directly;

styles	2023/4/26 11:42	文件夹	
translations	2023/4/26 11:42	文件夹	
ChangeLog.txt	2023/4/24 16:38	文本文档	1 KB
concr140d.dll	2023/3/21 11:11	应用程序扩展	714 KB
configuration.ini	2023/5/16 10:13	配置设置	1 KB
<b>Credimension.exe</b>	2023/4/26 11:41	应用程序	1,448 KB
csreconstruction2.0.dll	2023/4/24 14:56	应用程序扩展	15,118 KB

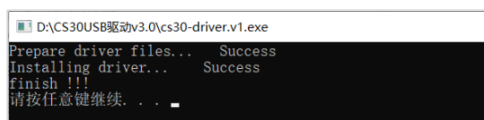
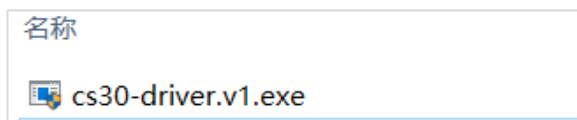
### 2.3. Hardware Connection

#### 2.3.1. CS20 & CS30 products are connected to the USB interface of the PC through the data cable:

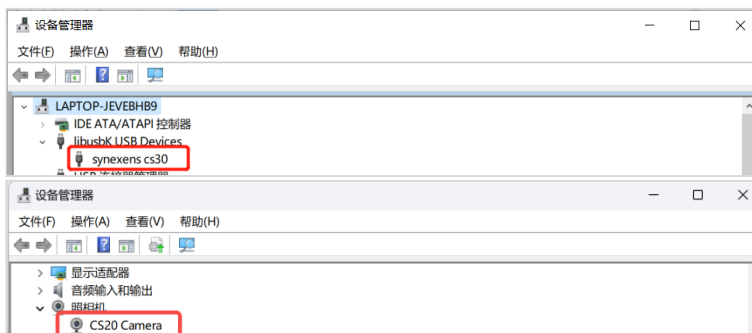


To run CS30 series products with "Credimension Viewer" version 4.0 for the first time, you need to install the driver first (if the computer has run the old version of Credimension Viewer and installed the driver, it can be ignored), the installation steps are as follows:

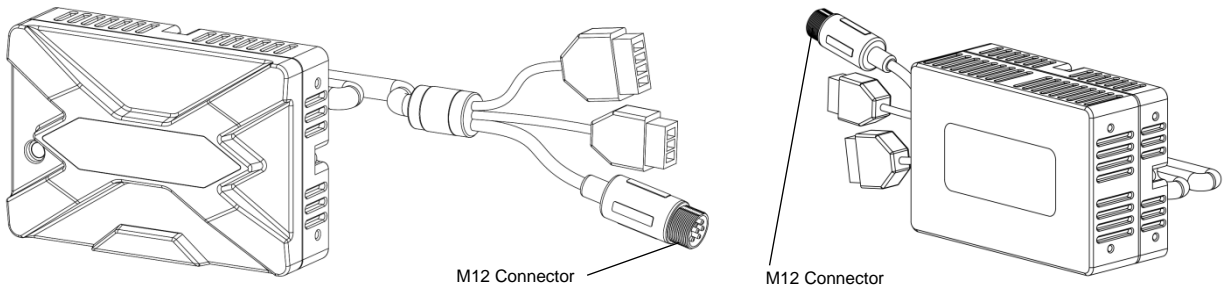
a: Connect the CS30 to the PC, double-click the "cs30-driver.v1.exe" file, and after about 1 min, it prompts: "Please press any key to continue..." to complete the installation;



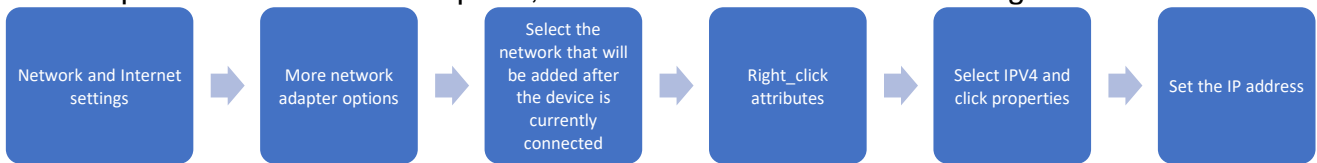
b: If "synexens CS30" is displayed in Device Manager, the driver is successfully installed. The CS20 does not need to be connected for about 5 seconds, and the CS20 Camera appears in the camera list in the Device Manager.



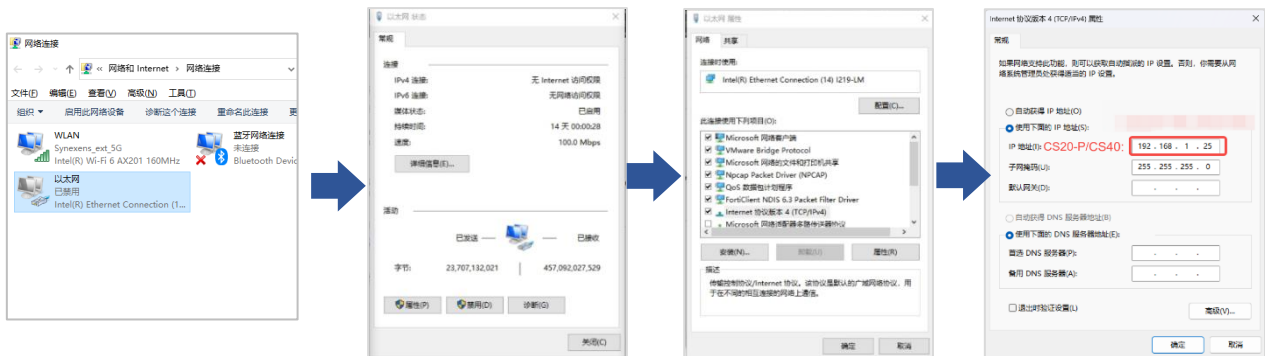
### 2.3.2. CS20-P & CS40 products are connected to a computer via TCP:



After connecting the CS20-P/CS40 product to the power supply and connecting the network port terminal to the computer, the IP address needs to be configured as follows:



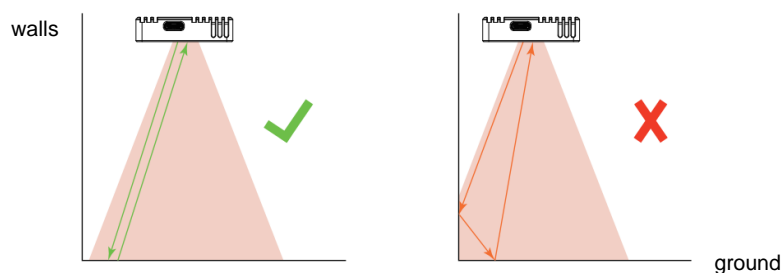
The IP address is 192.168.1.1~100, and 1~100 is an integer containing 1 and 100



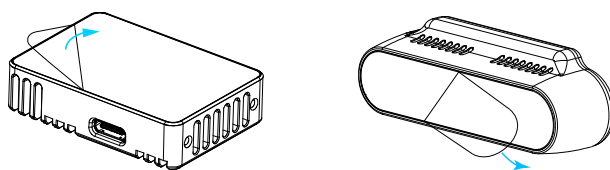
### 2.4. Precautions for the use of the device

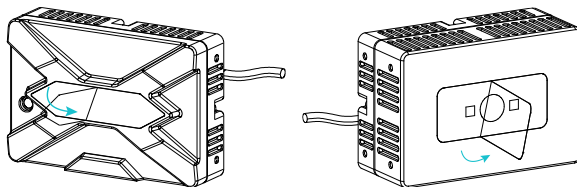
a: Before use, please make sure that the computer turns off the "360 Antivirus" and other anti-virus software, and the laptop turns off the "Camera" software to avoid the image cannot be displayed;

b: It is recommended that the product can be searched, and the FOV area should be kept at a certain distance from the wall, and should not coincide with the wall to prevent abnormal images;



c: Before use, please peel off the protective film on the surface of the glass cover to prevent abnormal images;

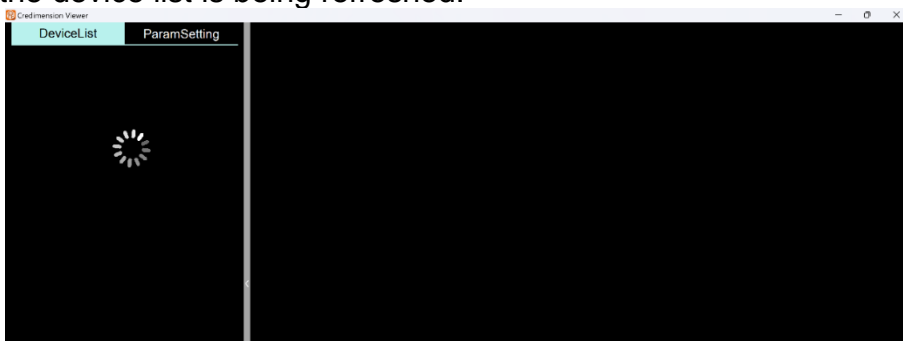




### 3. Instructions for use

#### 3.1. Get device information

Click the "Device List" button, wait for about 5S to display the list of connected devices, and the device list is being refreshed:

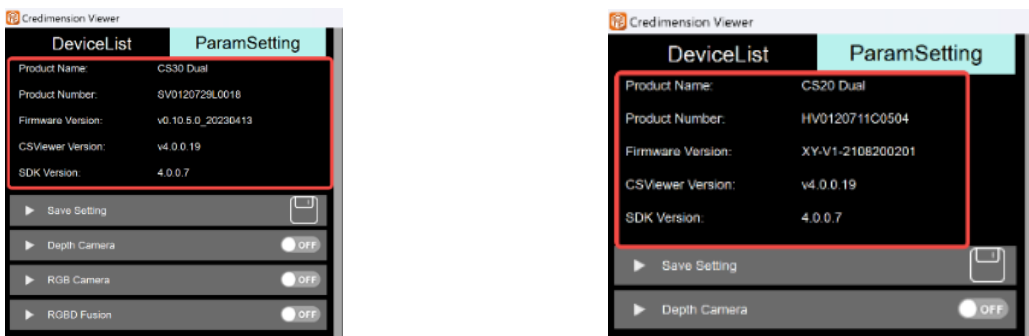


When a device is connected, the current device is selected by default, as shown in the following figure.

When connecting two devices, the device at the top of the list is selected by default, and the gray is unselected.



After selecting the device, click "Param Setting" to display the current device information, including the device name, device SN, SDK version, firmware version, etc., and you can turn the current device on and off. As shown in the figure below:



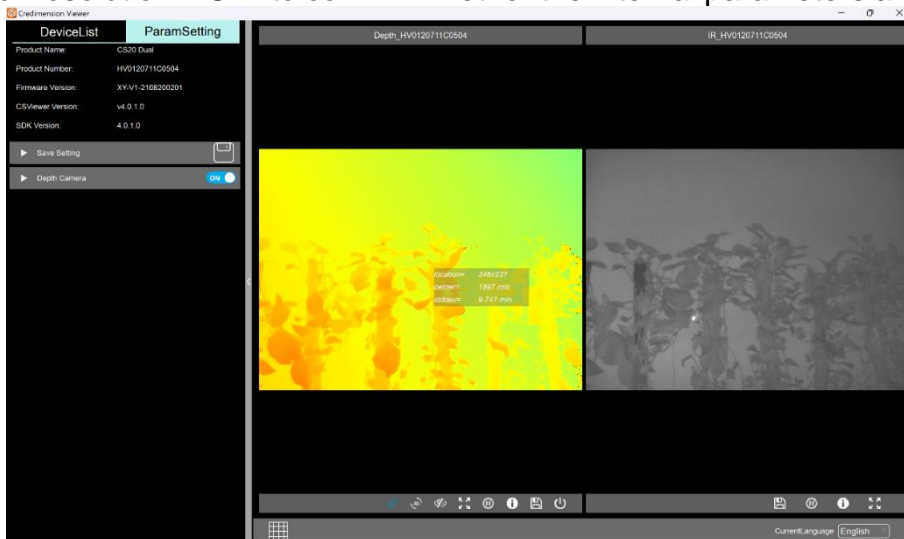
#### 3.2. Turn on the device

##### 3.2.1. Turn on a single device

Select the device you want to turn on, click ParamSetting, and then click the ON switch on the right side of the Depth Camera to display the depth image and IR image of the current device.

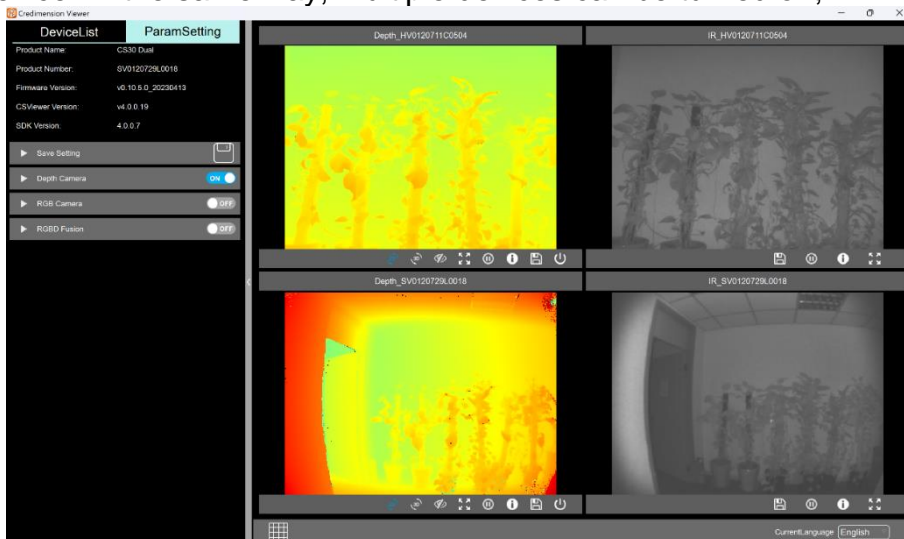
After CS20 is turned on and running, it will automatically download the internal reference file, which takes about 60 seconds, and the display frame rate will be reduced during the process, and it will return to normal after the download is completed.

In addition, CS20 needs to download the internal reference file for one update resolution, and be careful not to close the depth or program during the download of the internal reference. If you need to enable multiple devices, please make sure that the internal reference file is downloaded before opening it. In the parameters directory of the GUI, check whether there is a file named "resolution + SN" to confirm whether the internal parameters are downloaded.



### 3.2.2. Turn on multiple devices

Click the device list in the upper left corner, select another device, click the Param Setting button, and then click the "ON" button on the right side of "Depth Camera" to turn on the second device. In the same way, multiple devices can be turned on;

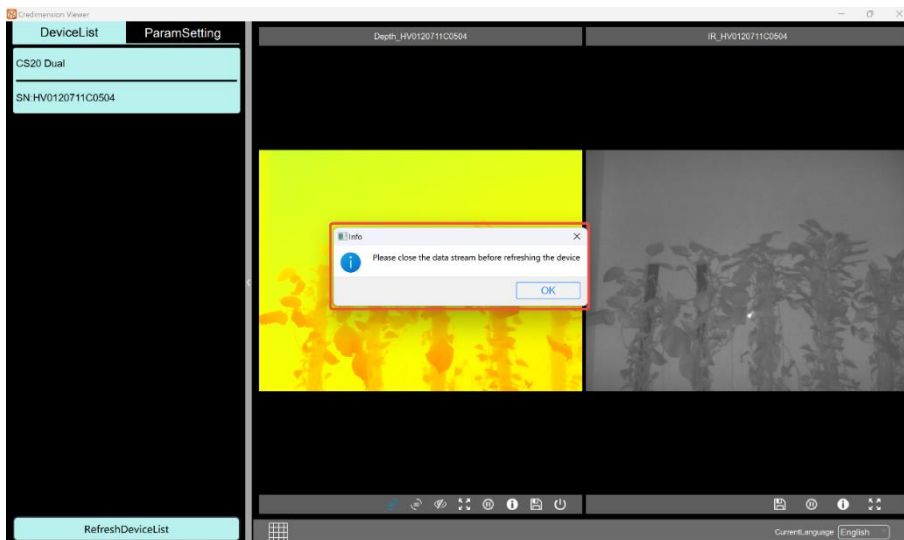


## 3.3. Introduction to the function of the window button

### 3.3.1. Refresh the device list

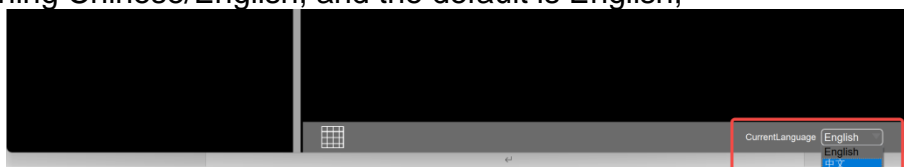
When no device is running, click Refresh Device List to display the currently connected device in the device list bar on the left. If there is a running device, you will be prompted to turn off the running device first and refresh it again.

When the device is interrupted during the connection process, it will prompt that the current device has been removed, and after clicking the OK button, the disconnected device will no longer be displayed in the device list.



### 3.3.2. Switch between Chinese and English

The current language is displayed in the lower right corner of the page, which can support switching Chinese/English, and the default is English;



### 3.3.3. Window layout settings

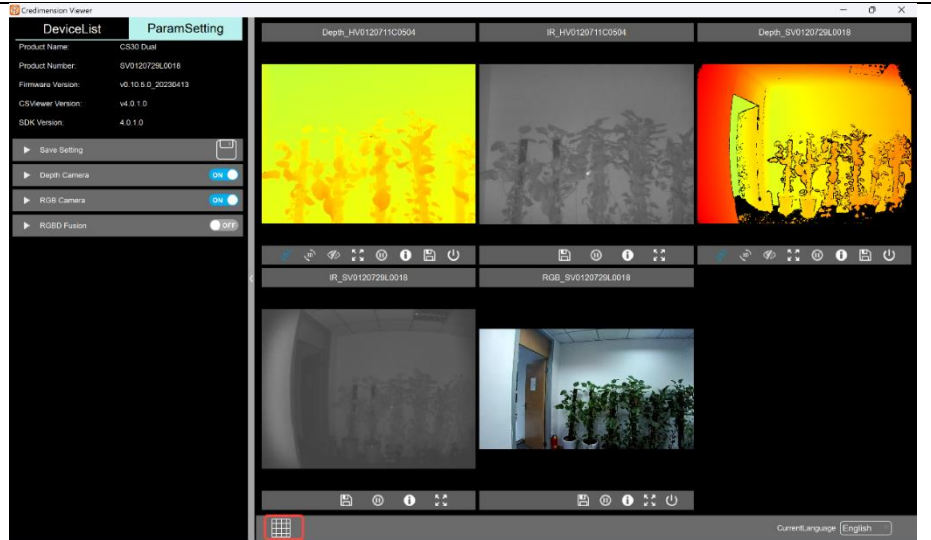
By clicking on the different buttons on the window, you can adjust the page size and recall some functions, as follows:

Click the ">" button on the left to hide the device list and menu bar, and click the "<" button again to restore it;  
Click the frame to adjust the position and display size of each screen window

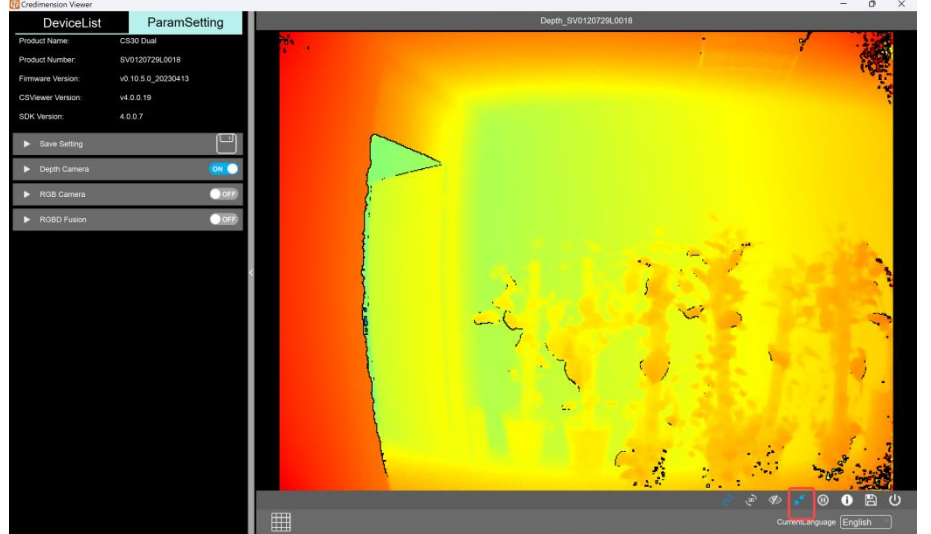
The screenshot shows a multi-view layout of the Credimension Viewer. It features five panels: 'Depth\_HV0120711C0504' (top left), 'IR\_HV0120711C0504' (top middle), 'Depth\_SV0120725L0018' (top right), 'IR\_SV0120725L0018' (bottom left), and 'RGB\_SV0120725L0018' (bottom middle). A red box highlights the left edge of the interface, indicating the area for window layout adjustments. The 'CurrentLanguage' is set to 'English' at the bottom right.



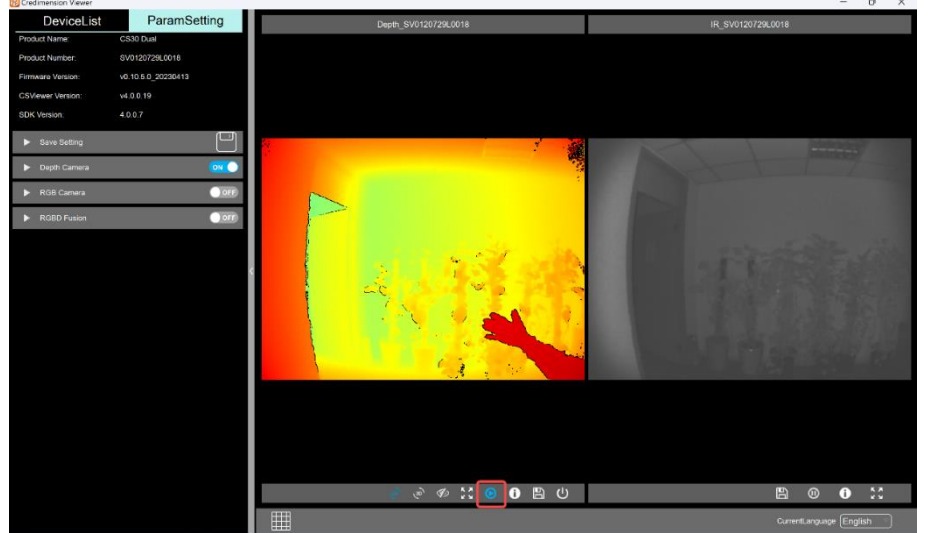
The mouse can click and drag the edge of the window to modify the window size or change the window position; The nine-square grid button is re-arranged and restored

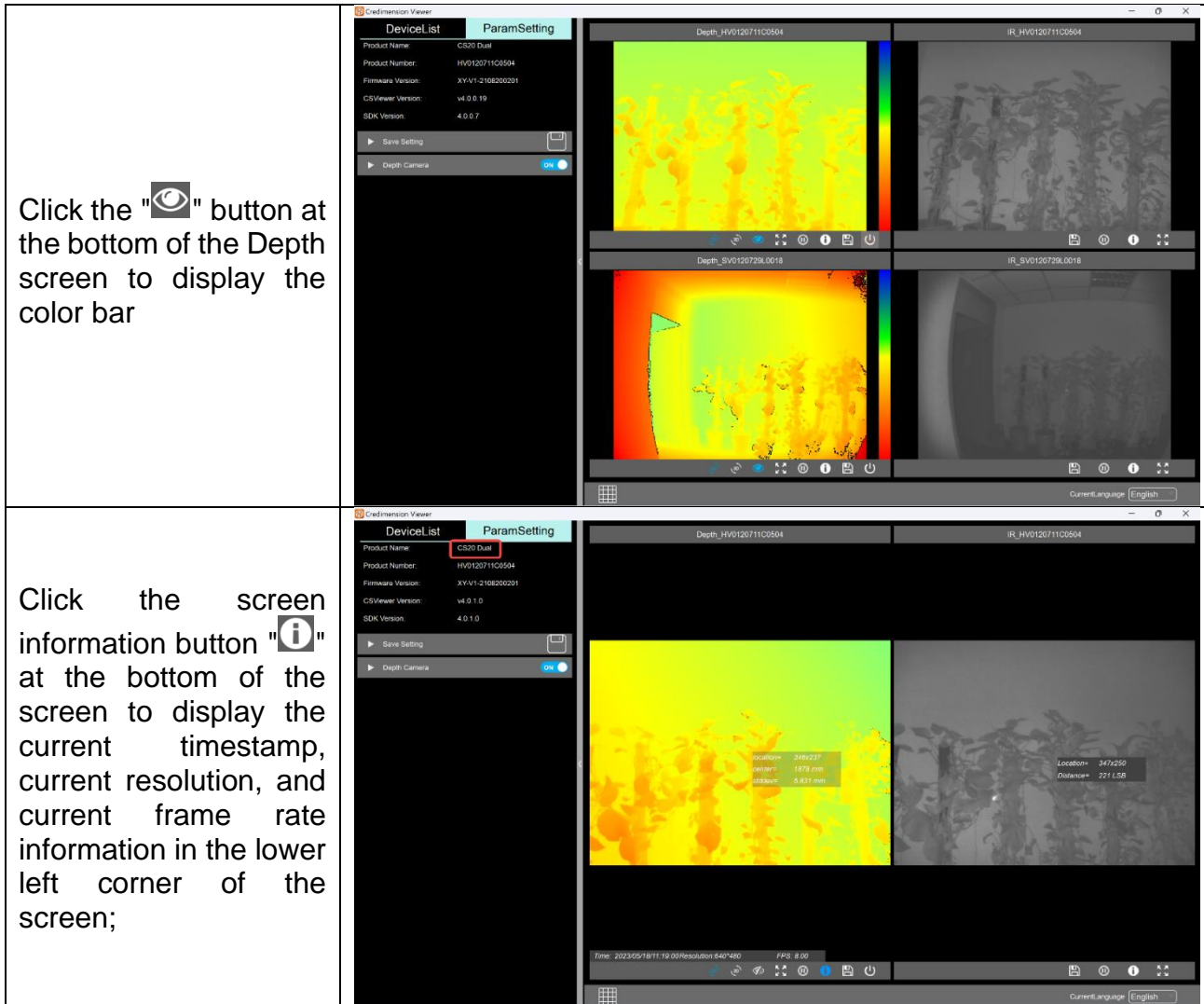


Click the magnification button at the bottom right of the screen "⌕" The current screen can be displayed as maximized, and the rest of the screen window will be hidden, click the restore button "⌕" again to restore the previously displayed screen



Click the pause button "⏸" at the bottom of the screen to pause the display screen of the corresponding window

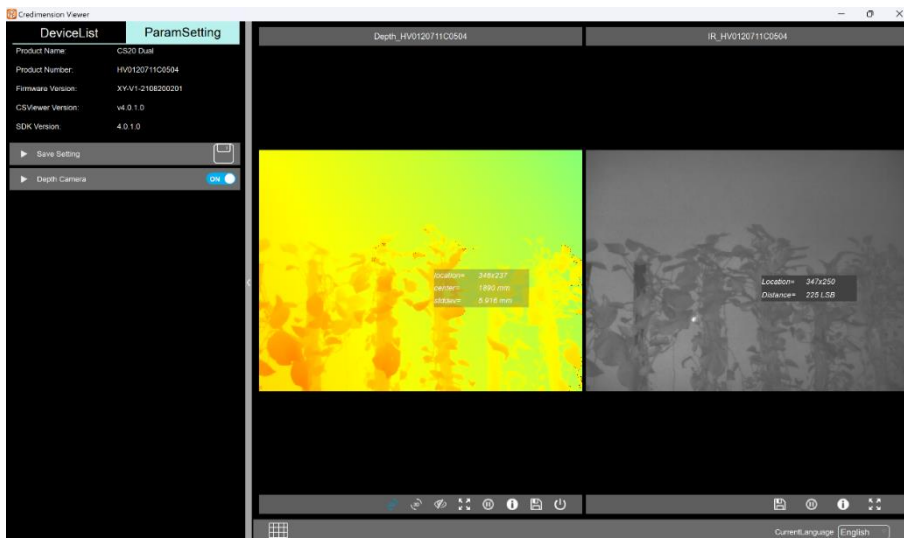




### 3.4. Display 2D Depth image

After clicking the switch button "ON" on the right side of "Depth Camera", the device will be turned on and running, and the Depth image window and IR image window will be opened by default, and the window naming format is: Depth\_SN, IR\_SN, where SN is used to distinguish the corresponding window and device when multiple devices are connected at the same time, and Depth and IR are used to distinguish the type of window opened; Click the mouse on the depth screen to view the depth value of the currently clicked pixel. Click on the IR screen to view the IR intensity value.

The close button "X" in the lower right of the depth screen window is the same as the close button of the Depth Camera on the left, and the IR image is displayed or hidden with the opening and closing of the depth screen window, and there is no separate control switch;



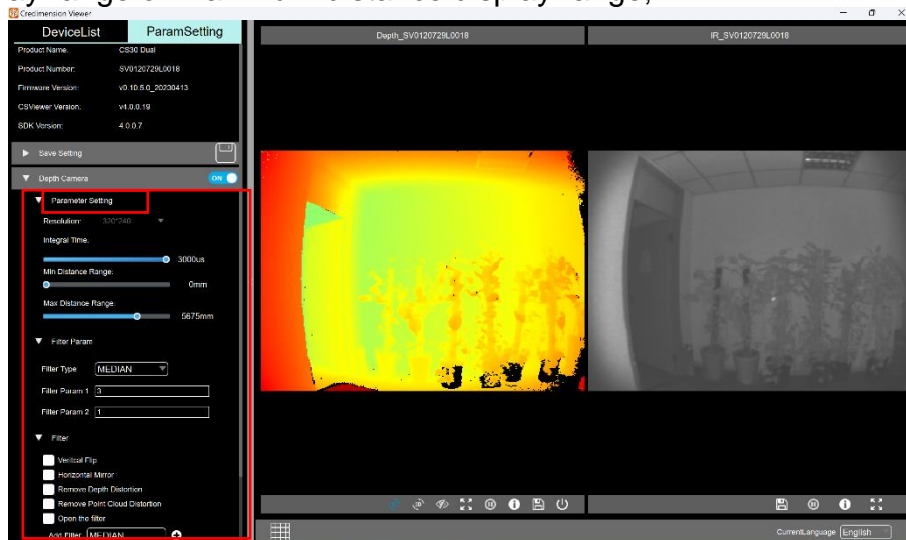
### 3.5. Display 3D pseudo-color point clouds

Click the 3D button "3D" under the depth window to view the real-time pseudo-color point cloud map corresponding to the current device, and drag the mouse to control the viewing angle or slide the scroll wheel to zoom in, and you can view the point cloud of two devices at the same time.

<p>View the pseudo-color dot cloud for 1 device</p>	
<p>View the pseudo-color point cloud for 2 devices</p>	

### 3.6. Adjustment parameters

Click the drop-down button "▼" on the left side of the Depth Camera to set the adjustment parameter information, filter parameter setting, setting screen, etc. Click Parameter Setting to display the parameter adjustment box, you can choose to switch the resolution to 320\*240 (default) or 640\*480, adjust the exposure time, and adjust the minimum distance display range or maximum distance display range;



Note: The detection distance is related to the integration time, and different distances need to be adjusted to achieve the accuracy of the test data, it is recommended to refer to the following CS30 integration time correspondence diagram:

Test distance	Integration time
300mm~500mm	<500us
600mm~900mm	500us~1000us
1000mm~1700mm	1500us~2500us
>1700mm	3000us(Long range requires a close test environment without interference)

Note: The CS20 integration time is up to 1800us by default, and when the resolution is set to 320\*240, the CS20 integration time is up to 580us

### 3.7. Screen settings

Click the drop-down button "▼" on the left side of the fitter to open the detailed settings list, you can set whether to add filtering, horizontal flip, vertical flip, remove distortion, etc.;

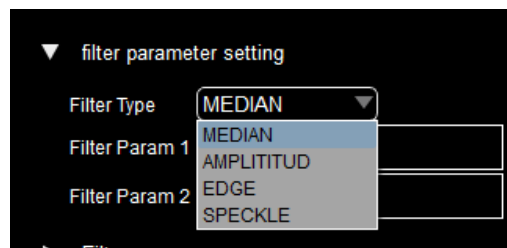
<p>Flip effect vertically</p>	
<p>Horizontal flip effect</p>	
<p>Effect after horizontal + vertical flip</p>	



Note: CS20 products do not have the distortion removal function, and "Remove Depth Distortion" and "Remove Point Cloud Distortion" are disabled.

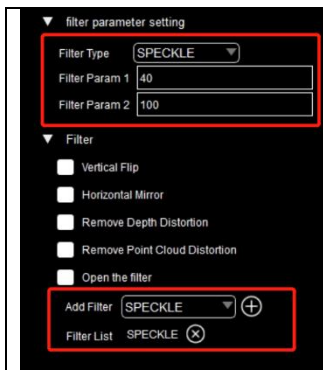
### 3.8. Filter parameter setting

This option can set the following filter parameters: median filter (MEDIAN), amplitude filter (AMPLITUD), boundary filter (EDGE), and blob filter (SPECKLE), as shown in the following figure:



After setting the filter parameters, check "Open the Filter" to view the filter effect.

When setting the blob filter, you need to select Filter.Type as "SPECKLE", set "Add Filter" to "SPECKLE" under the Filter parameter, and click the "+" button to add the "SPECKLE" option to the Filter List to successfully set the blob filter. The speckle filter is shown below:



**Parameter setting instructions:**

**Amplitude filtering:** The default value is set to 6, the number of parameters is 1, and the setting range is 0-100

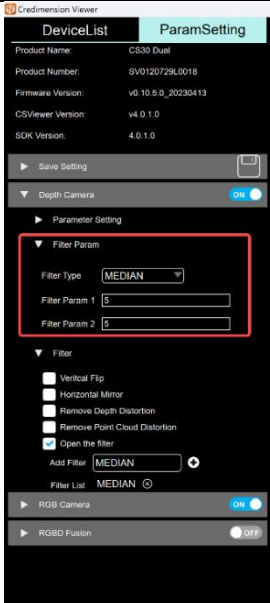
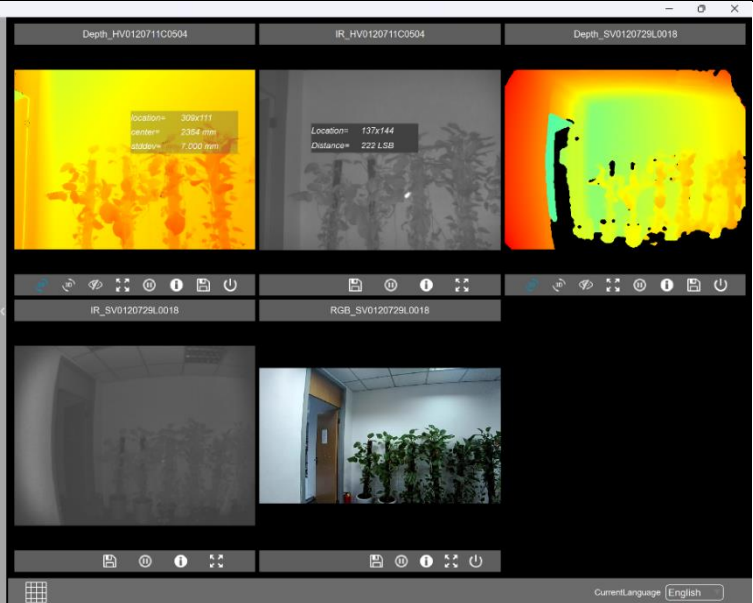
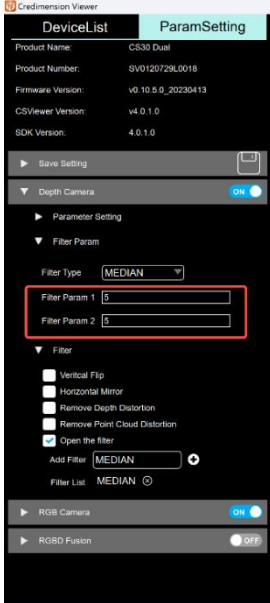

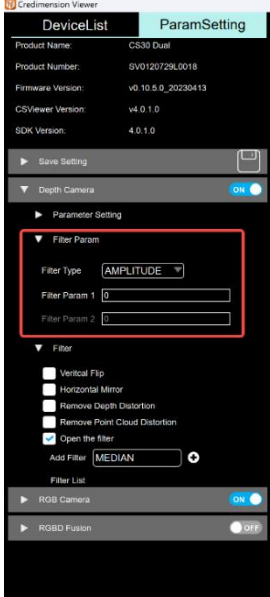
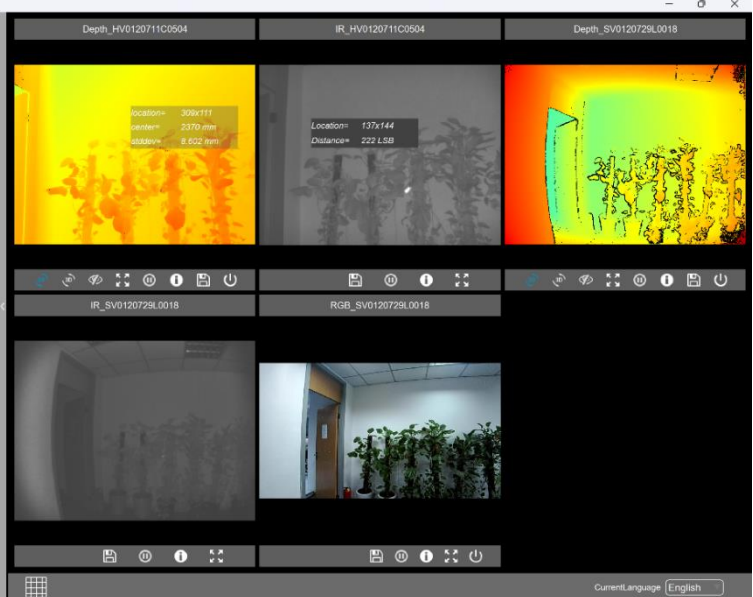
**Median filtering:** The default value of the first parameter size is 3, which can be set to 3 or 5, and the default value of the second parameter is 1, which can be set from 0 to 5.

**Boundary filter:** The default value is 50, and the range can be set from 20 to 200.

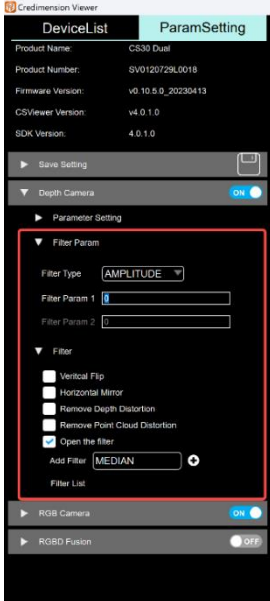

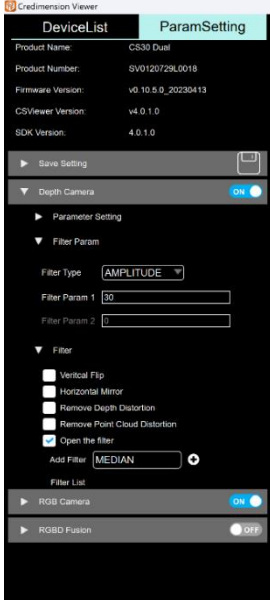
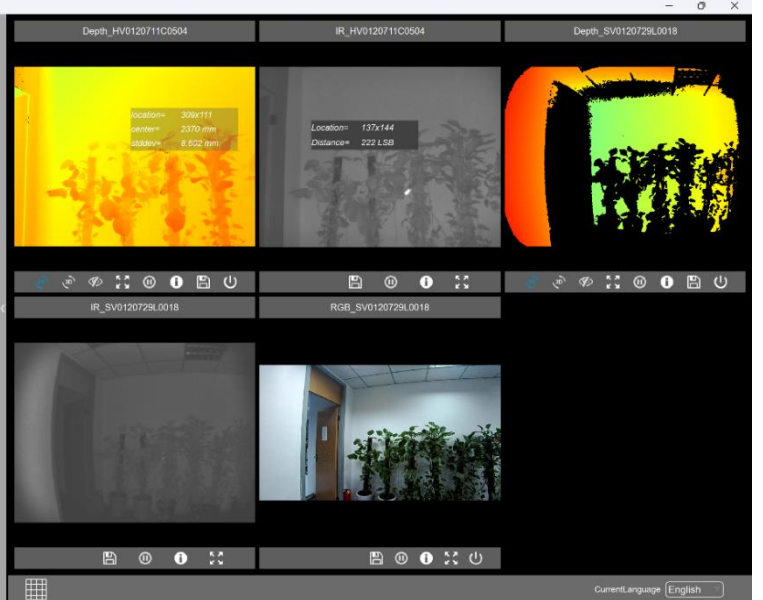
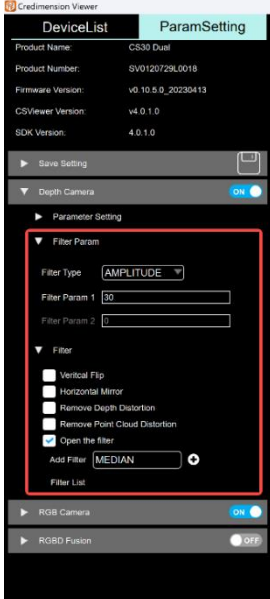
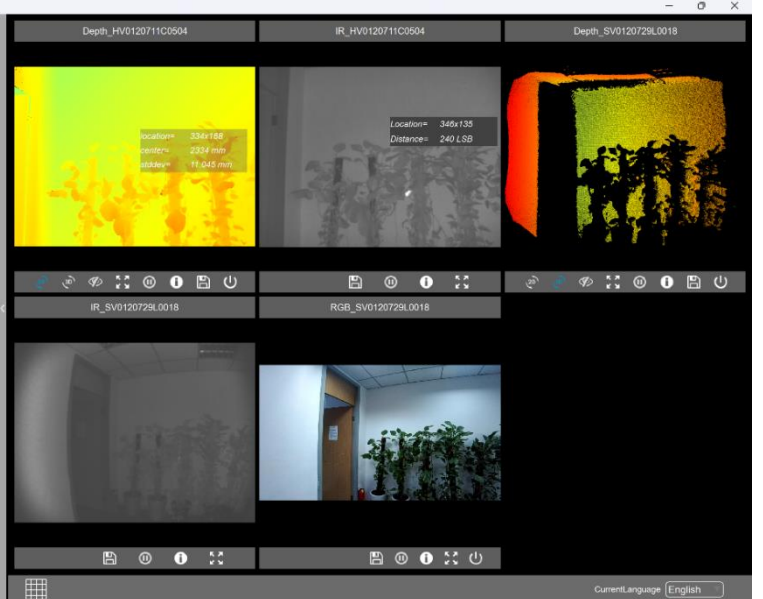
**Blob filter:** The default value is 40 for the first parameter and can be set to the range of 24-200, and the default value for the second parameter is 100, which can be set to the range of 40-200.

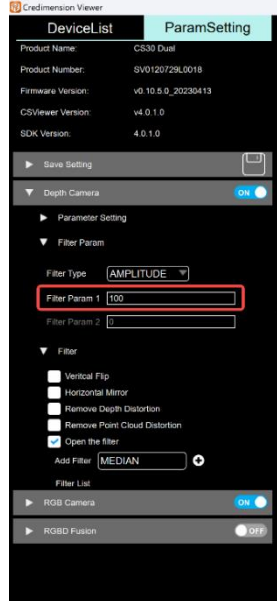
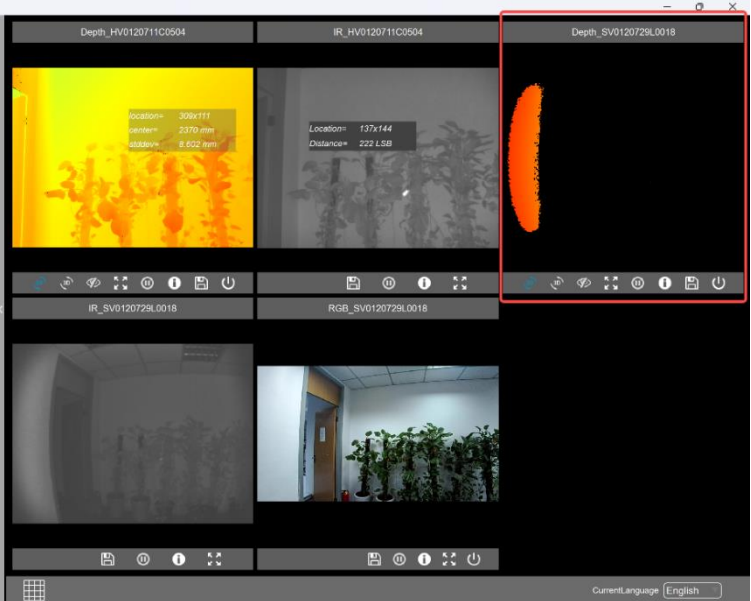
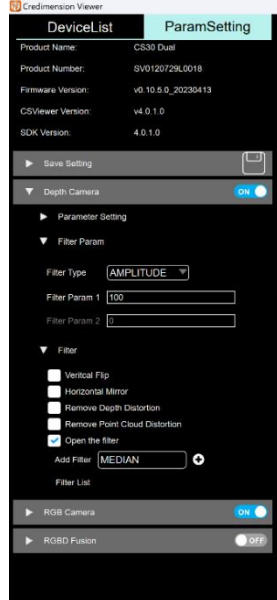
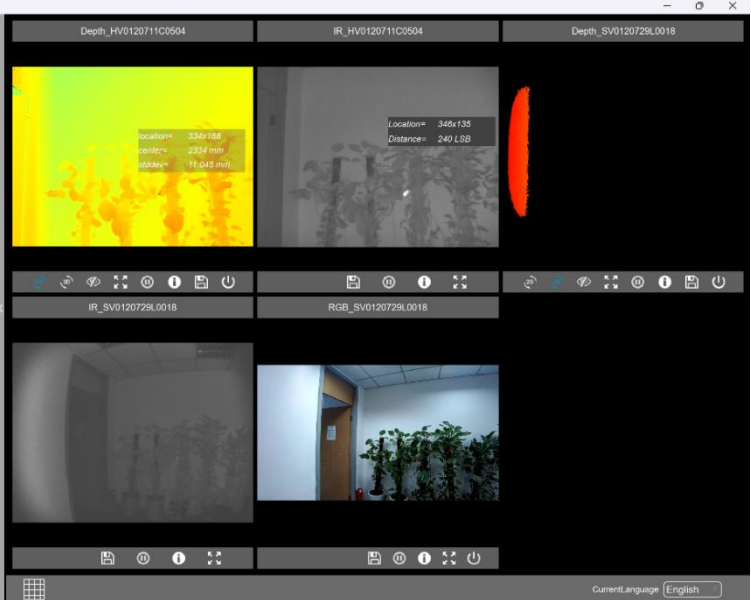
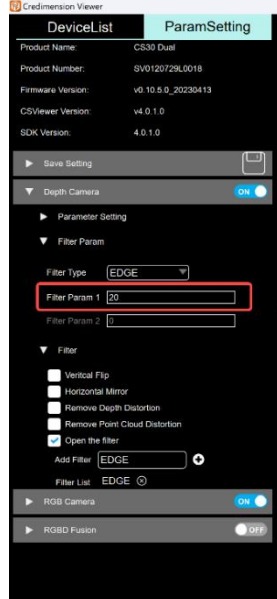

Different setting parameters, the corresponding effects are as follows:

<p>Default filtering effect</p>	
<p>Default point cloud effect</p>	


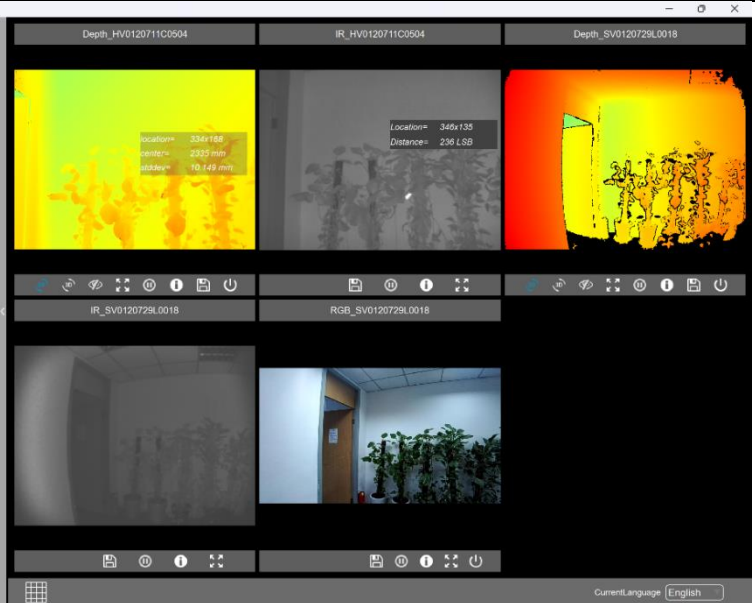
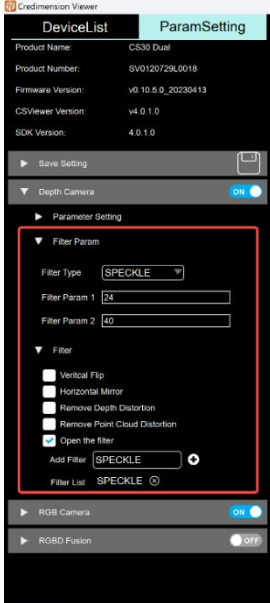

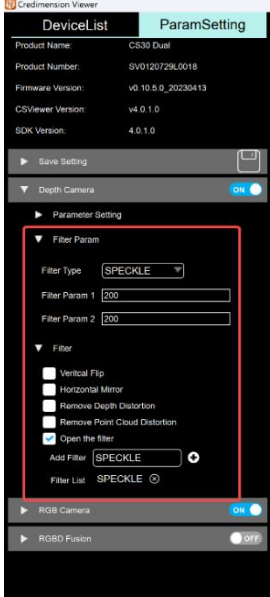

<p>The Median Filter setting parameter is the maximum depth effect</p>		
<p>The effect of the point cloud after setting the parameters of the median filter</p>		
<p>Amplitude filtering is set to the minimum depth effect</p>		

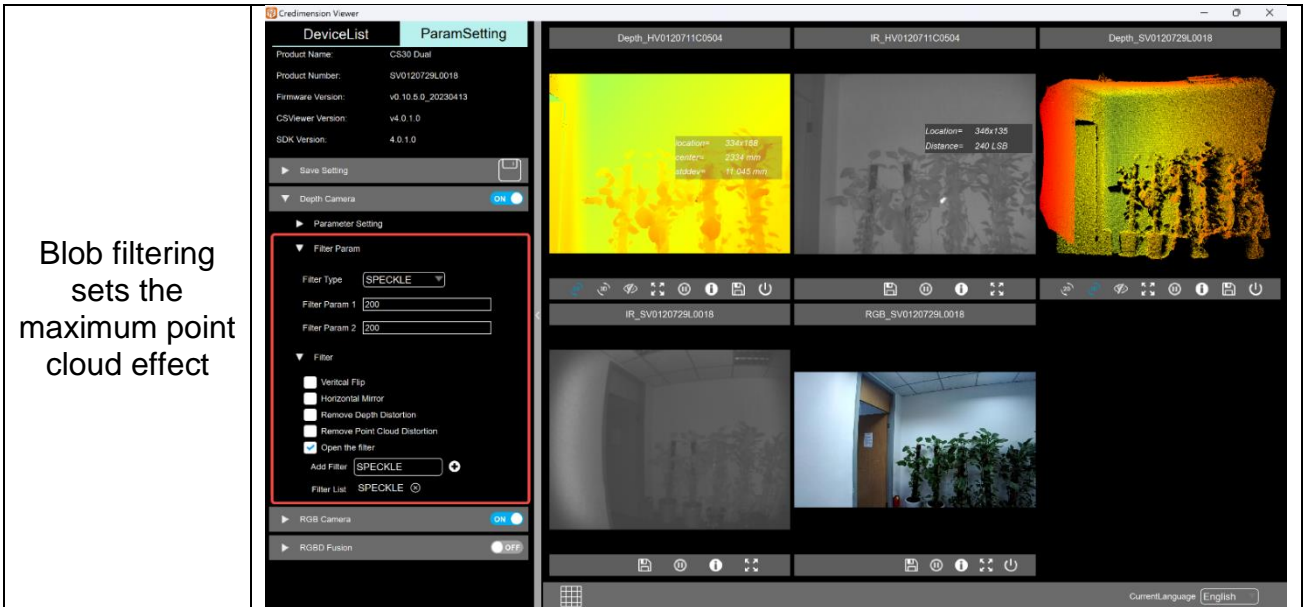


<p>Amplitude filtering sets the minimum point cloud effect</p>		
<p>The Amplitude Filter parameter is set to 30 Depth effect</p>		
<p>The amplitude filter parameter is set to 30 point cloud effect</p>		

<p>The Amplitude Filter parameter is set to the maximum depth effect</p>		
<p>The Amplitude Filter parameter is set to Maximum Point Cloud Effect (Set the amplitude filter, the larger the filter value, the more data will be filtered)</p>		
<p>Boundary filtering sets the minimum depth effect</p>		

<p>Boundary filtering sets the minimum point cloud effect</p>	
<p>Boundary filter sets the maximum depth effect</p>	
<p>Boundary filtering sets the maximum point cloud effect</p>	

<p>The depth effect after setting the minimum value of blob filtering</p>		
<p>The point cloud effect after the speckle filter is set to a minimum value</p>		
<p>Speckle filter to the maximum depth effect</p>		



Blob filtering sets the maximum point cloud effect

### 3.9. RGB function

Some products do not have RGB, no RGB and RGBD related functions, the following example is when a CS30 depth is enabled, the Depth & RGB display function is enabled;

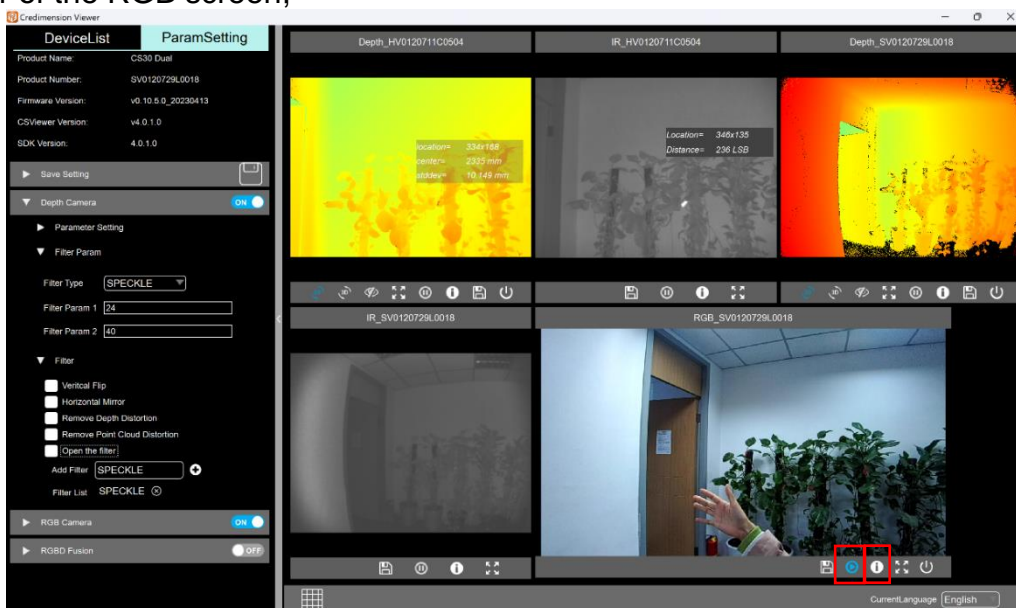
Click the "ON" switch on the right side of the RGB Camera to display the RGB image;

#### 3.9.1. RGB window control

A: When there are multiple windows, click the screen maximization button "☒" at the bottom of the RGB screen, the RGB screen will be displayed as maximized, and the other windows will be hidden, click the restore button again "☑";

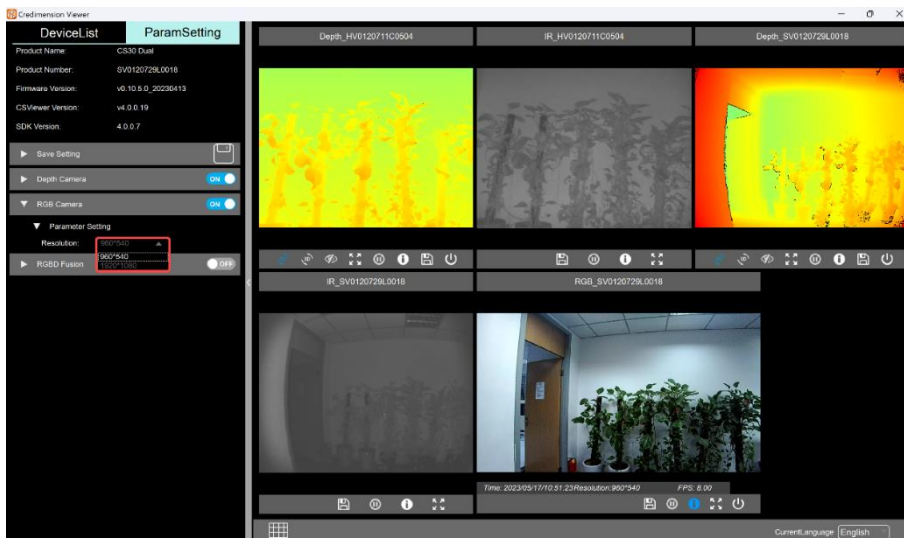
B: Click the pause button "⏸" at the bottom of the screen to pause the RGB screen;

C: Click the screen information button "ℹ" at the bottom of the RGB screen to display the current time information, current resolution, current frame rate information, etc. in the lower left corner of the RGB screen;



#### 3.9.2. RGB switching resolution

When RGB is enabled, the default resolution is 960\*540, which can be switched to 1920\*1080;

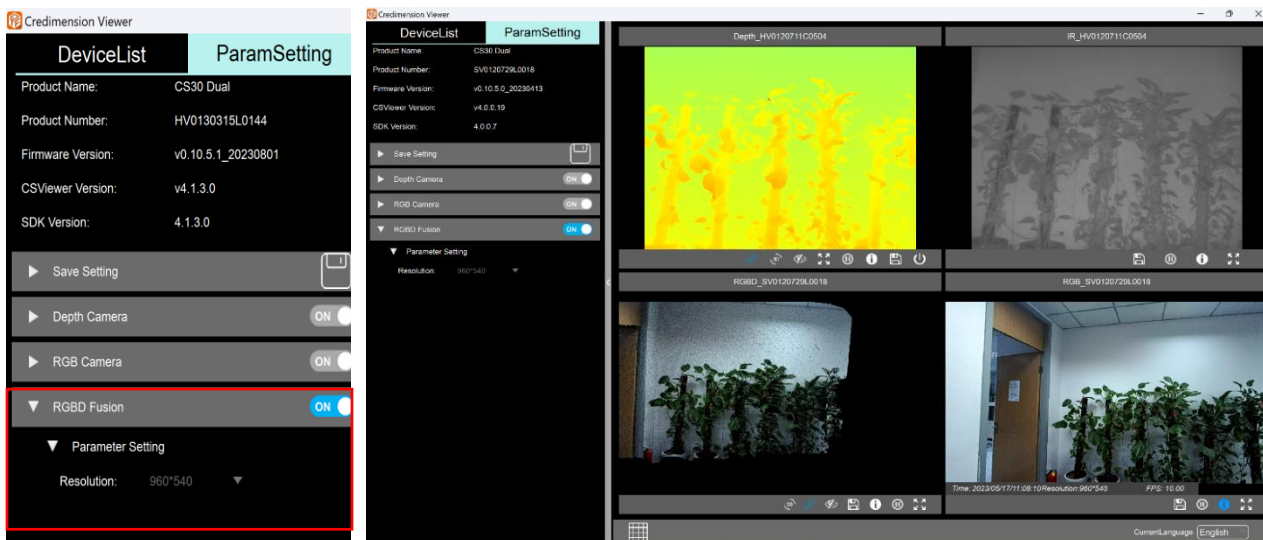


### 3.10. RGBD blending is on

Click the "ON" button on the right side of RGBD Fusion to open the RGBD-depth window and RGB window, the RGBD window will display the depth image with a resolution of 960\*540 by default, and the RGB window will display the resolution of the RGB image by default.

After RGBD is enabled, you can only adjust the integration time in the Depth parameter and save the point cloud data as RGB mapped point cloud data. There are no functions such as distance range, filtering, picture flipping, switching depth resolution, RGB resolution, and distortion removal.

Click the drop-down button "" on the left side of RGBD Fusion to switch the resolution to 1920\*1080 or 960\*540. After switching the resolution, click the 3D button "" in the RGBD window to display the RGBD 3D fusion (RGB mapping point cloud) screen at the corresponding resolution:



### 3.11. Screen saving

You can click the total save button "📁" or the save button under each screen window "📄" to save the relevant data to the local computer, and the save format and number of saved frames can be set in the save settings;

#### 3.11.1. Save setting instructions

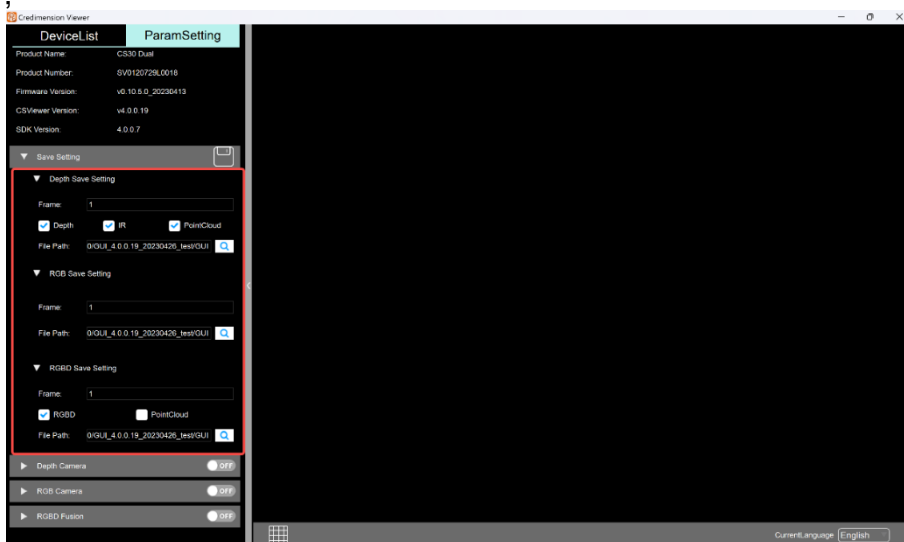
The save path is the default directory of this software, in the save settings of the corresponding module, you can set the content to be saved, frame rate (Frame: save the

frame rate to set the frame rate, the frame rate can be set in the range of 1~99), etc., click "Q" Select the path you want to save the data, do not set Chinese and Chinese characters in the save path, complete the path setting; When you start the software again, the default set path is the save path.

According to whether the product has RGBD function, there are certain differences in the save settings page; As:

There is "Depth Save Setting" in CS20 product save settings;

CS30 product save settings include: "Depth Save Setting", "RGB Save Setting", "RGBD Save Setting";

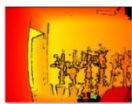


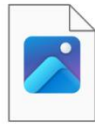











### 3.11.2. Save file format description

In Depth data saving, you can choose to save data types such as depth, IR, and PointCloud, and the saved data format is depth.png, ir.png, and PointCloud.pcd after checking, and if the relevant options are not checked, the default data saving format will be Depth.raw and IR.raw;

In the process of saving RGB data, the saved file format is "RGB.png";


In RGBD data saving, the save file format is "RGBD\_Depth.png" + "RGBD\_Depth.raw" + "RGBD\_RGB.png", as shown in the following table:


<p>Depth: Save the content and format of the data</p>	<div style="display: flex; justify-content: space-around; align-items: center;">      </div>
<p>RGB saves data format</p>	<p style="text-align: center;">此电脑 &gt; Data (D:) &gt; 20230519172341_SV0120729L0018_rgb</p> <div style="display: flex; justify-content: space-around; align-items: center;">      </div>
<p>RGBD saves data format</p>	<p style="text-align: center;">此电脑 &gt; Data (D:) &gt; 20230519163332_SV0120729L0018_rgbd</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div>

The software will automatically generate the corresponding folder according to the saved content, and the folder naming format is "save time + SN + content form", where the content form is "tof", "rgb", "rgbd", as shown in the following figure:

20230519172341_SV0120729L0018_rgb	2023/5/19 17:23	文件夹
20230519163332_SV0120729L0018_rgbd	2023/5/19 16:33	文件夹
20230519163041_SV0120729L0018_tof	2023/5/19 16:30	文件夹
20230519163020_SV0120729L0018_tof	2023/5/19 16:30	文件夹


### 3.11.3. Description of the function of the saved button

A: Function description of the total save button "":



After multiple devices are enabled, click the total save button "" on the right side of Save Setting, and save the data content as the data of the currently selected SN product; For example:

If CS30 is selected in the device list and the stream type is depth & RGB, and the total save button is clicked, the saved data is the depth data and RGB data selected under the corresponding SN of the current CS30 product.

B: Window save button "" function description:

Click the Save button "" in the screen window, and the saved content is the information that has been checked in the save settings in the current screen window;

When you click the Save button in the depth window or IR window, the save data is the content selected in the depth saving settings of the SN of the current window.

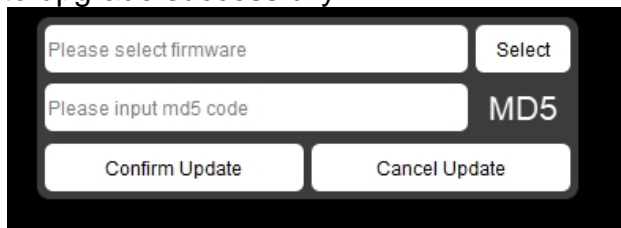
When you click the Save button under the RGB window, the RGB data with the SN content of the current window will be saved. When the software only opens the RGB window, clicking the save button "" under the RGB screen window is the same as clicking the total save button "" on the left menu bar;

If RGBD is enabled on the device, click the save button under the window to save the RGBD data of the window SN;



### 3.12. Firmware Upgrade

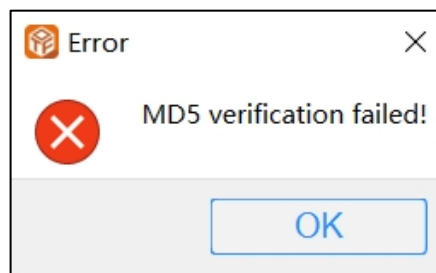
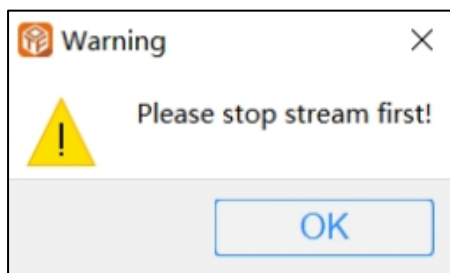
For products that transmit data through TCP network port connections, such as CS20-P and CS40, you can upgrade the firmware directly in this tool, and click the arrow "🔄" on the right side of the model to pop up the upgrade pop-up window. Select the firmware that needs to be upgraded, enter the current firmware to adapt to the MD5 password, click Upgrade, and wait for about 1 minute to upgrade successfully.



After the upgrade is successful, you need to disconnect the device and reconnect it, refresh the device list, and complete the firmware upgrade.

Precautions for upgrading firmware:

1. The firmware cannot be upgraded during the device streaming, if there is a product currently being streamed, you need to turn off the stream and then click Upgrade;
2. Enter the MD5 code corresponding to the firmware, the MD5 code does not match and cannot be upgraded;



### 3.13. Error message dmp address lookup

In the "crash" folder at the same level of the installation directory, find the folder corresponding to the error date, and then you can find the dmp file, as shown in the following figure:

GUI_4.0.1.0_202305191650 > GUI > crash > 2023-5-22			
名称	修改日期	类型	大小
Credimension-13.56.59.dmp	2023/5/22 13:57	DMP 文件	825,041 KB

## 4. Example of connecting devices

Conventional computers (desktop computers and laptops, laptops need USB ports on both sides) support 2 devices running at the same time, the number of multi-machine equipment running products is determined according to the computer configuration and the computer's own USB interface;

### 4.1. Example of desktop computer connection

<p>Refer to PC 1 configuration</p>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>设备规格</p> <hr/> <p>设备名称: DESKTOP-6VJLMVP              处理器: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz 2.59 GHz              机带 RAM: 16.0 GB (15.7 GB 可用)              设备 ID: 9D8072C8-9088-4E78-9916-6900068D25F6              产品 ID: 00342-36351-00314-AAOEM              系统类型: 64 位操作系统, 基于 x64 的处理器              笔和触控: 没有可用于此显示器的笔或触控输入</p> </div>
<p>Refer to PC 2 configuration</p>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>设备规格</p> <hr/> <p>OptiPlex 7080              设备名称: DESKTOP-OUNKUTF              处理器: Intel(R) Core(TM) i7-10700 CPU @ 2.90GHz 2.90 GHz              机带 RAM: 16.0 GB (15.7 GB 可用)              设备 ID: 7F2351A1-978B-493B-B354-59251D277BF8              产品 ID: 00326-70000-00001-AA031              系统类型: 64 位操作系统, 基于 x64 的处理器              笔和触控: 没有可用于此显示器的笔或触控输入</p> </div>

Connect 2 devices to open the flow map normally;

When connecting 3 devices (CS20+CS30+CS30), it is recommended not to connect them on the same side of the host, but on the front and rear sides.

When connecting 4 devices (e.g. two CS20 + two CS30s), it is recommended that the two CS20s not be connected to one side of the computer at the same time, but connect one side to the CS20+CS30, and place another set of CS20+CS30 on the other side, as shown in the following figure:



3 devices are connected

4 device connections

Connect 5 devices (CS20 + CS30 + CS20 + CS30 + CS20-P), except for CS20-P connected to the network port, the remaining four devices are connected as above (the USB interface of each device is differently distributed, connected according to the actual situation);

### 4.2. Laptop connection example

<p>Refer to PC Configuration</p>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>① 设备规格</p> <hr/> <p>设备名称: Synexens-Daisy              处理器: AMD Ryzen 7 6800HS Creator Edition 3.20 GHz              机带 RAM: 16.0 GB (13.7 GB 可用)              设备 ID: 3B29D2BE-6A26-4AA2-AAC9-12938DCF1846              产品 ID: 00342-30661-95430-AAOEM              系统类型: 64 位操作系统, 基于 x64 的处理器              笔和触控: 没有可用于此显示器的笔或触控输入</p> </div>
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Laptop USB port	
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Note:

1. When running with a laptop, it can support 2~3 devices to run at the same time;
2. As shown in the figure above, if the laptop has only one USB port and one Type-C port, the Type-C port can be used to expand the USB port or TCP network port to connect devices (the extended USB interface can only connect to 1 device), and if the HUB is used for power supply, this HUB can be connected to 2 devices;
3. If the HUB connection device is CS20-P or CS40, do not connect CS20 or CS30 to this HUB, otherwise the product will run abnormally due to insufficient power supply.

## Disclaimer

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