
Credimension Viewer instruction manual

Revise the historical version

date	version	description	author
2021/12/03	V1.0.0	CS30 instructions for use	Daisy
2021/12/07	V1.0.1		Daisy
2022/3/18	V1.0.2	Added adjustment distance and integration time	Daisy
2022/7/26	V2.0.0	Credimension3.0(V3.0 Version SDK+ adds RGBD functionality)Version usage instructions	Daisy
2022/12/1	V3.0.0	The GUI supports turning on CS30 dual band or CS30 single frequency module and optimized Update related features	Daisy
2023/2/17	V3.1.0	Added filtering function and distortion removal function	Daisy
2023/5/15	V3.2.0	CS30+CS20GUI description	Daisy
2023/5/22	V4.0.0	GUI4.0 instructions	Daisy

directory

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1. Introduction to the tool

Tool Name : Credimension Viewer v4.0

Tool description : Credimension Viewer v4.0 is a Windows demo GUI for the CS20/CS30 multi-machine series tool . This tool is mainly used to get display saved Depth, IR, Pointcloud, RGB (CS30), RGBD (CS30) letters . At the same time, it supports functions such as viewing basic information of the device, setting resolution, integration time, etc, and supports 2 or more devices Connect and use at the same time.

2.Installation instructions

2.1.System requirements

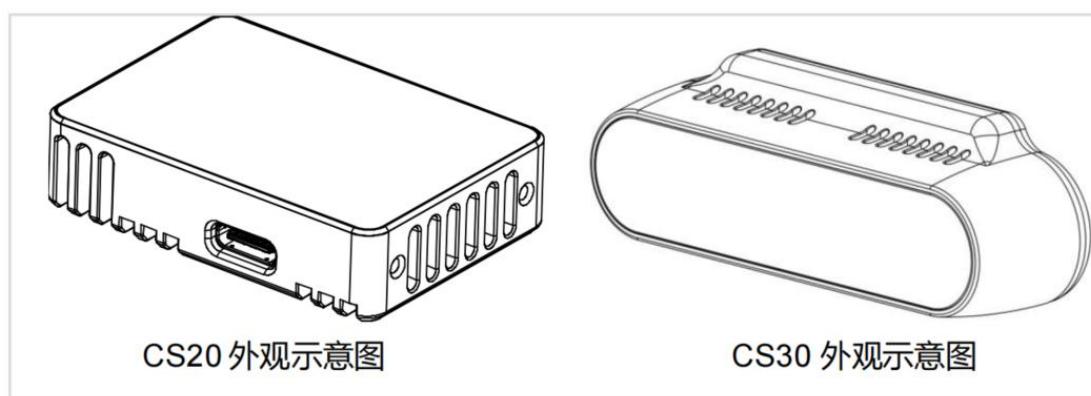
The current Credimension Viewer 4.0 supports window10 and window11.

2.2.Credimension Viewer installation

Credimension Viewer is a green version and does not require a separate installation

名称	修改日期	类型	大小
log	2023/5/15 13:36	文件夹	
parameters	2023/5/16 10:09	文件夹	
platforms	2023/4/26 11:42	文件夹	
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
Credimension.exe	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
D3Dcompiler_47.dll	2014/3/11 18:54	应用程序扩展	4,077 KB
libEGL.dll	2020/11/6 13:30	应用程序扩展	25 KB
libGLESv2.dll	2020/11/6 13:30	应用程序扩展	3,306 KB
msvcp_win.dll	2021/6/1 16:10	应用程序扩展	620 KB
msvcp110_win.dll	2021/4/23 13:21	应用程序扩展	548 KB
msvcp140.dll	2021/7/27 9:54	应用程序扩展	553 KB
msvcp140_1d.dll	2023/3/21 11:11	应用程序扩展	30 KB
msvcp140d.dll	2021/6/3 9:30	应用程序扩展	899 KB
msvcr100.dll	2011/6/11 1:15	应用程序扩展	810 KB
msvcrtd.dll	2021/4/23 13:21	应用程序扩展	623 KB
opencv_core440.dll	2022/11/25 15:39	应用程序扩展	3,956 KB

2.3.Hardware connection

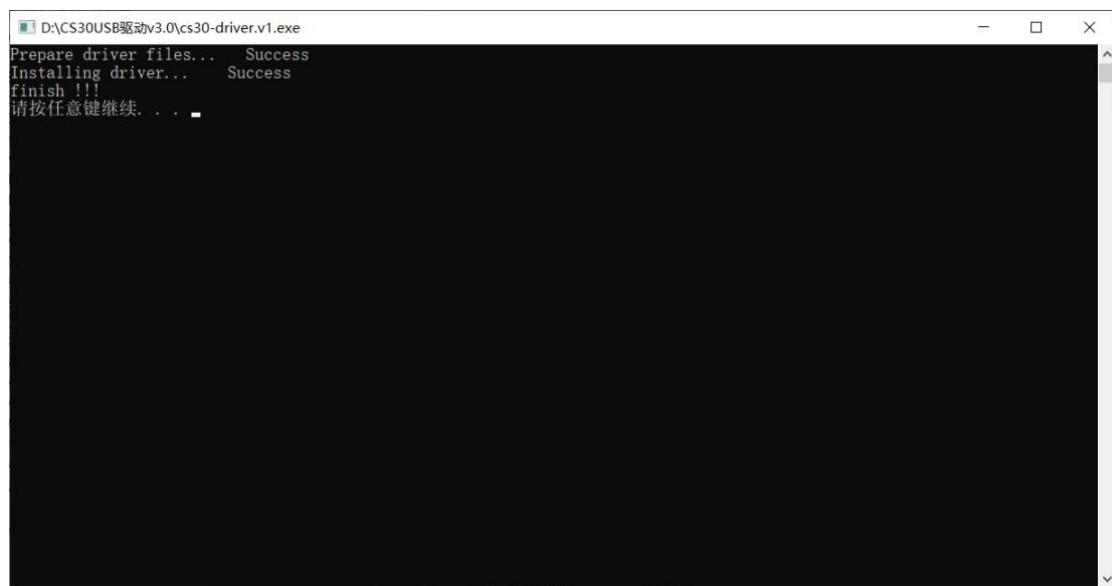


Note: Run the Credimension Viewer version 4.0 tool for the first time before opening CS30 (If the computer has been running before Credimension Viewer v3.0 with installed drivers can be ignored), you need to install the driver first, the installation steps are as follows:

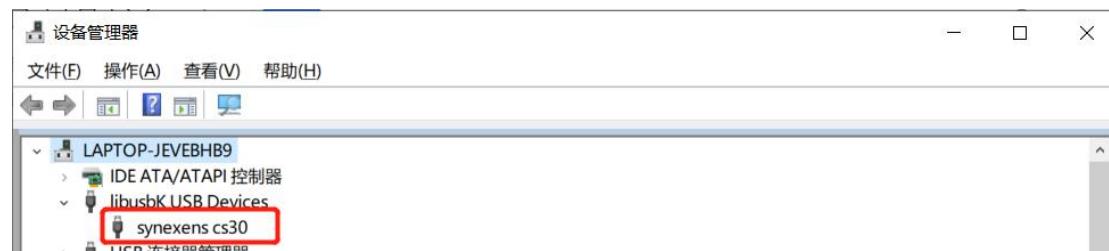
Download the driver locally:



Connect the CS30 module to the PC, double-click the cs30-driver.v1.exe file to install the driver, Wait 1 minute or so for the prompt to appear: Please press any key to continue... As shown in the following figure, the installation is complete.

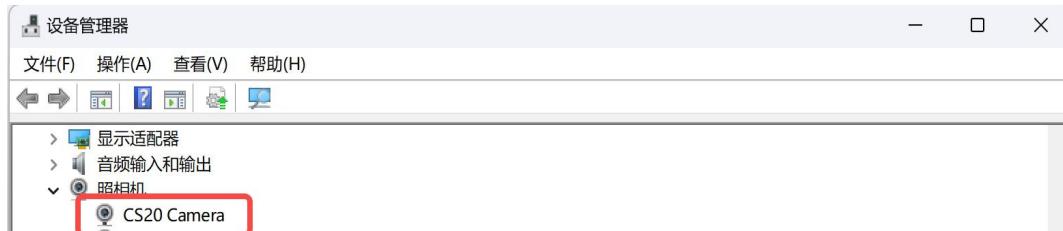


At this point, the current module can be recognized in the device manager, as shown in the figure below, and the device manager shows synexens CS30 as the driver installation is complete.



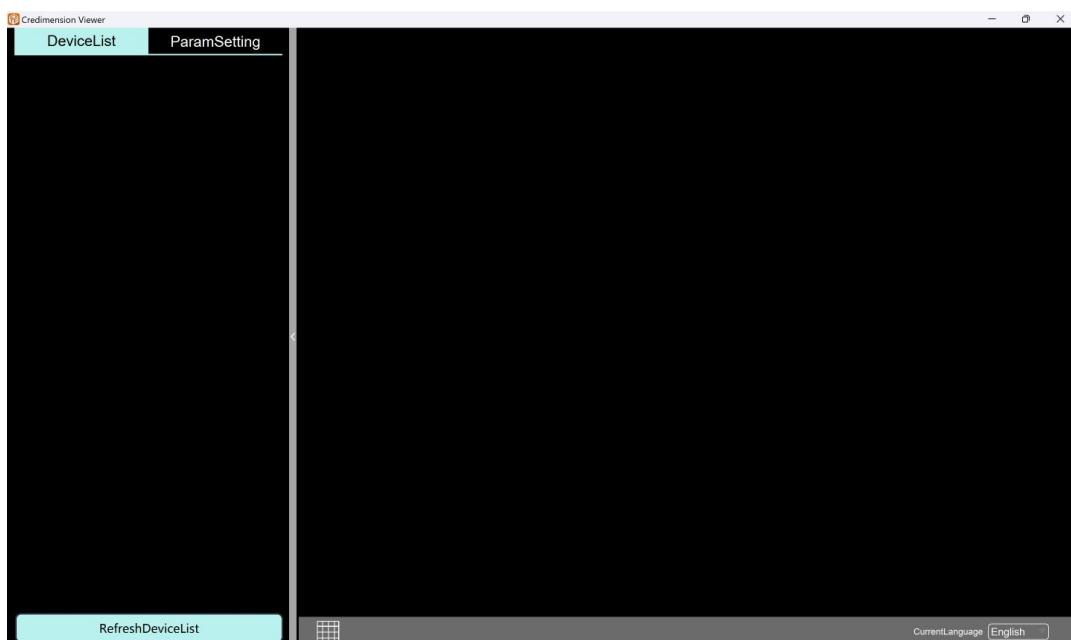
After the driver installation is complete, or the driver is directly connected to the device before it has been installed. (After connecting the device, you need to have about 5S computer connection response time, when the device manager list appears

in the above figure is the connection is successful, CS20 does not need to install the driver, connect the device around 5S device manager list - > camera CS20 Camera appears is the connection is successful.)



The following example shows the example of connecting two modules at the same time.

Run the Credimension Viewer tool.(double-click the Credimension.exe executable file)



Note: Before opening, you need to turn off the camera turned on in the computer, otherwise it will occupy this device and cause no screen display.

Notes on connecting devices:

Do not use the USB under one bus when accessing, try to have a separate USB for each one.

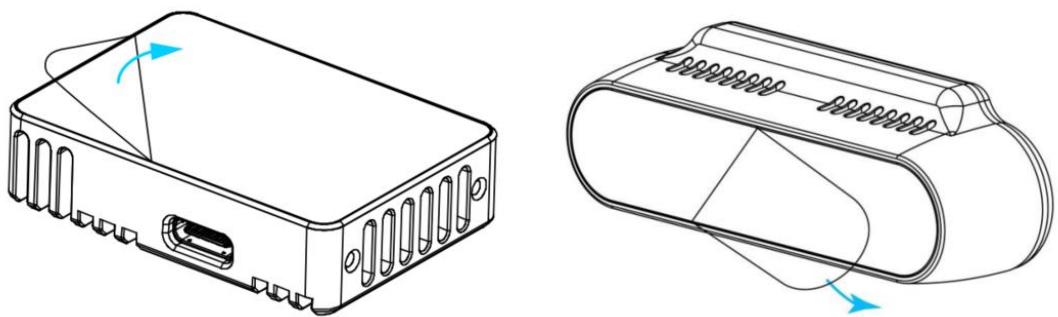
There may be insufficient power supply to the motherboard, in which case it is necessary to connect the hub external power supply to the module.

CS20 runtime will first download the internal parameter file (about 60S), it is best to wait for the internal reference file to be downloaded before turning on another device, whether the internal parameter file is downloaded can check the parameters directory under the GUI (resolution + SN number named file)

4. When the CS20 or CS30 device does not flash the SN number, the program

protection mechanism restricts the device to turn on, so it runs before this connected device needs to burn the SN number, it can open the stream.

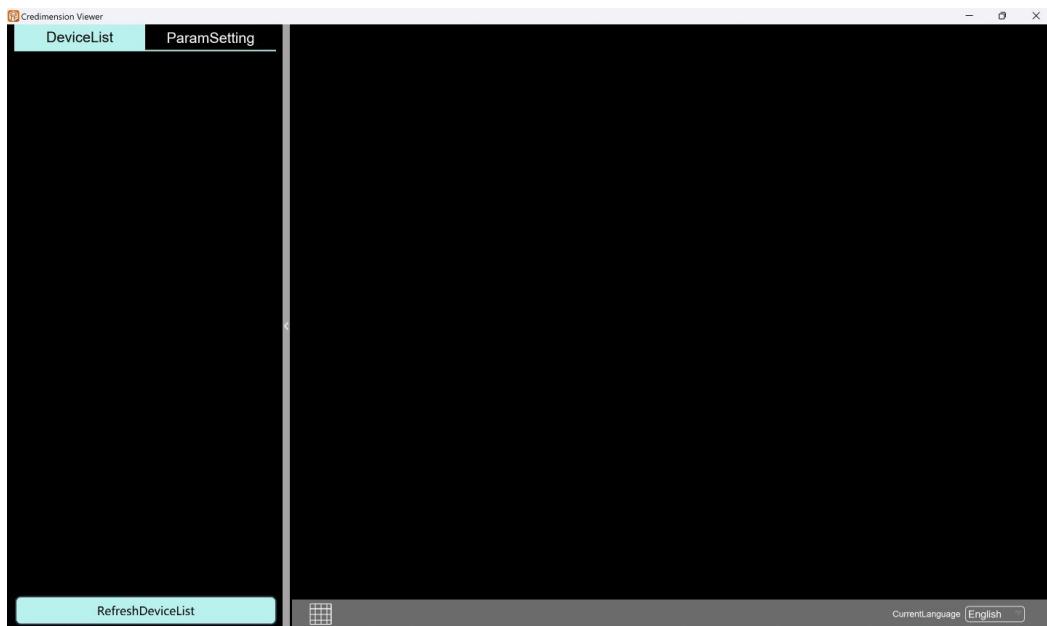
Tips: Please tear off the protective film on the glass cover of CS20/CS30 module before use, and use it as shown in the figure below, if there is no protective film, this prompt can be ignored.



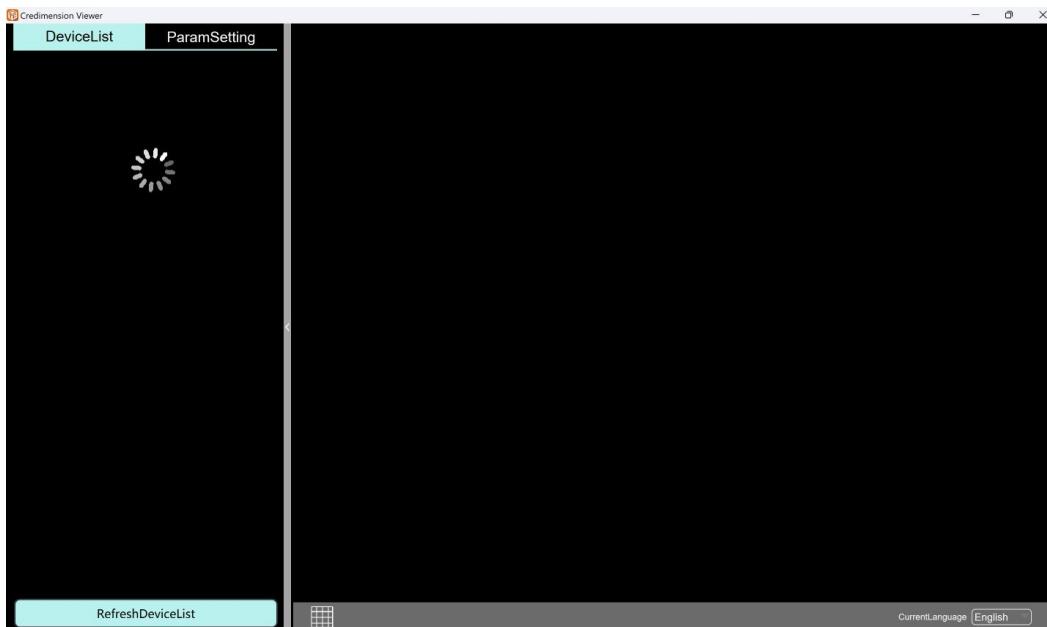
3.Guidance on use

3.1.Turn on the device

Click the Refresh Device List button as shown in the figure below, and the refresh status appears on the left side around 5S to display the list of currently connected devices.

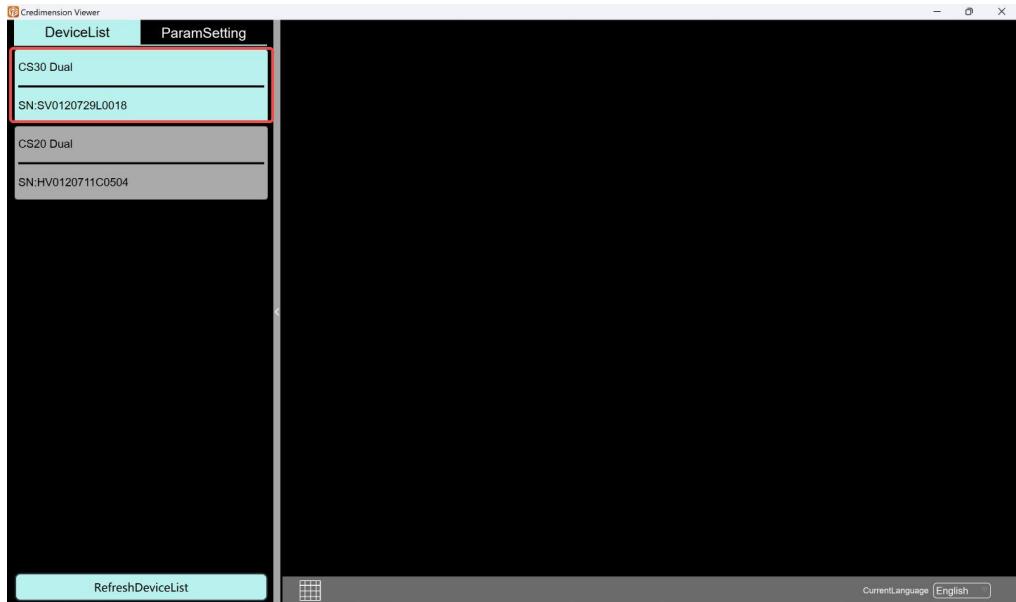


Device list refreshing:

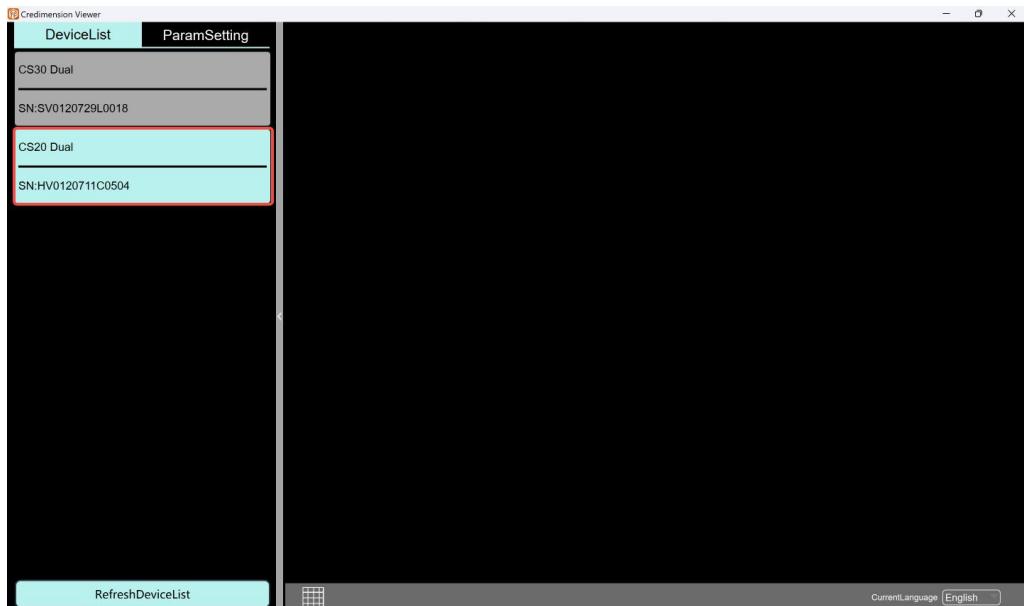


Displays a list of devices(At present, the connection of CS20 dual-band + CS30 dual-band module is used as an example):

When connecting a device, the current device is selected by default (blue background), and when connecting two devices, The first device is selected by default, gray is unchecked, and the selected module is CS30 Dual, and the device SN number for : SV0120729L0018



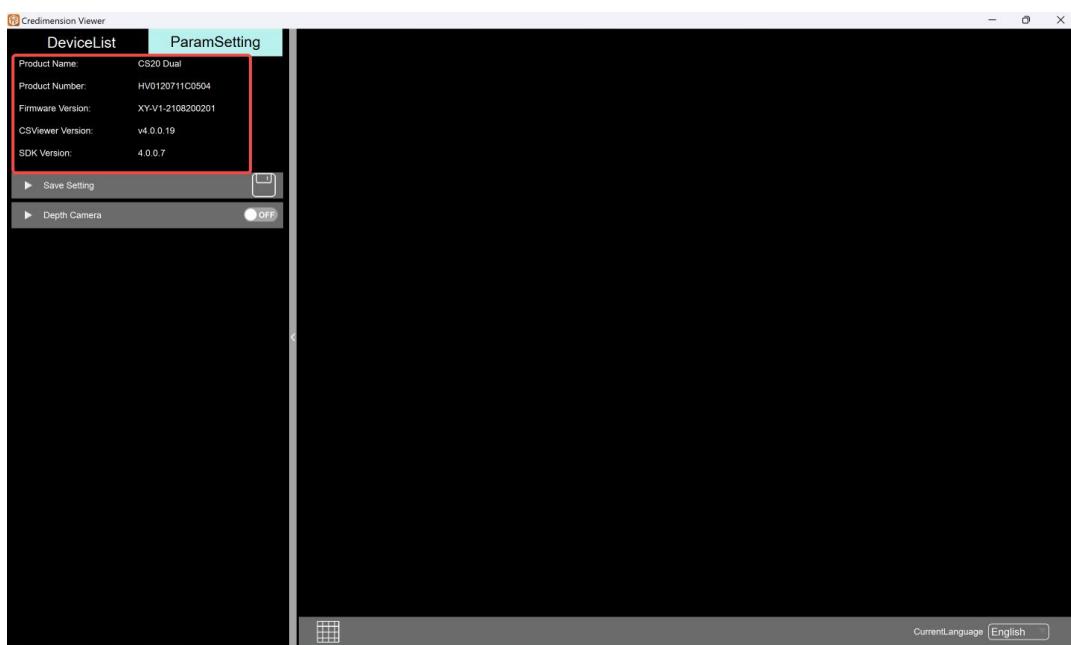
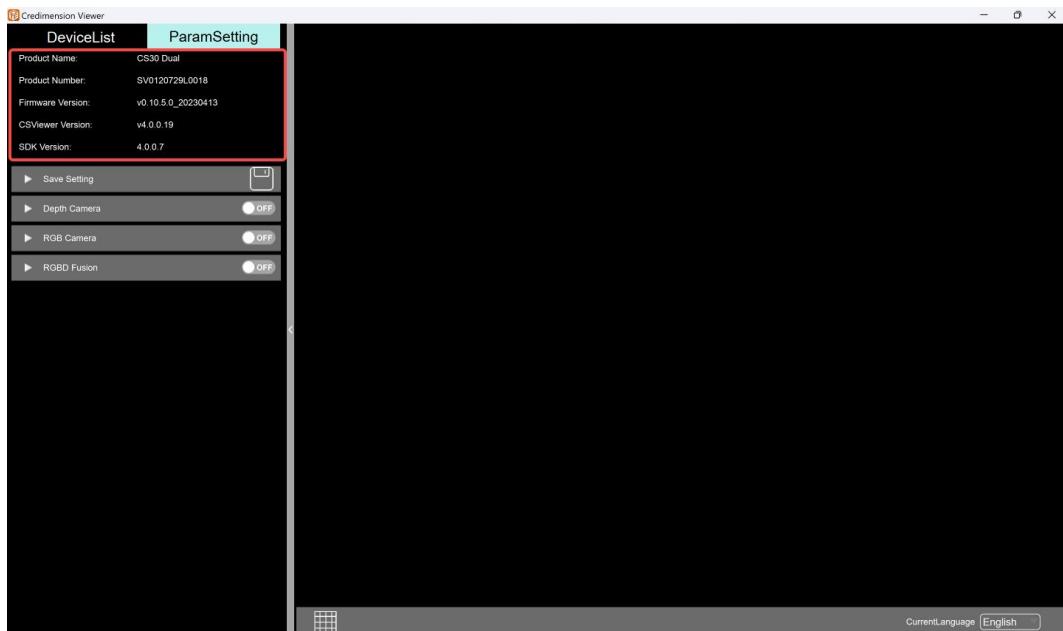
The selected device is CS20 Dual and the device SN number is: HV0120711C0504



3.2.Get device information

After selecting a device, click ParamSetting to display the information of the currently selected device, and you can open and close the current device.

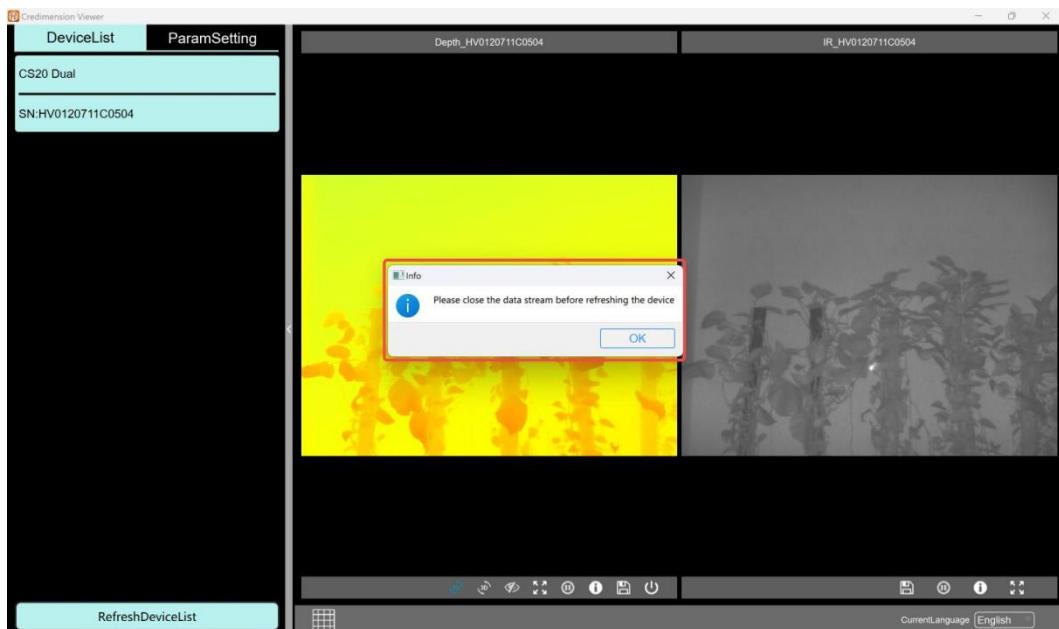
Includes: device name, device number (SN number), SDK version, firmware version, etc.



3.3.Introduction to assistive tools

3.3.1.Refresh the list of devices

When no devices are in the stream, click Refresh Device List to display the currently connected devices in the left device list column. If there is currently a device that is being opened, prompt you to close the device in the open stream and refresh it again.

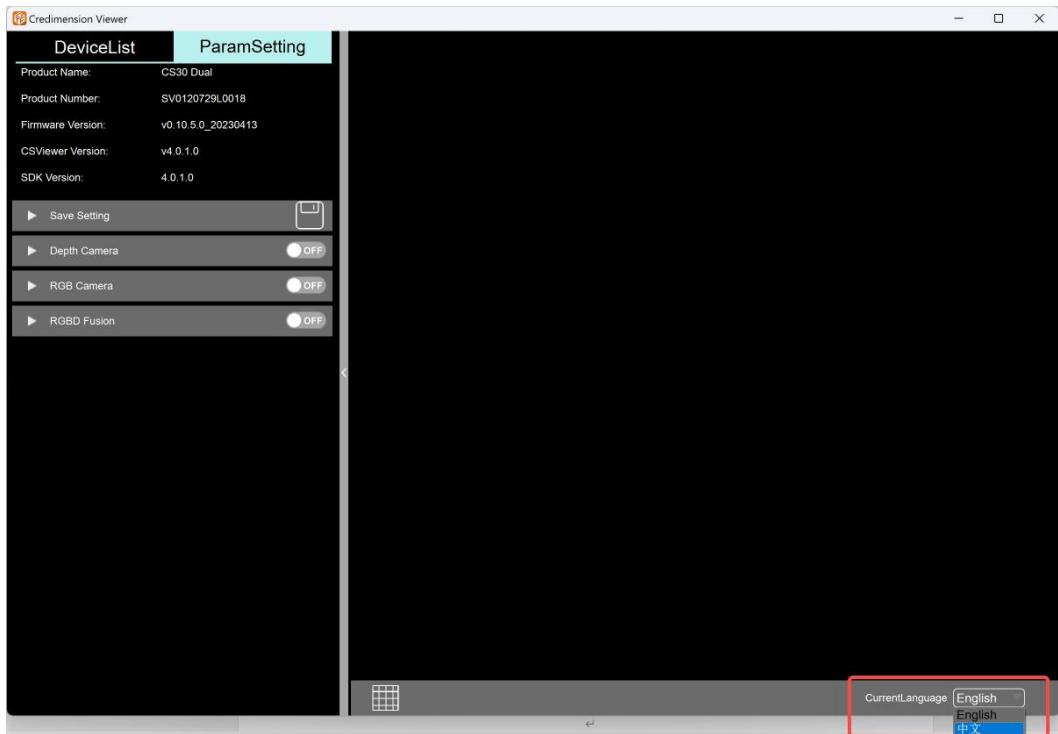


When the device connection process is interrupted, and the device is already in the device list, there will be a prompt box to indicate that the current device has been removed, click the OK button in the device list. The disconnected device will no longer be displayed in the list.



3.3.2.Switch between Chinese and English

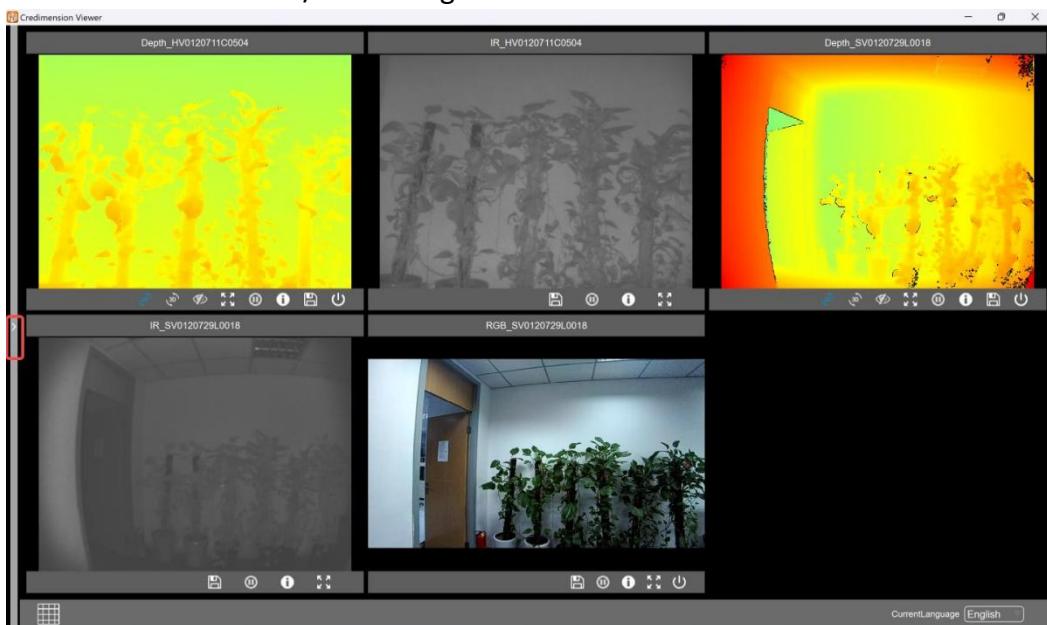
The lower right corner of the tool shows the current language, which can support switching Chinese/English; The default is English.



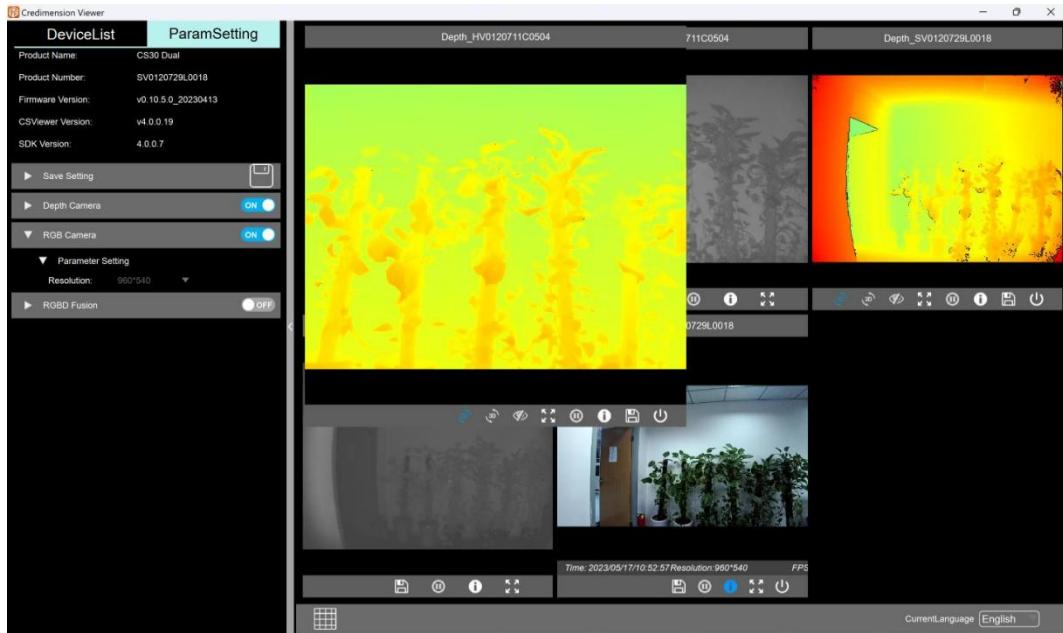
3.3.3.Window layout settings

Click on the left to hide the device list and menu bar to make the screen space larger, click the arrow to restore; Mouse drag each screen window to move the window position, or zoom in and out of the current screen window, display the nine-square button at the bottom left of the screen window frame, you can restore the screen window dragged by the mouse back to the normal layout state.

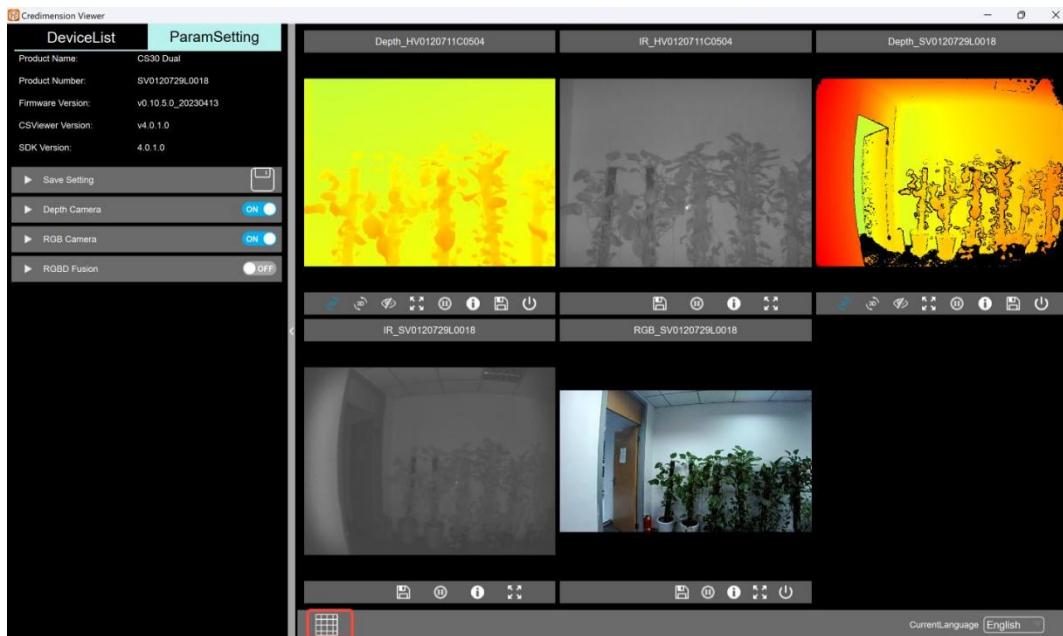
Hide the left device list/left settings bar:



To modify the window size and change the window position:



Nine-grid button relayout restoration:

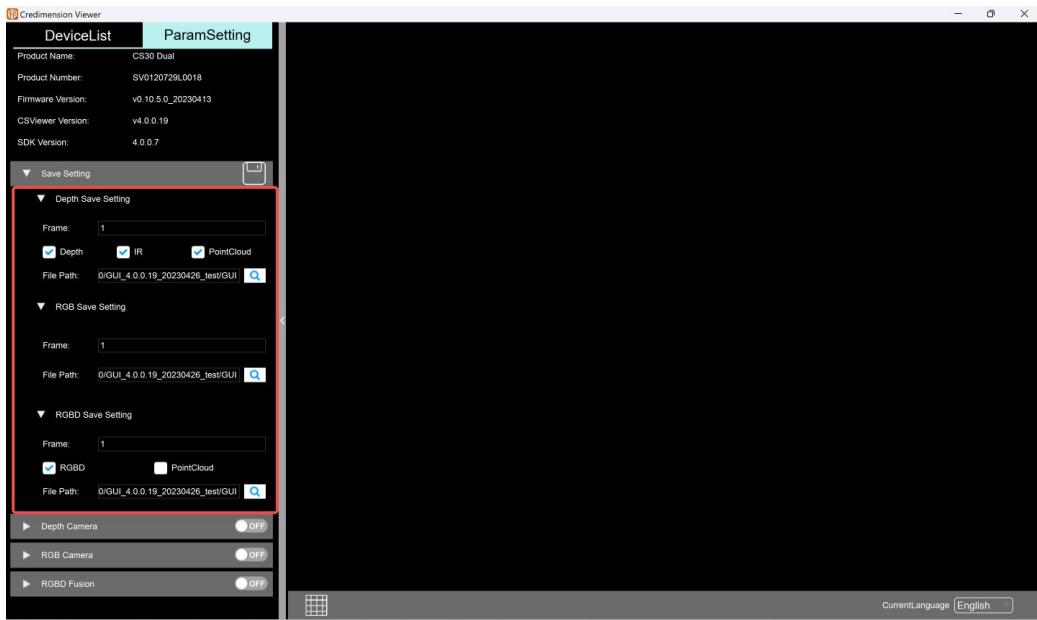


3.3.4.Save the settings

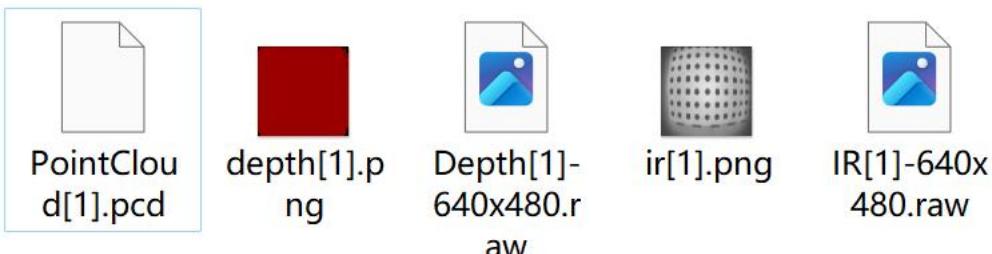
Save settings multi-device universal, save path default to the current directory folder (put the path try not to contain Chinese), select the file path to save the data, after setting, the software will default to the currently selected path The latest set save path, number of save frames, etc.(Note: Do not include Chinese/Chinese characters in the save path)

CS30 device save settings include: Depth Save Setting, RGB Save Setting, RGBD

Save Setting; CS20 device save settings include: Depth Save Setting;



Depth save settings can choose to save the data type, depth/IR/PointCloud, check the save data format corresponds to depth.png, ir.png, PointCloud.pcd, the default save data is Depth.raw, IR.raw



Note: After enabling multiple devices, click the Save Setting button on the right to save all data streamed by the current SN number module, for example: the current enabled module is CS20+CS30, when you click the Save button, select the device as CS30 in the device list, the corresponding number is SV0120729L0018, and the stream type is depth+RGB, click Save to save the data as Depth under the SN number corresponding to the current CS30 device Select Data to be saved + RGB data; If CS30depth+RGB CS20 depth is turned on at this time, select CS20 in the device list, click the Total Save button, and save data as all checked data under CS20 depth.

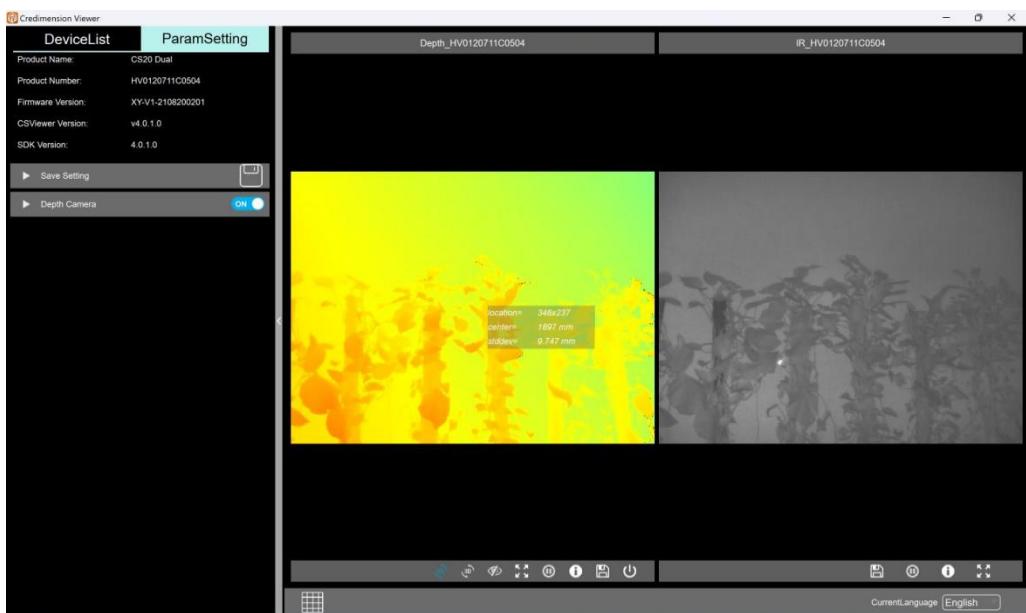
3.4.Turn on the device

CS20 Open Flow Considerations:

CS20 runtime will first download the internal parameter file (about 60S), it is best to wait for the internal reference file to be downloaded before turning on another device, whether the internal parameter file is downloaded can be viewed in the parameters directory under the GUI (resolution + SN number named file, a CS20

resolution corresponds to download the internal parameter file once), be careful not to close the depth or program during the download of the internal parameters.

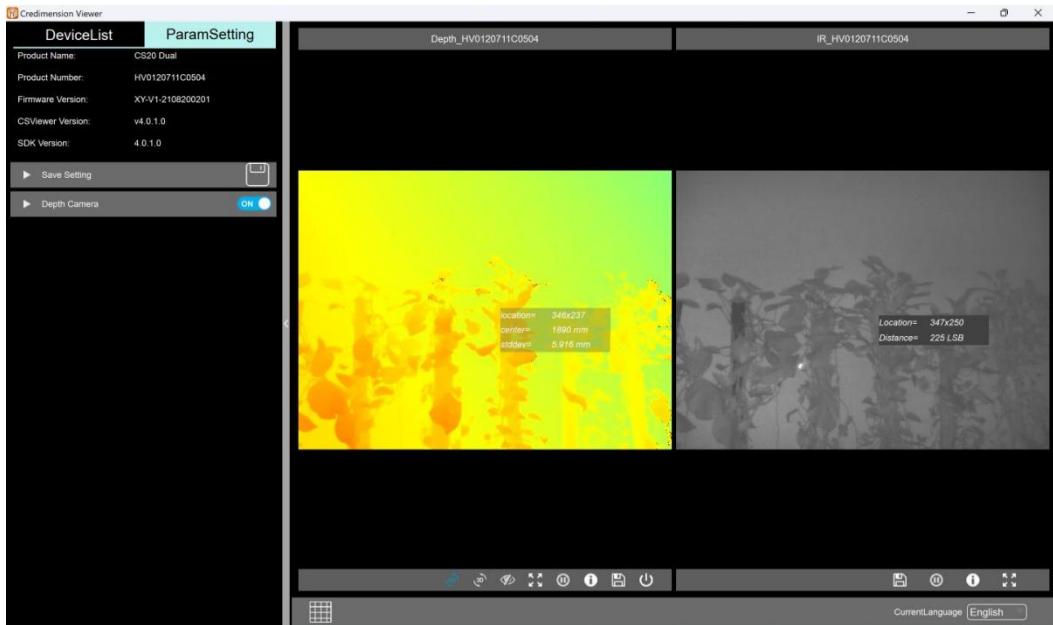
Select the device that currently needs to be turned on, click ParamSetting and click the Depth Camera switch to display the depth image (left) and IR graph (right) of the current device. The default resolution of CS20 open stream is 640*480, the default resolution of CS30 open stream is 320*240 (dual-frequency frame rate 20fps, single-frequency frame 40fps), the current example is CS20 open-stream screen is 640*480 resolution (frame 7~8fps), the frame rate will be reduced when CS20 is first turned on, and the frame rate can return to normal after the participation load is completed around 60S.



3.5. Displays a 2D Depth plot

The naming format of the screen window is: Depth_SN number, IR_SN number, SN number is used for the corresponding window and device when multiple devices are connected at the same time, and Depth/IR is used to distinguish the type of open window;

Click the mouse on the depth screen to view the depth value of the currently clicked pixel. Click the IR screen to view the IR intensity value.



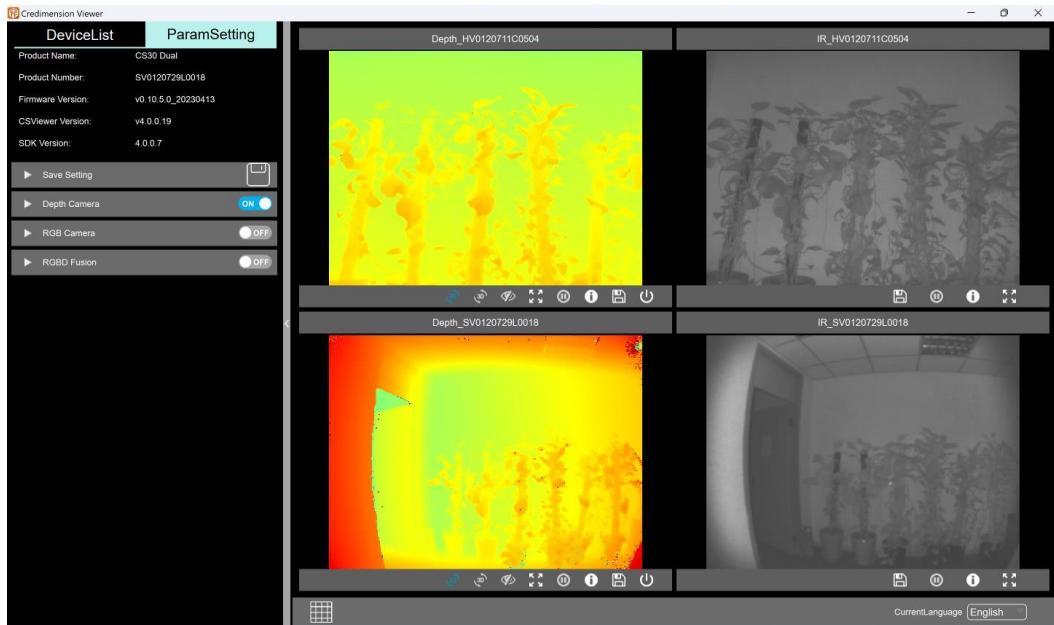
Note: The close button at the bottom right of the depth screen window, this button functions the same as the Depth Camera close button on the left, the ir figure is shown or hidden with the depth screen window switch, and there is no separate control switch.

Click the Camera switch when connecting CS20, and the image can be displayed in about 5S;

When opening a CS20 device for the first time, the internal reference will be downloaded to the local (the same module is downloaded once), download time: about 60S, please do not close the module or close the GUI during the download process, the frame rate will be reduced during the loading process, and when the frame rate returns to normal (640 resolution 7~8fps) within the participation is completed).

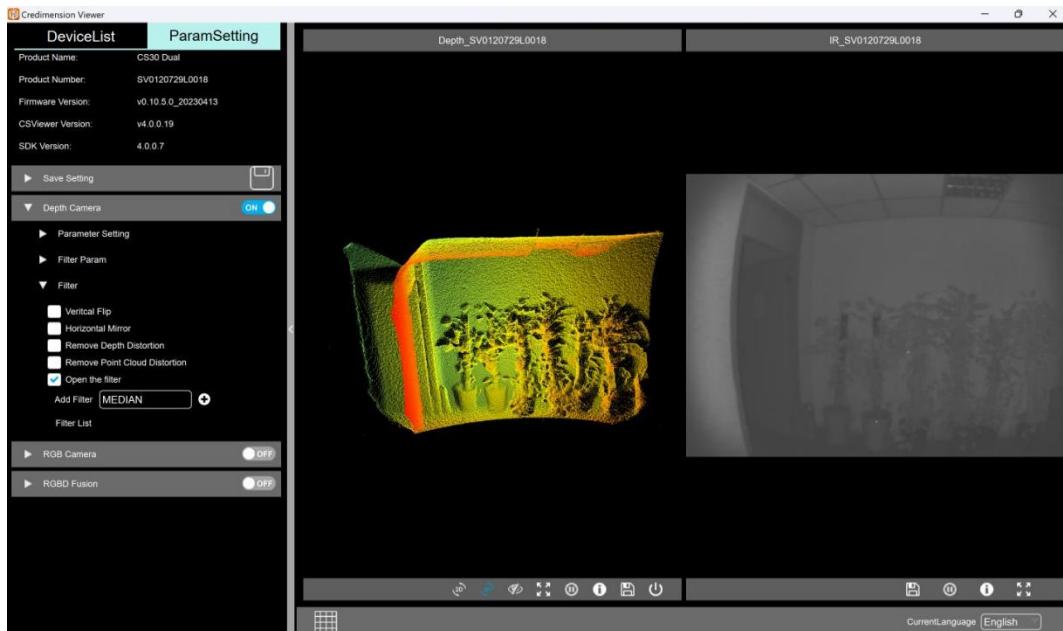
3.6.The second device turns on

Click the device list in the upper left corner, select another device, click the ParamSetting button, Depth Camera open stream .(CS30 dual band example)

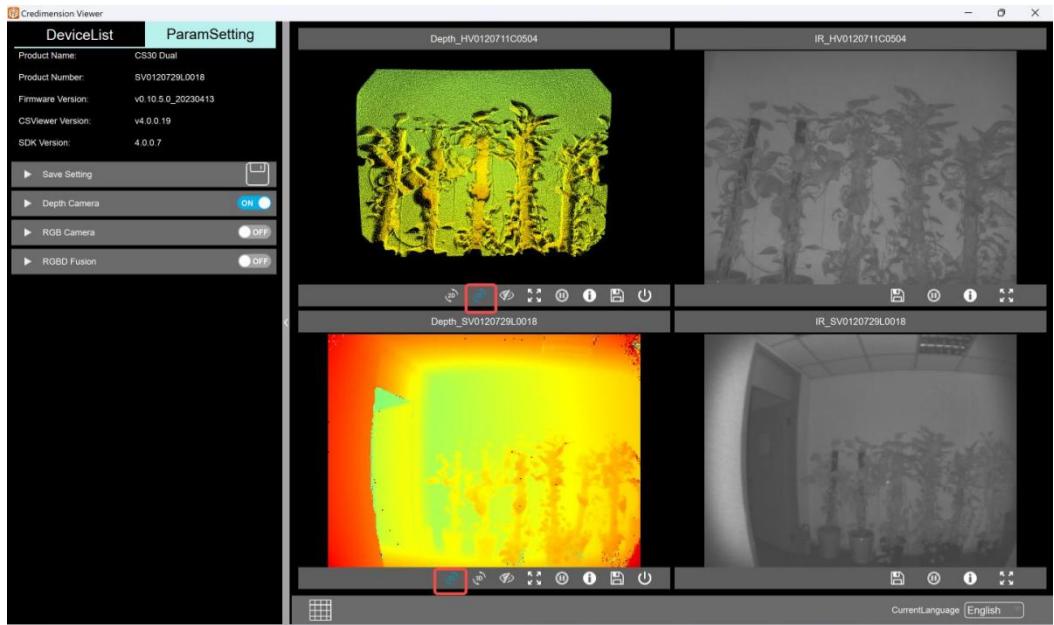


3.7. Displays a 3D pseudo-color point cloud

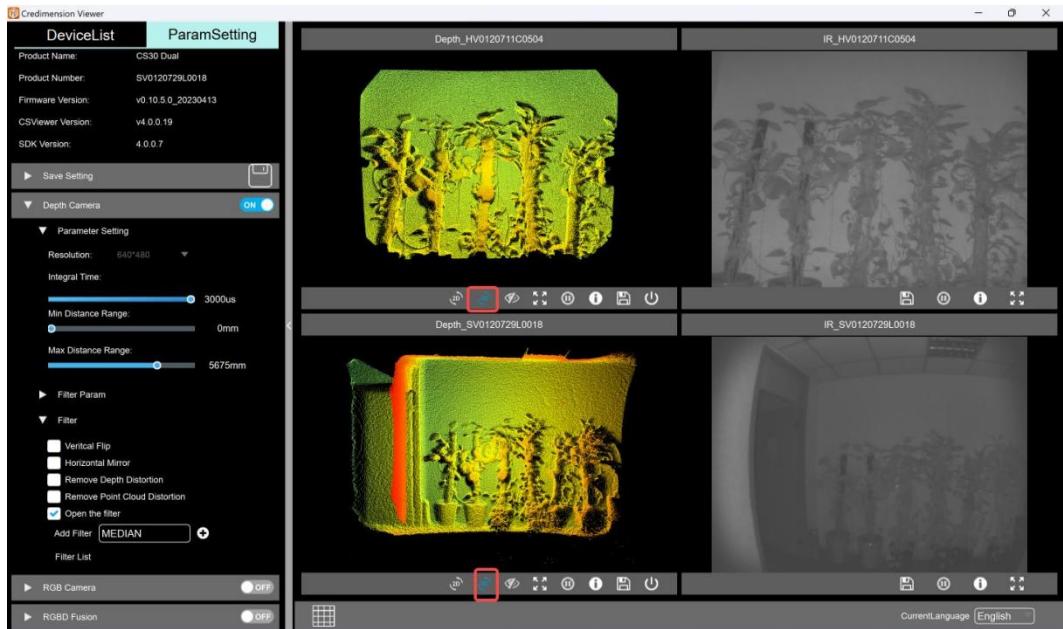
Click the 3D button under the depth window to view the real-time pseudo-color point cloud map corresponding to the current device, and drag the mouse to control the viewing angle or slide the scroll wheel to zoom in and out, and you can view two device point clouds at the same time.



To view a device artifact point cloud:

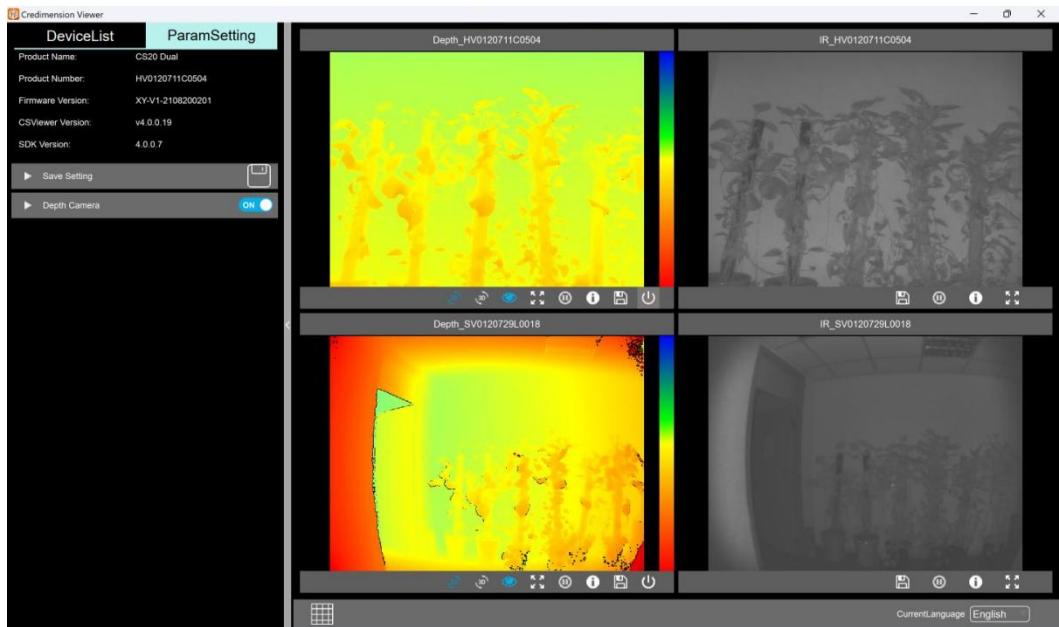


View two device false color point clouds:



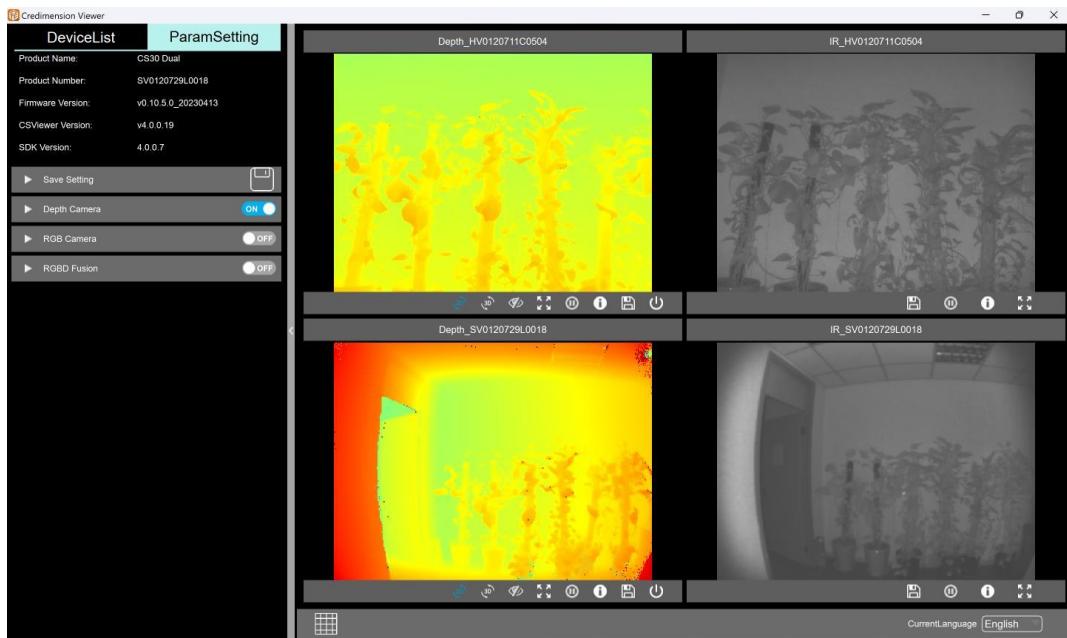
3.8. Check the color bar

Click the View color bar button at the bottom of the Depth screen to display the color bar.

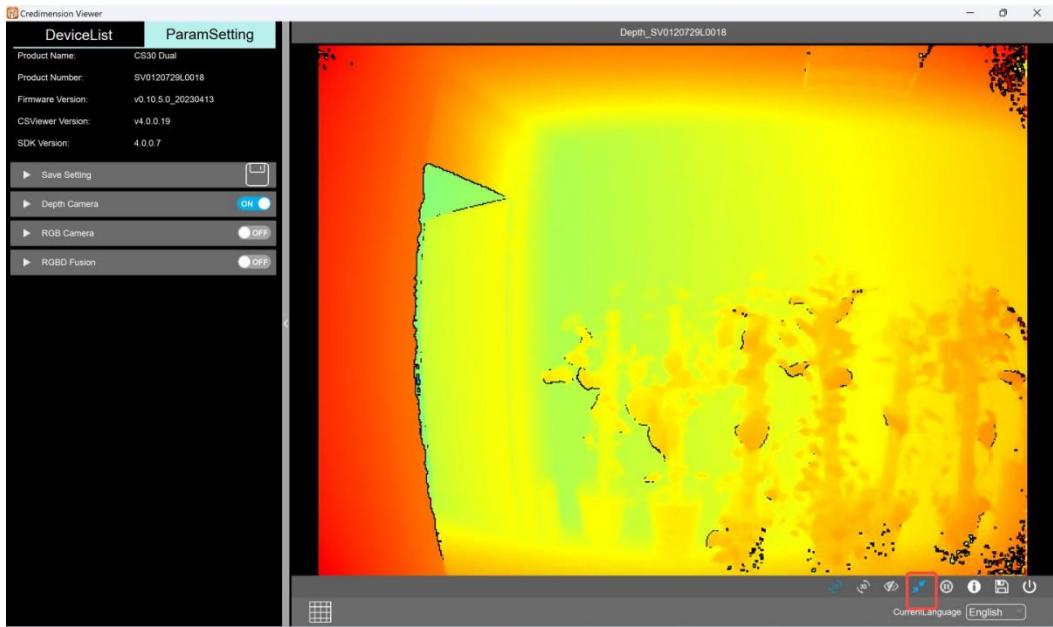


3.9. Window maximization

Click the maximize button at the bottom of the screen (valid when two screen windows are displayed at the same time, and there is at the bottom of each screen.) This button), the currently selected screen can be displayed as maximized, the window that has not been clicked is hidden, click the restore button again, and all the screens currently open are displayed normally.



Select one of the windows and click Window Maximize:

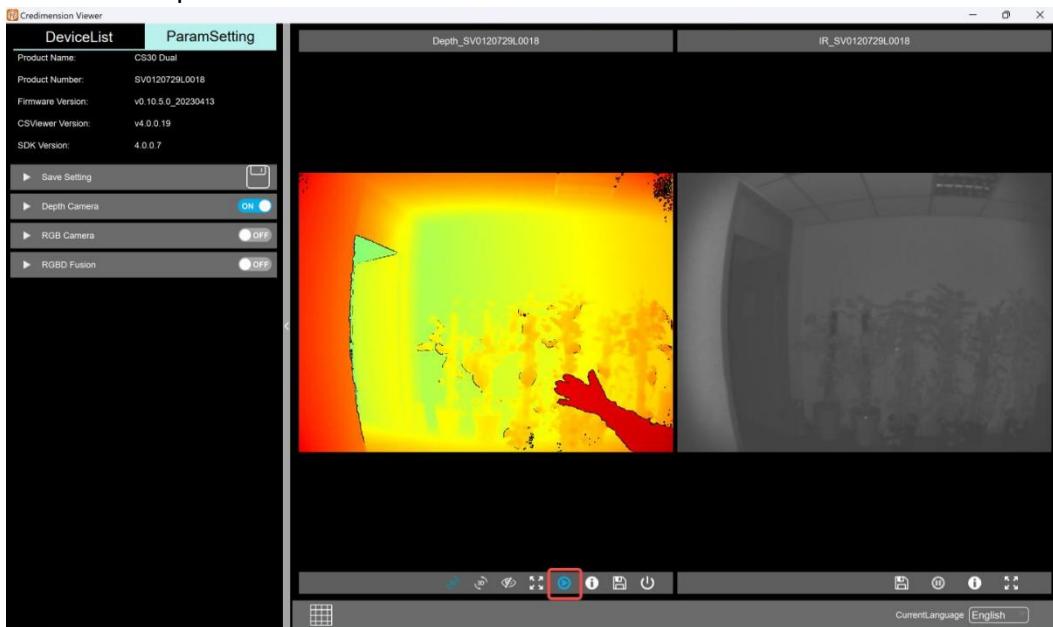


Click the blue arrow in the red frame to restore the original window size.

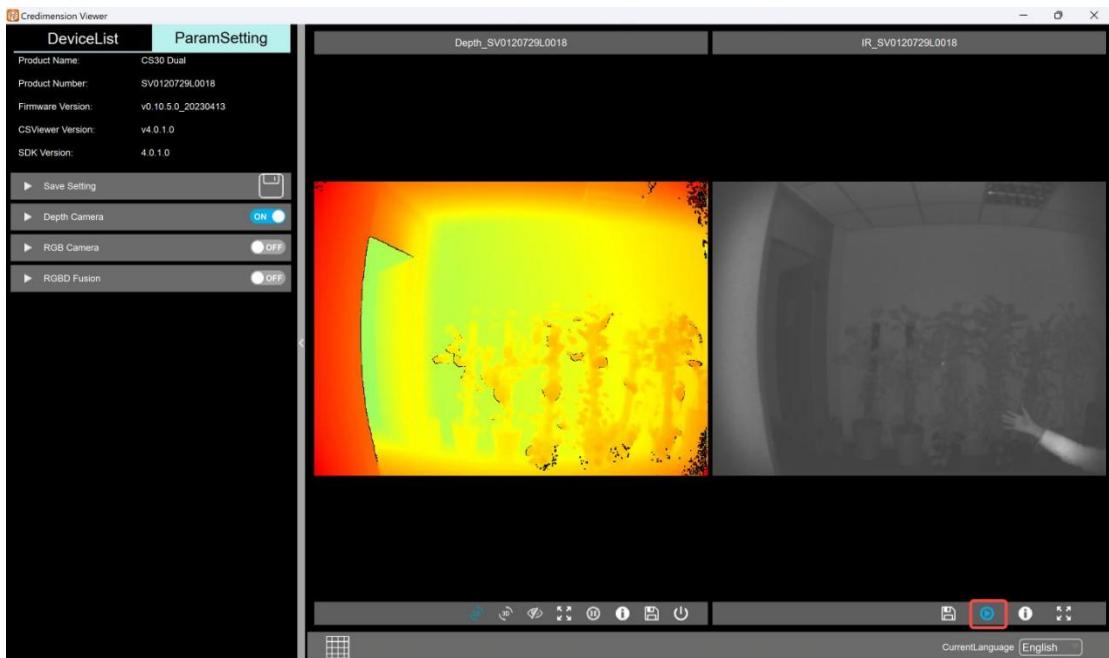
3.10. Pause the Depth screen

Click the pause button at the bottom of the screen to pause the Depth screen or pause the IR screen:

Pause the Depth screen:



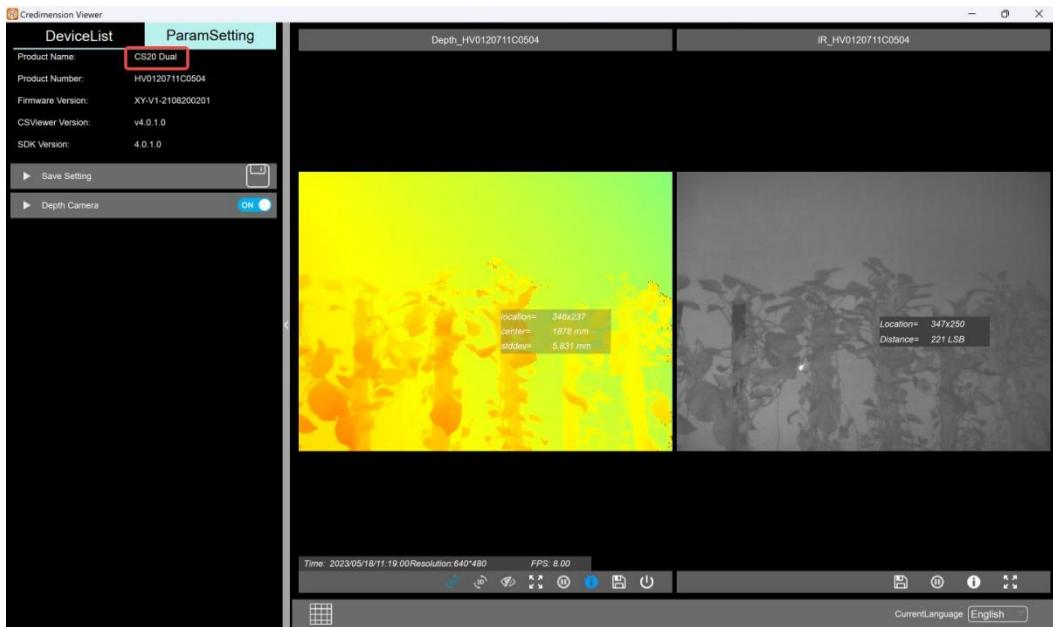
Pause the IR screen:



3.11. Display Information

Click the screen information button at the bottom of the screen to display the current timestamp, current resolution, current frame rate information in the lower left corner of the screen, CS30 depth default resolution (320*240) dual-frequency frame rate is 20 frames, CS30 single-frequency module is 40 frames, the dual-frequency module frame rate can reach 15 frames when the resolution is 640*480 (the frame rate is 13fps after filtering is turned on), and the single-frequency module frame rate can reach 18 frames (the frame rate is 15fps after filtering). The default resolution of CS20 dual-band depth is 640*480, the frame rate is 7~8fps, the switchable resolution is 320*240, and the frame rate is 21~22fps.

Note: There is this button under each open screen window, you can view the picture information of the current window, when two devices are turned on at the same time, the frame rate may be reduced due to the different computer performance.



3.12. Screen save button

Save button under the flow screen, click to save the current screen information data to the local, save the format and the number of saved frames are determined by checking the format content in the save settings.

Note: If you click the saved window as depth/ir, check the content in the depth save settings of the device corresponding to the SN number of the current window. When you click the saved window as RGB, the RGB data corresponds to the current window SN; If the CS30 device has RGBD enabled, the window save button saves the RGBD data.

Folder naming format:

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

After saving, create a folder in chronological order + SN number + tof/RGB, automatically save data, save depth png and raw data format, IR png and raw data format, point cloud save pcd data format.

Depth Save data content and format:



Depth[1].png



Depth[1].raw



IR[1].png



IR[1].raw



PointCloud[1].pcd

RGB save data format:

› 此电脑 > Data (D:) > 20230519172341_SV0120729L0018_rgb



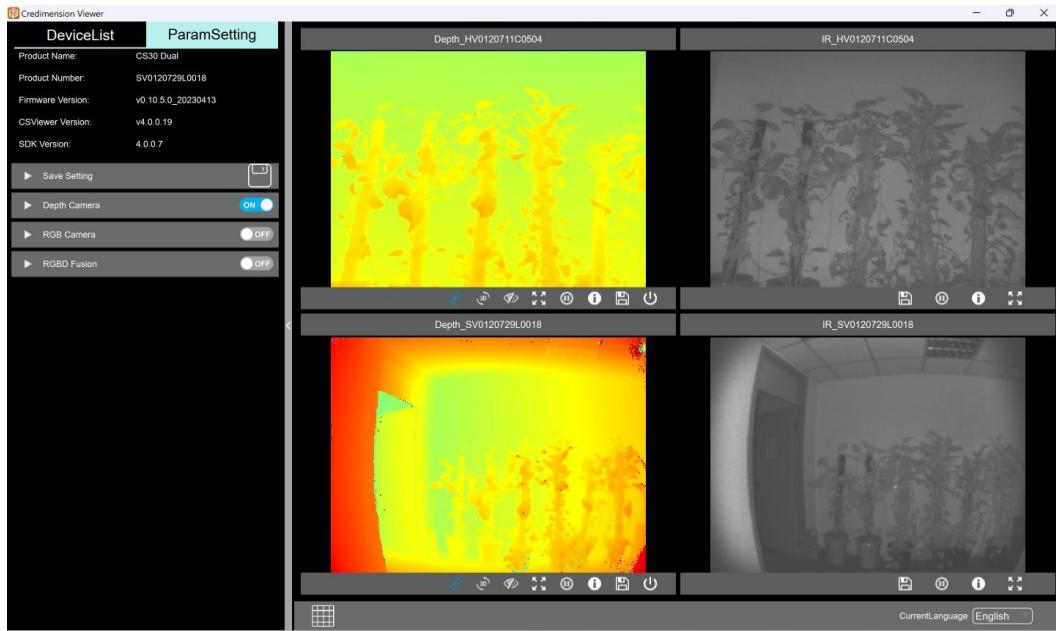
RGBD saves the data format content:

› 此电脑 > Data (D:) > 20230519163332_SV0120729L0018_rgbd



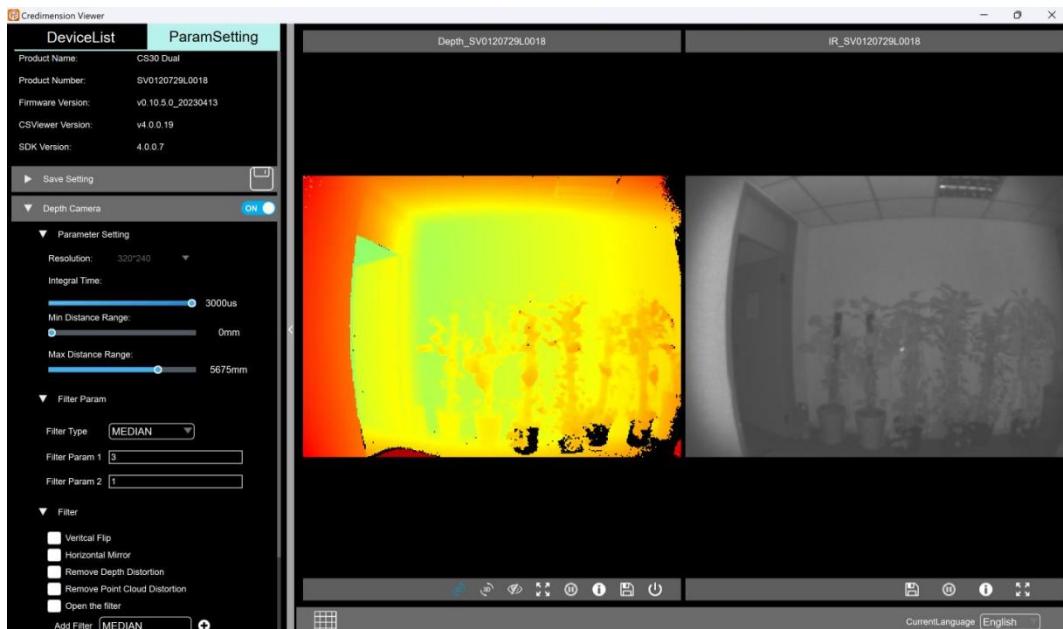
3.13. Turn on two devices at the same time

Click the device list, select another connected device, click ParamSetting , Depth Camera to open the stream, when you open a CS20 device for the first time, the internal parameter will be downloaded to the local (the same device is only downloaded once in this computer), the download time is about 60S, please do not close the module or close the GUI during the download process, the frame rate will be reduced during the loading process, and the participation will be completed when the frame rate returns to normal (640 resolution 7~8fps); If the open-streaming device is CS30, the default resolution is 320*240.



3.14. Tuning Parameters

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



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

GUI测试数据不同距离相应调整不同对应的积分时间对应关系如下：

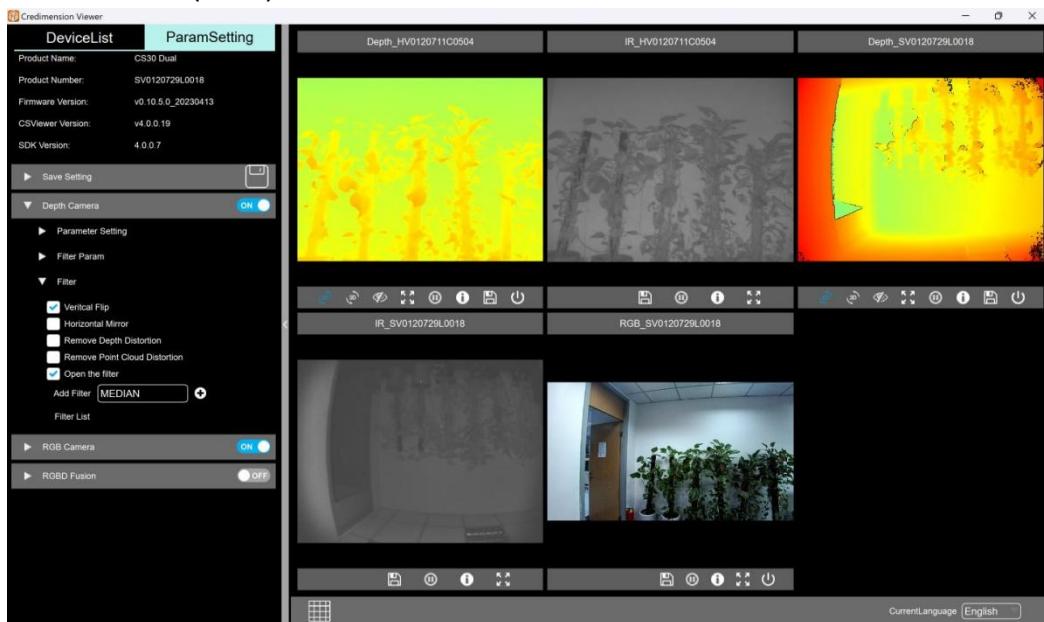
测试距离	积分时间
300mm-500mm	<500us
600mm-900mm	500us-1000us
1000mm-1700mm	1500us-2500us
>1700mm	3000us (远距离要求测试环境近距离无干扰)

CS30 integration time correspondence diagram

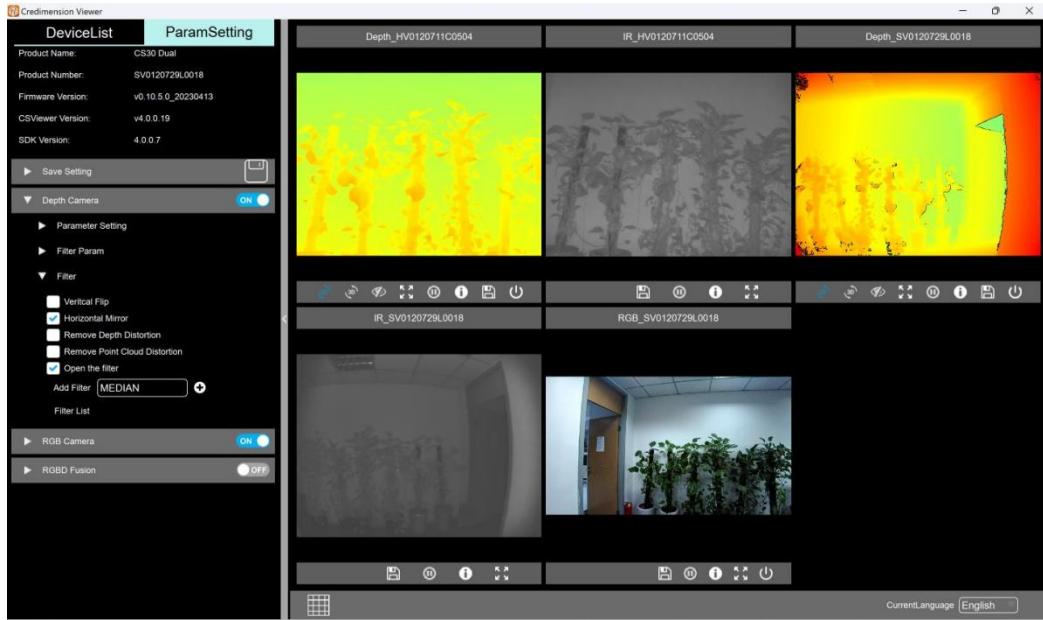
Note: The default CS20 integration time is up to 1800us, and the CS20 integration time with 320*240 resolution is up to 580us to adjust the distance range.

3.15. Screen Settings

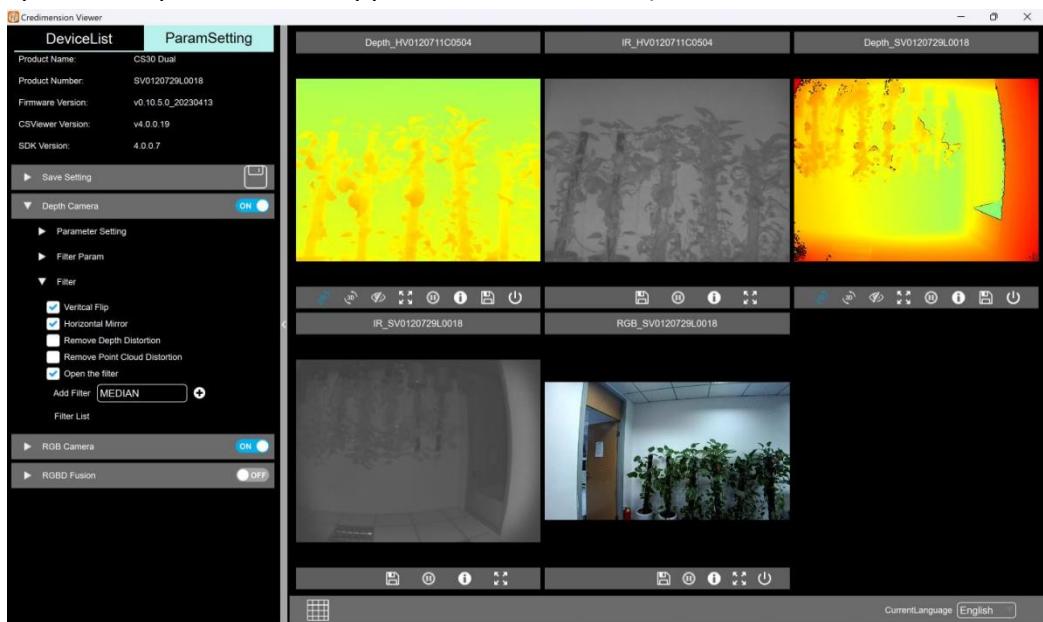
Click the drop-down button on the left side of the fitter to set whether the screen is filtered, whether it is flipped horizontally and vertically, and whether to remove distortion (CS30).



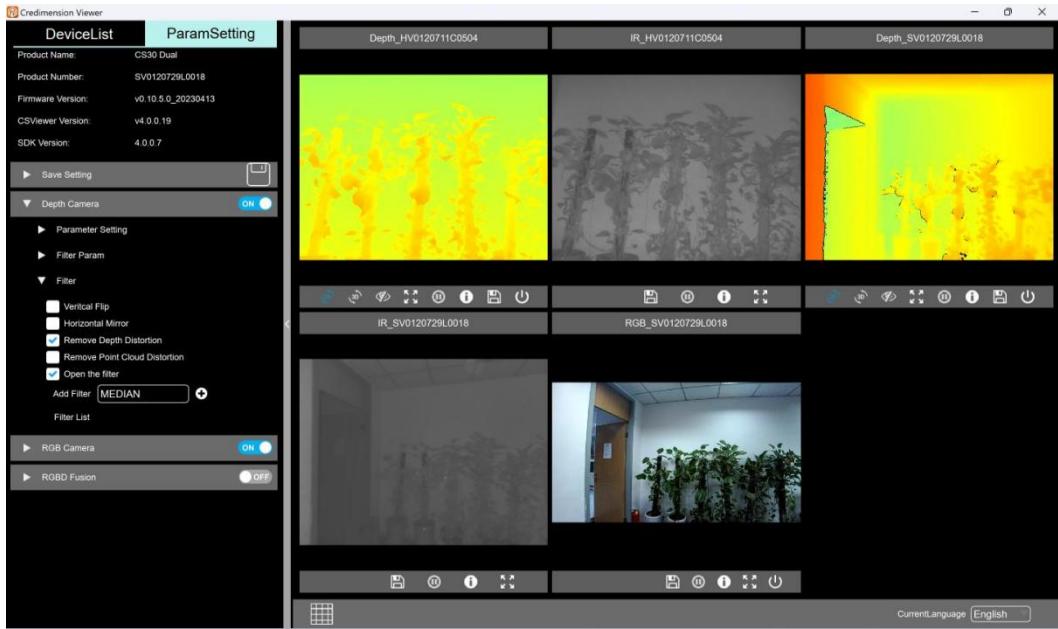
Horizontal flip effect:



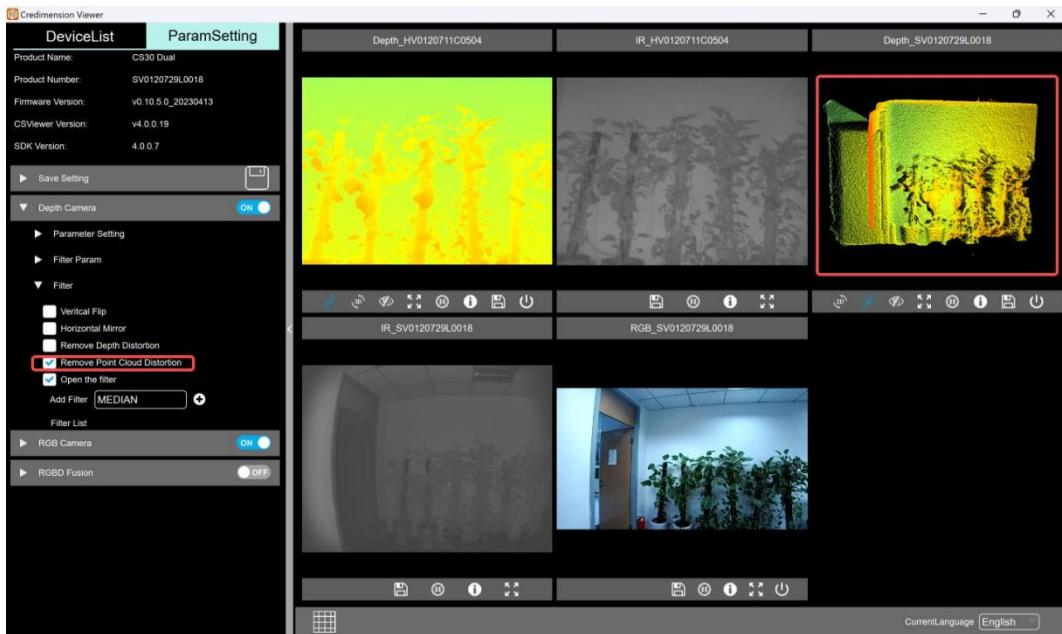
Horizontal + vertical flip effect (take adjusting CS30 SV0120729L0018 as an example to compare CS20 unflipped and other effects):



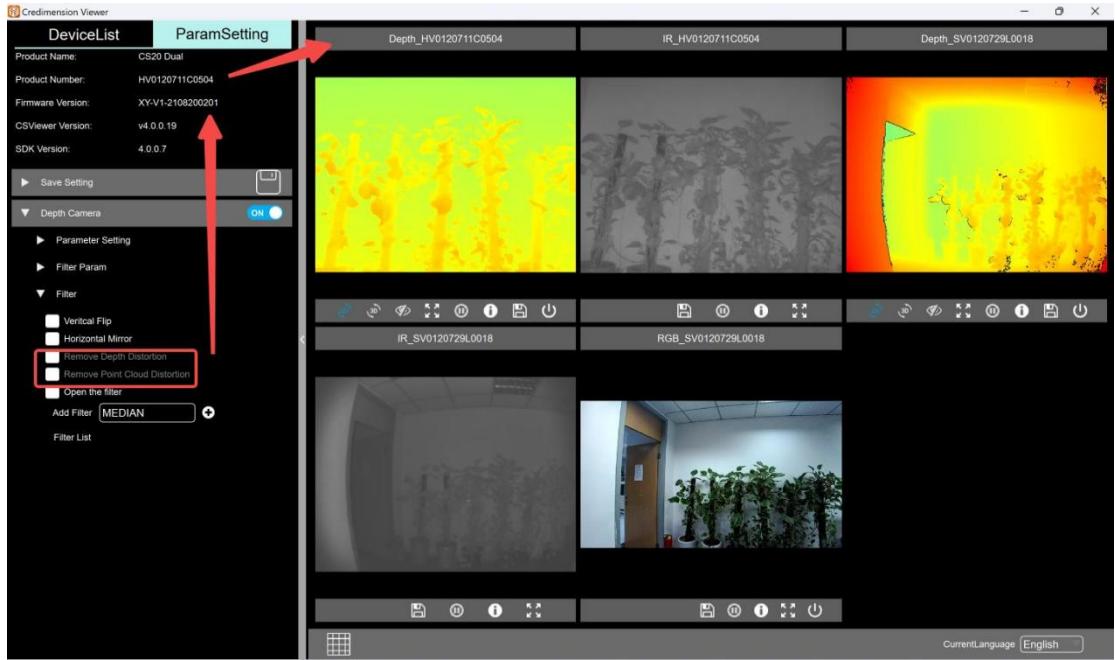
CS30 depth Distortion Removal Effect:



CS30 point cloud distortion removal effect:



CS20 device field of view is small, no need to remove distortion function, select CS20 device in the device list, click RemoveDepth Distortion and Remove Point Cloud Distortion in Depth Camera under ParamSetting to disable state, as follows:

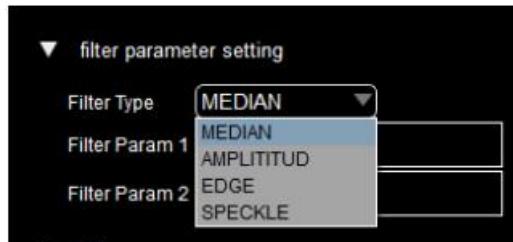


Check or uncheck Open the filter to enable the filter or cancel the filter function, check or cancel the effect is as follows, the specific filter parameter settings and each filter function are detailed in 3.16.

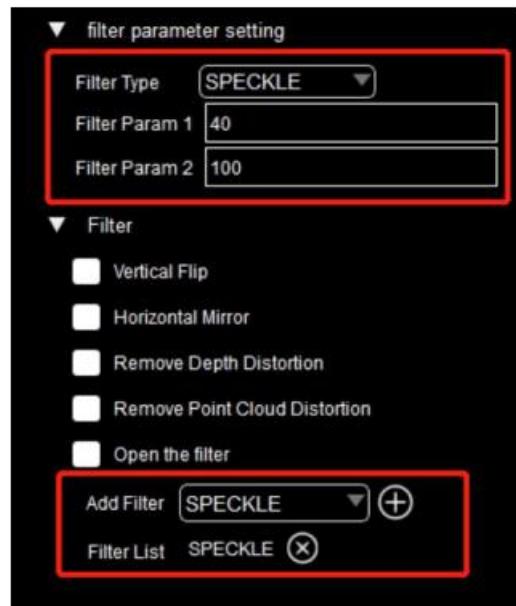
Note: With the filter frame rate turned on, the CS30 dual-band module will be reduced to about 13fps

3.16. Set filtering parameters

Filter Parameter Setting Filter parameters can be MEDIAN filter, AMPLITUD filter, and boundary filter EDGE and SPECKLE filtering are shown in the figure below.



After setting filtering parameters, check "open the filter" to view the filtering effect. Note: SPECKLE filter As shown in the following figure, when setting spot filtering, select filter. Type and set Add Filter spot, point under the Filter parameter after spot Click plus to add the dot filter to the filterList (as shown in the following figure).



Description of parameter Settings:

Amplitude filtering: The default value is 6, the number of parameters is 1, and the value ranges from 0 to 100

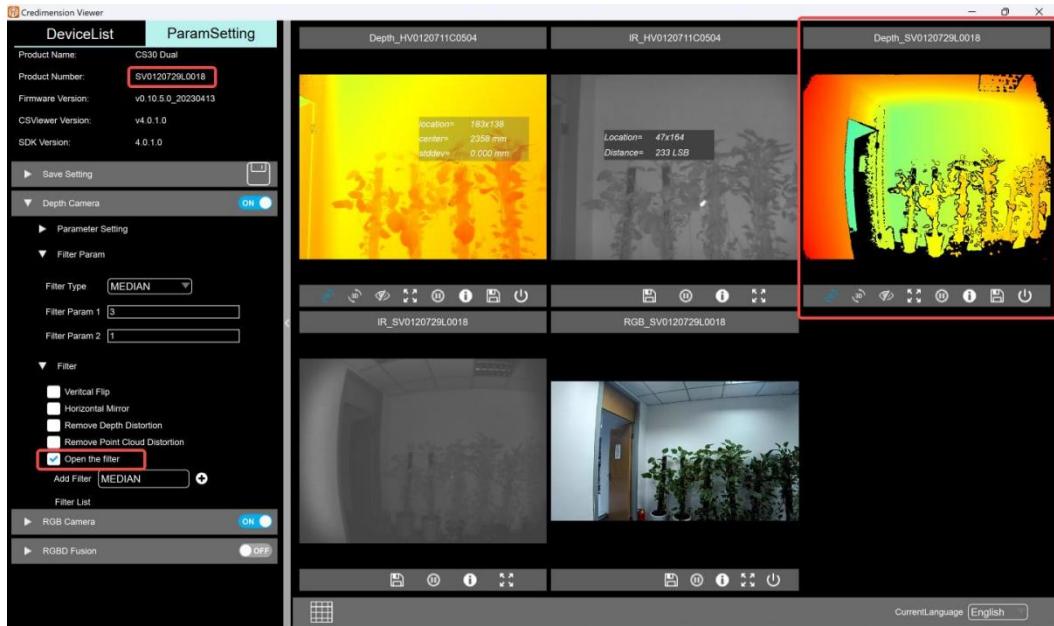
Median filter: default value The first parameter size default value 3, can be set 3 or 5, the second parameter iteration number,The default value is 1. The value can be 0 to 5.

Boundary filtering: The default value is 50. The value ranges from 20 to 200.

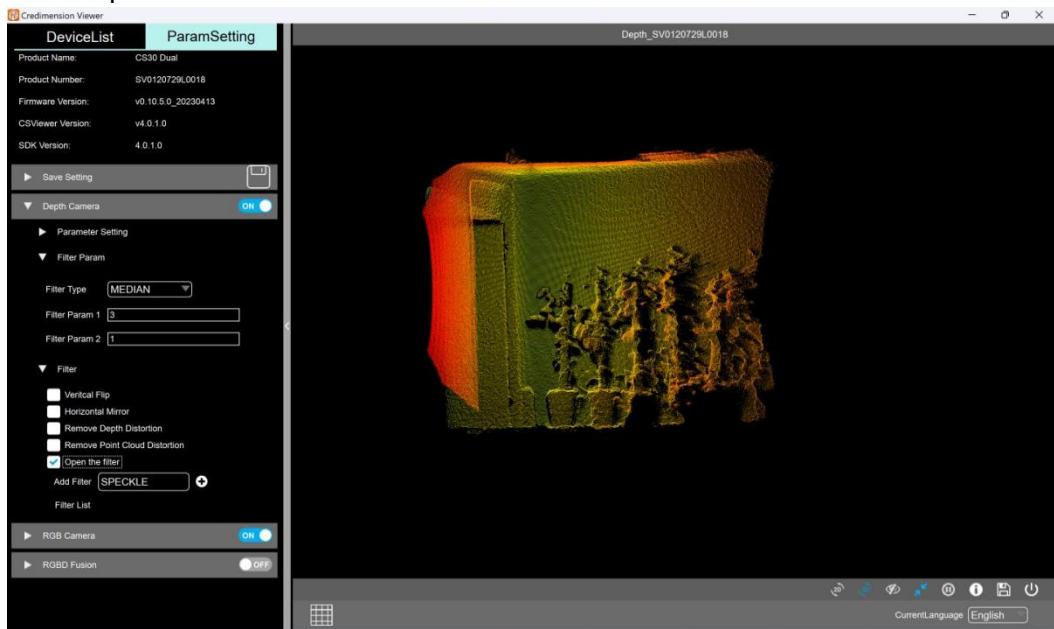
Speckle filtering: The first parameter is 40 by default, and the range is 24-200.The default value of the second parameter is 100. The value ranges from 40 to 200.

The following example uses SV0120729L0018 as an example:

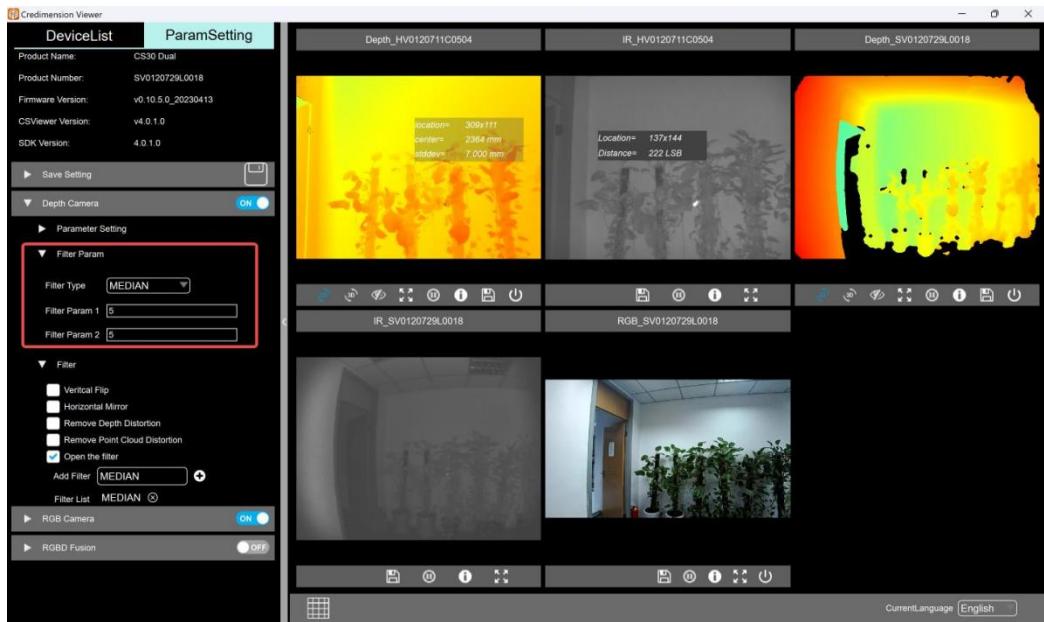
Default value effect:



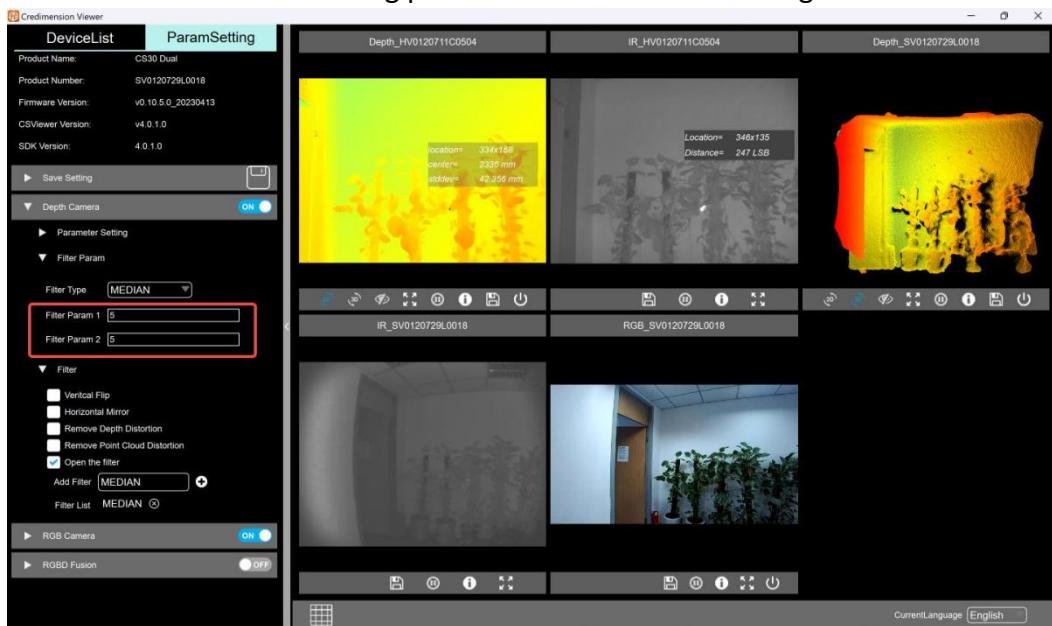
Default point cloud effect:



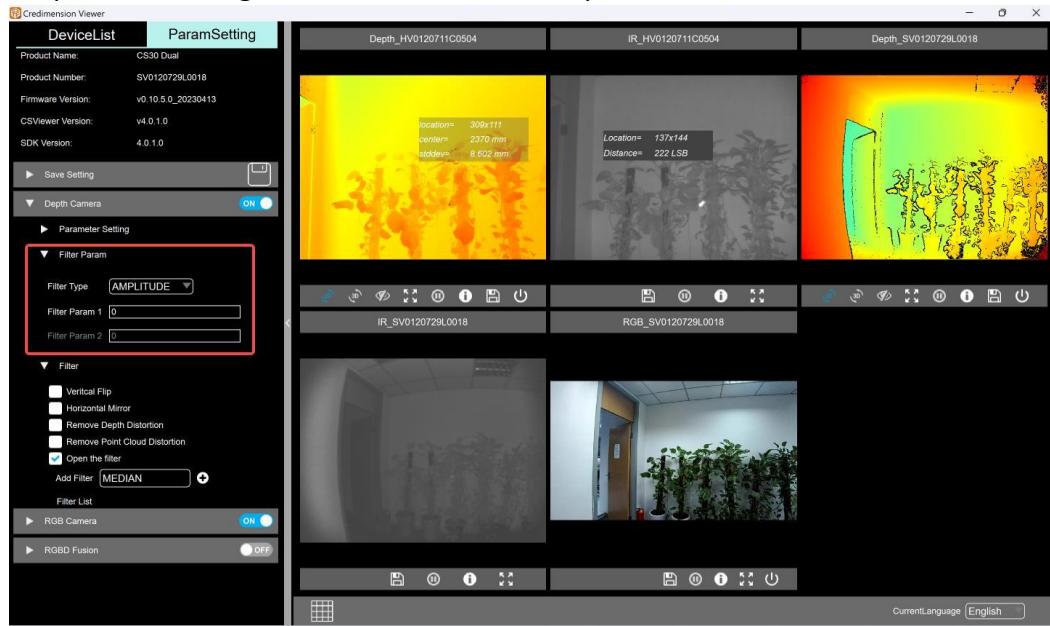
The Median Filter setting parameter is Maximum Depth effect:



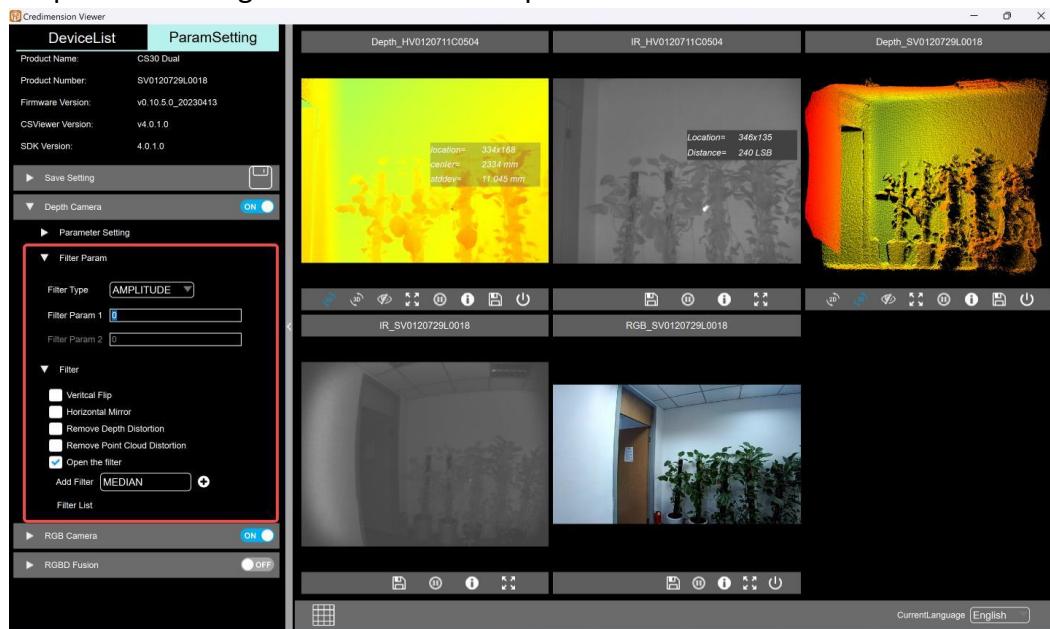
Point cloud effect after setting parameters for median filtering:



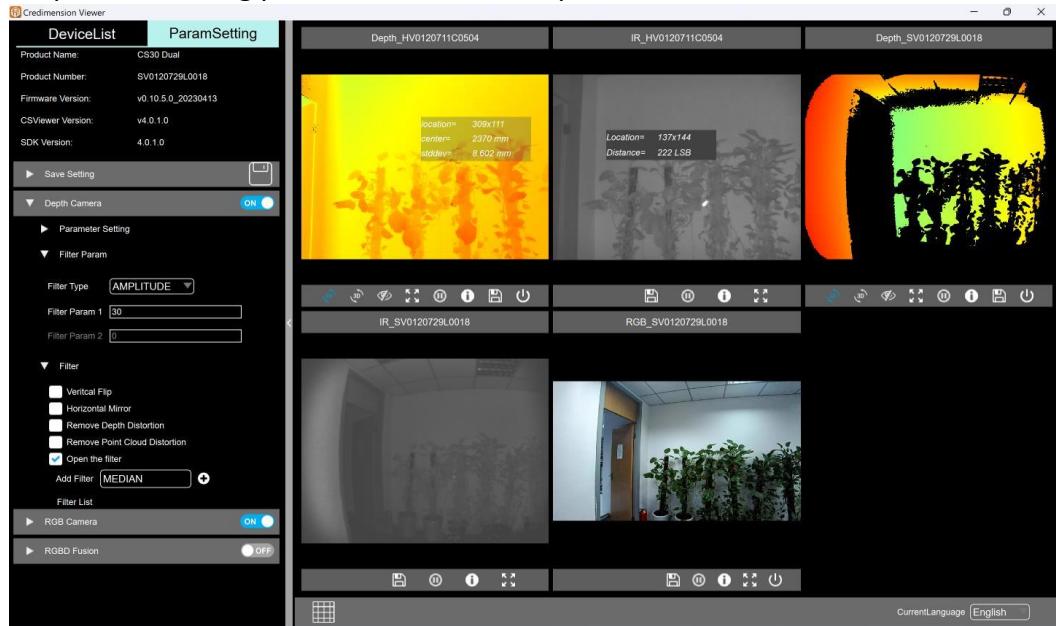
Amplitude filtering is set to the minimum depth effect:



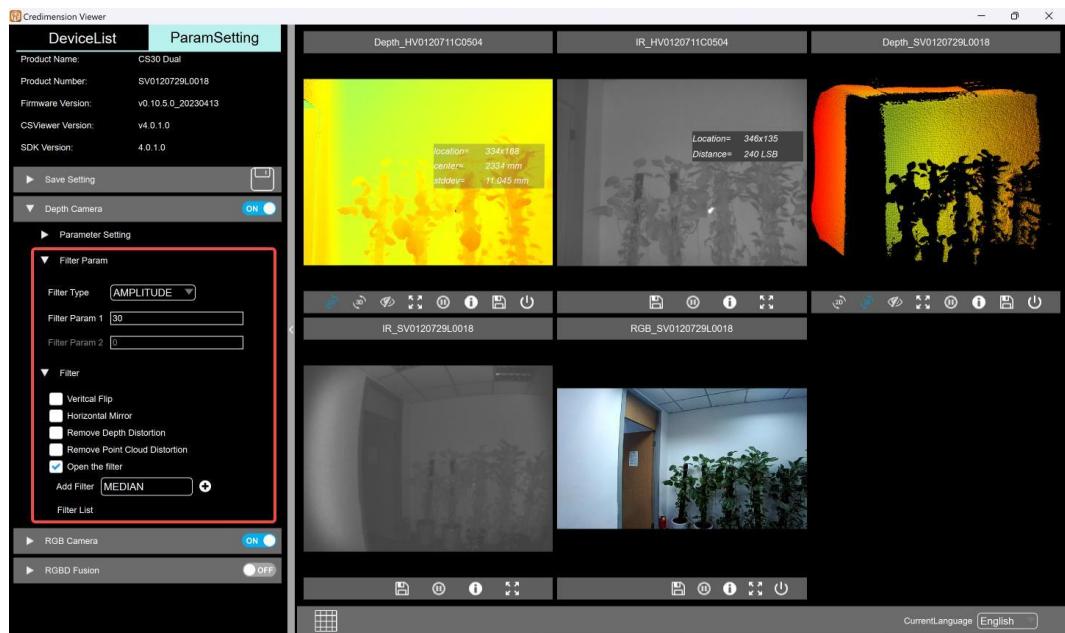
Amplitude filtering to set the minimum point cloud effect:



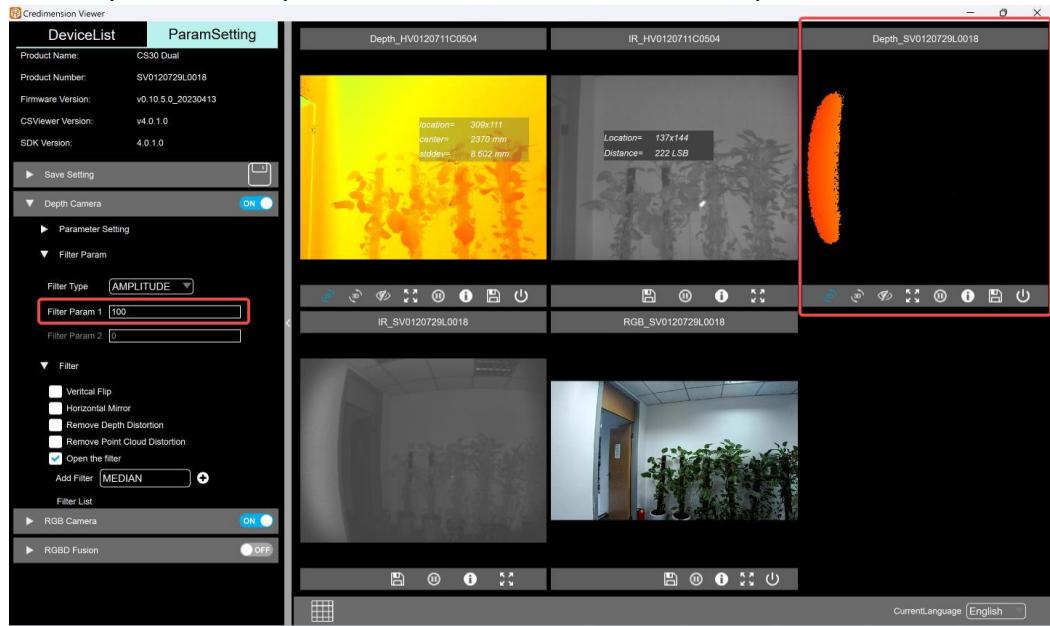
Amplitude filtering parameter set to 30 depth effect:



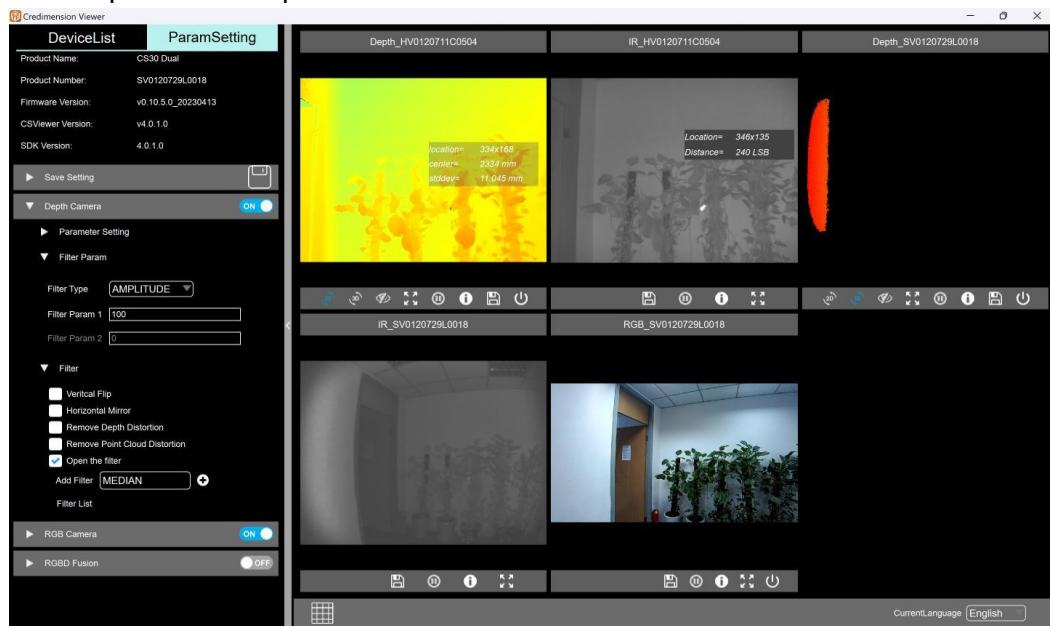
The Amplitude Filter parameter is set to the 30 Point Cloud effect:



The Amplitude Filter parameter is set to the maximum depth effect:

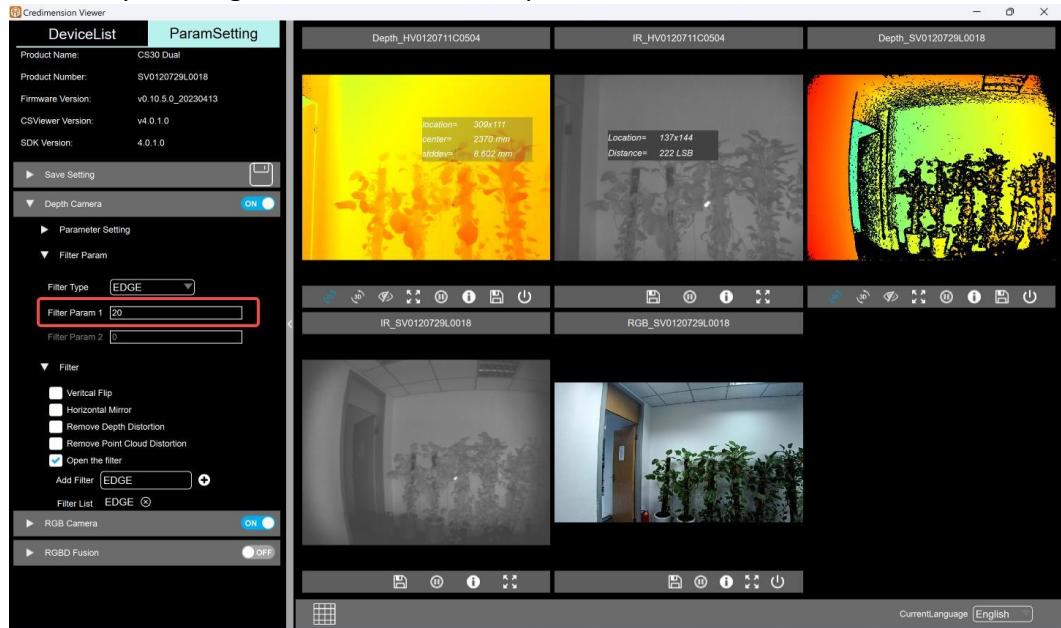


The Amplitude Filter parameter is set to Maximum Point Cloud Effect:

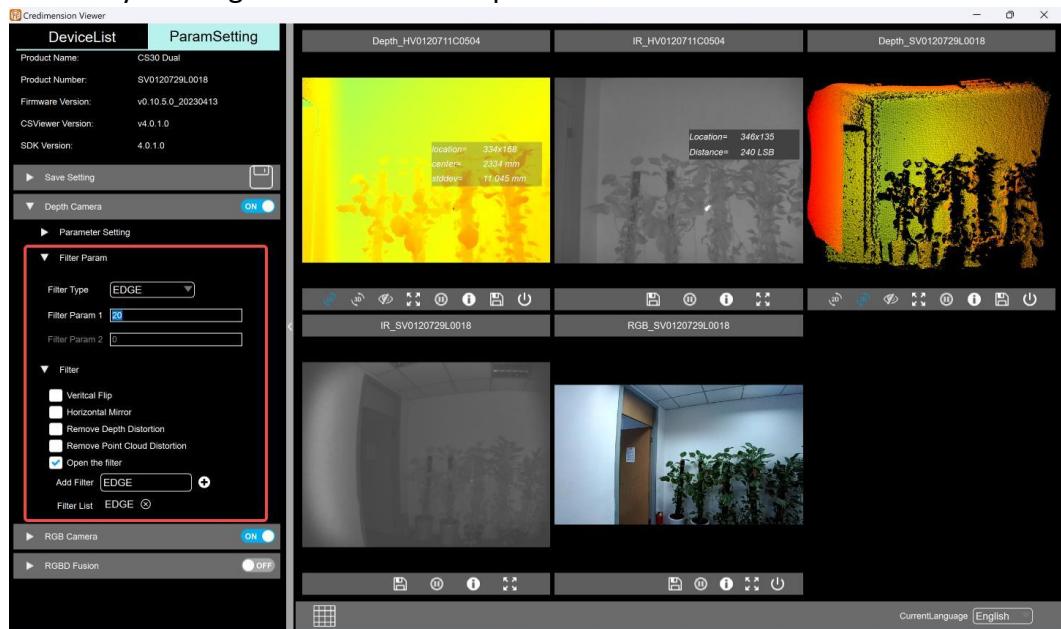


Set the amplitude filter, the larger the number, the more data will be filtered out.

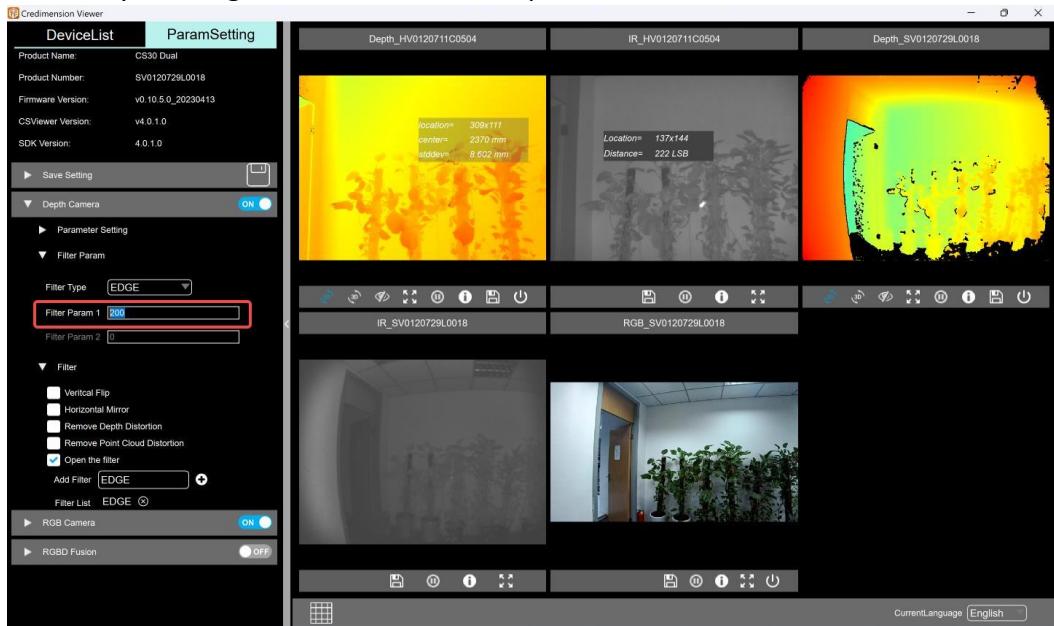
Boundary filtering sets the minimum depth effect:



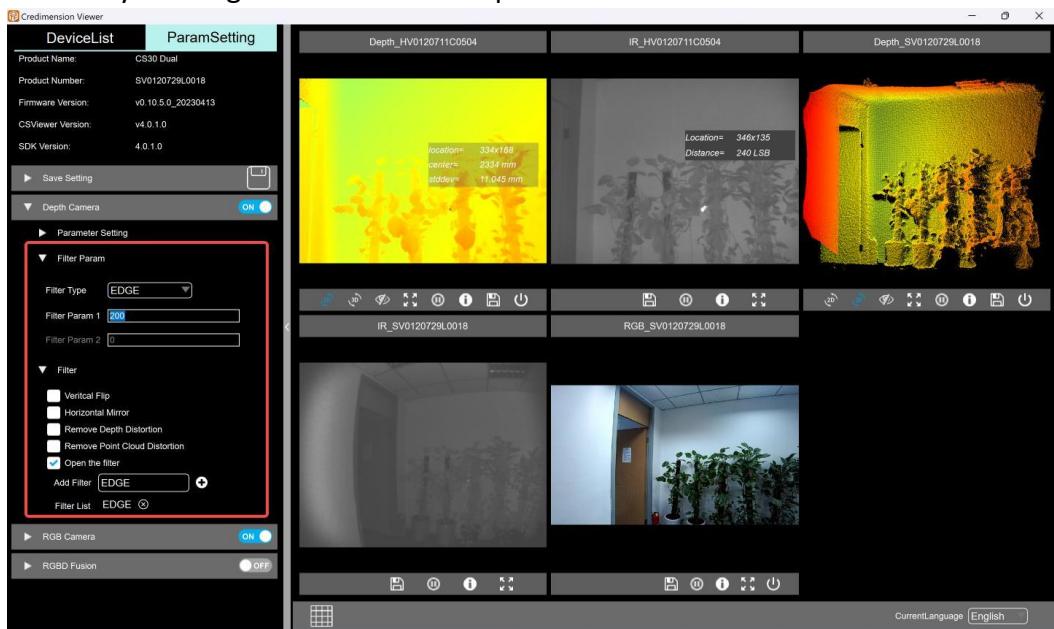
Boundary filtering sets the minimum point cloud effect:



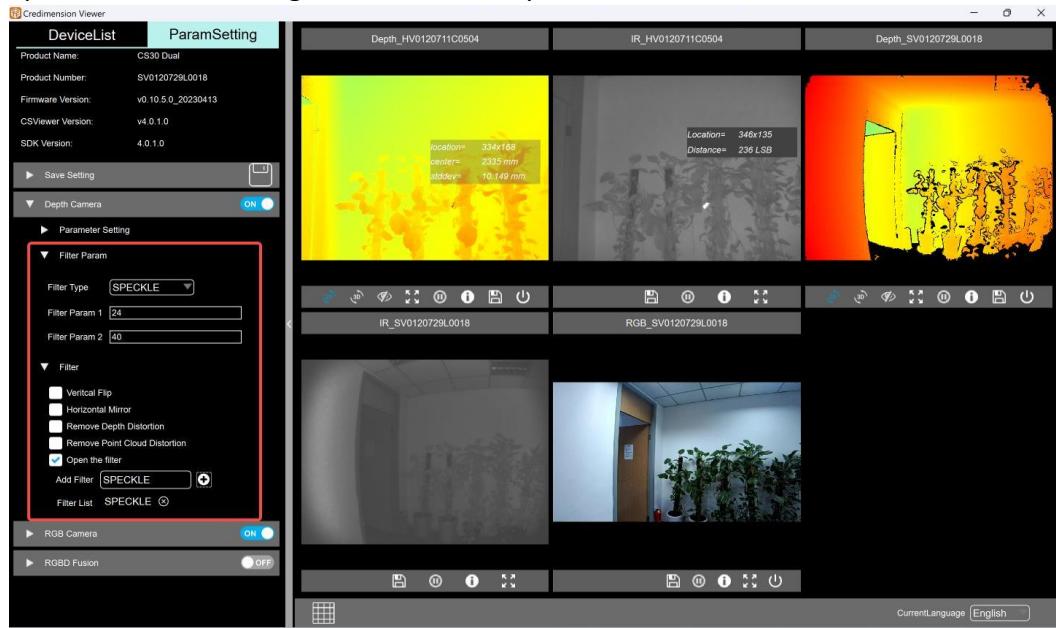
Boundary filtering sets the maximum depth effect:



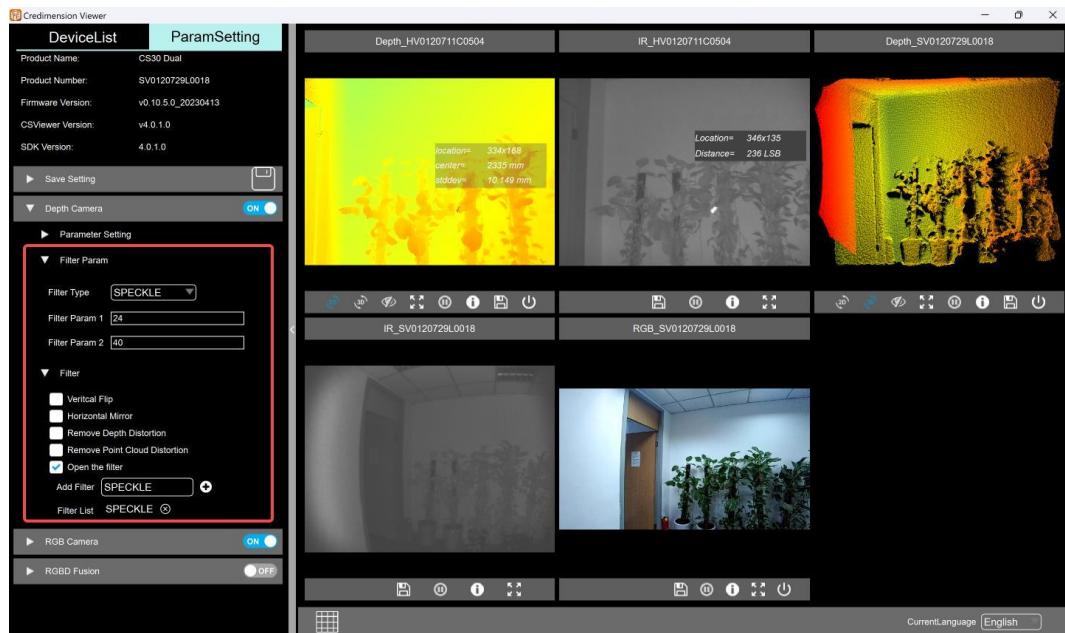
Boundary filtering sets the maximum point cloud effect:



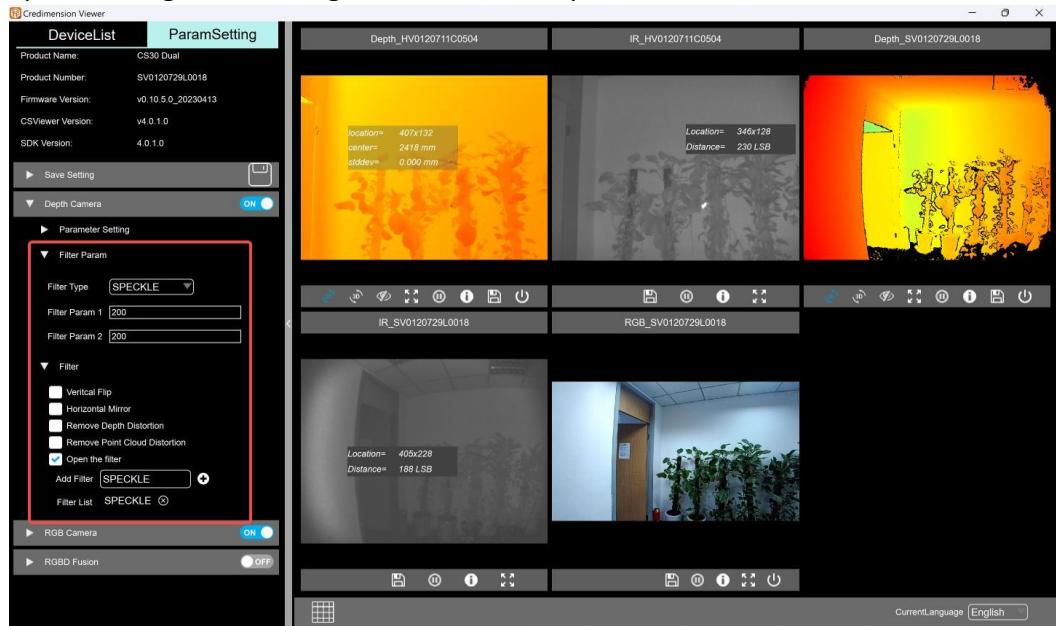
Spot filter after setting the minimum depth effect:



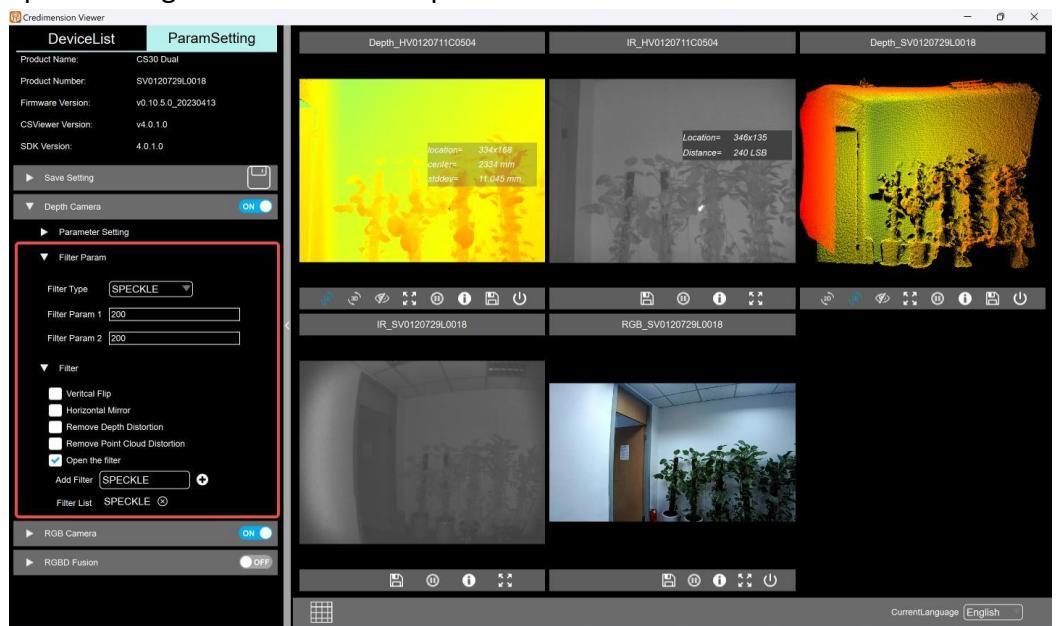
Point cloud effect after spot filtering is set to the minimum value:



Spot filtering after setting the maximum depth effect:



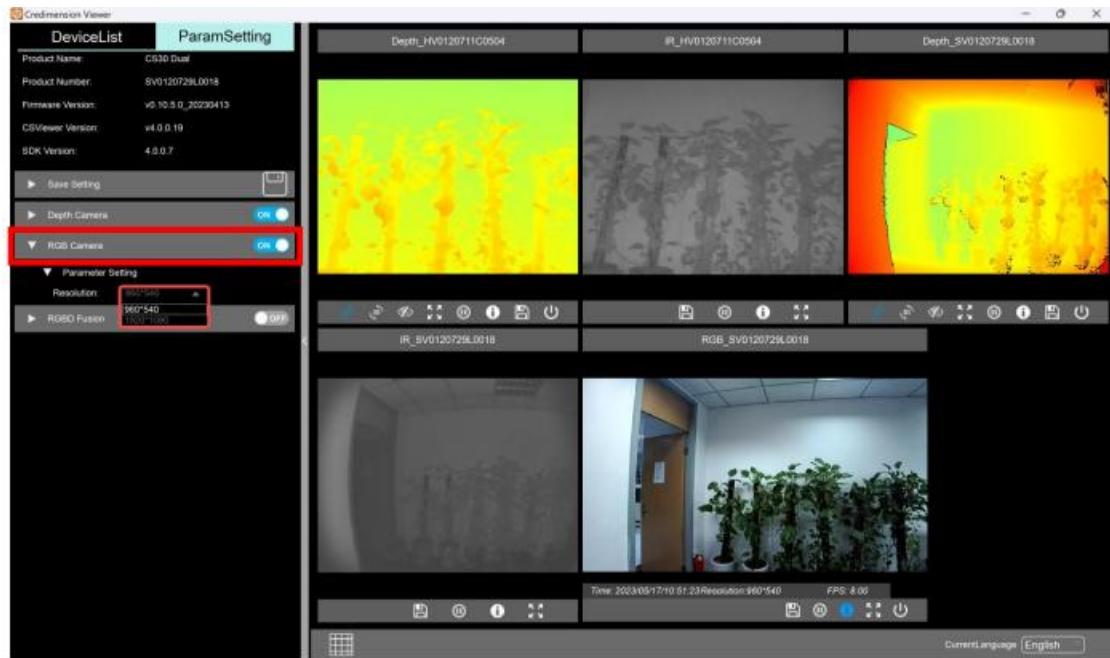
Spot filtering sets the maximum point cloud effect:



3.17. Enable RGB

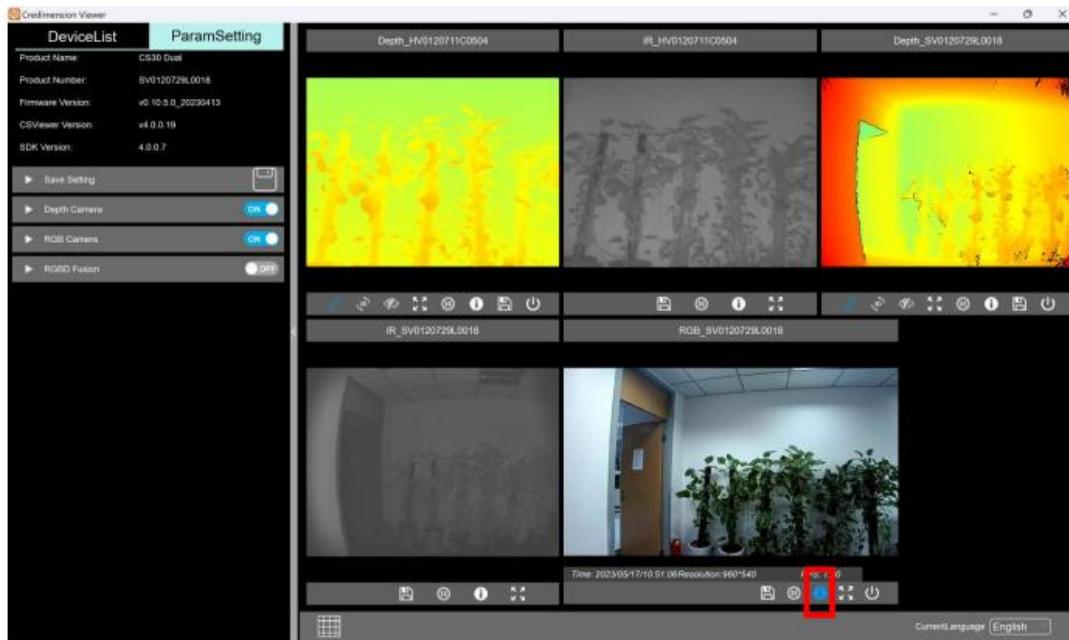
Note: CS20 has no RGB and no function related to RGB+RGBD. The following are the instructions for using RGB and RGBD. This parameter applies only to CS30. In the following example, after one CS20 depth is enabled, CS30 depth+RGB is enabled.

Click the RGB Camera switch to display RGB images. The default resolution for the first time is 960*540. The resolution can be changed to 1920*1080, and the mouse can drag the RGB window size or move the RGB window when it is in the RGB picture window Oral position.



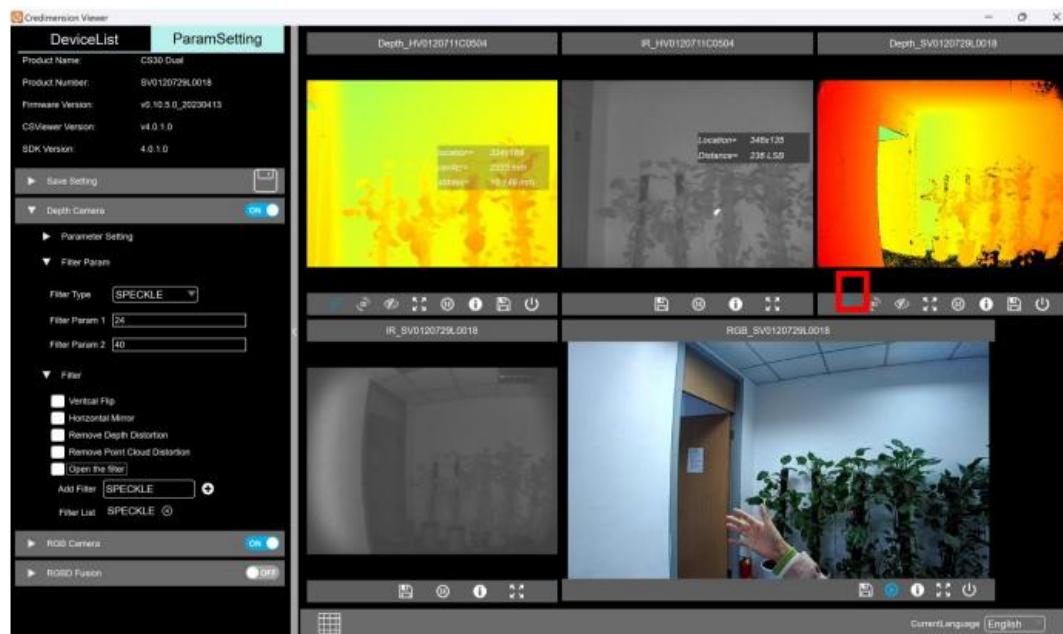
3.18. Display RGB picture information

Click the picture Information button below the RGB screen to display the current time information and the current minute in the lower left corner of the RGB screen Discrimination, current frame rate information.



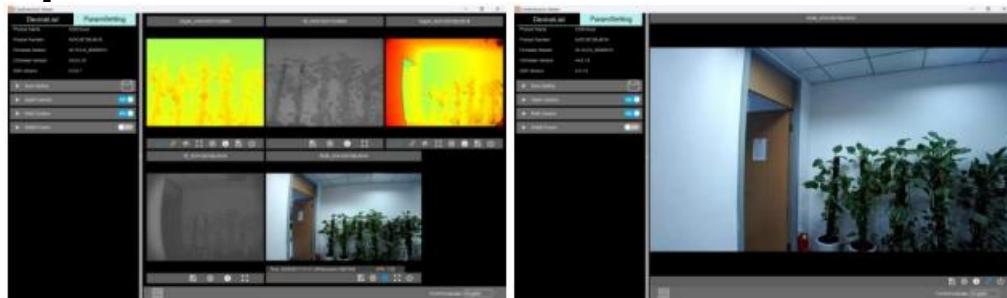
3.19. Pause the RGB screen

Click the pause button at the bottom of the picture to pause the RGB picture.



3.20. Enlarge/restore RGB window

Click the screen Maximization button below the RGB screen (opening the RGB screen window alone is invalid, and depth should be opened at the same time Window, or other device screen Windows have been opened), RGB screen can be displayed as maximized, other Windows hidden, and then After clicking the Restore button, RGB and other Windows are displayed normally. After magnification, the effect is as follows:



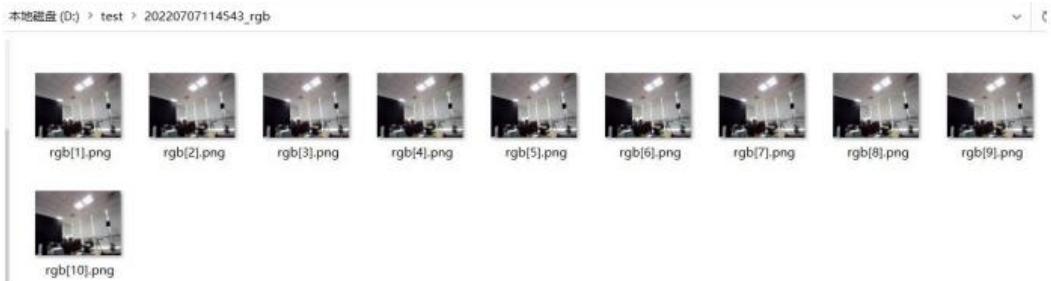
3.21. RGB image save

Click the drop-down arrow on the left of RGB Camera to set saving information and resolution. I'm gonna say save The drop-down button on the left of setting can set the number of data frames to be saved (the default number of saved frames is 1 frame) and select the data to be saved (The default path is the current software installation path). After the setting, the software will be restarted with the latest setting by default. (Note: The save path does not contain Chinese characters/characters)

Click the Save button below the RGB screen to save successfully.

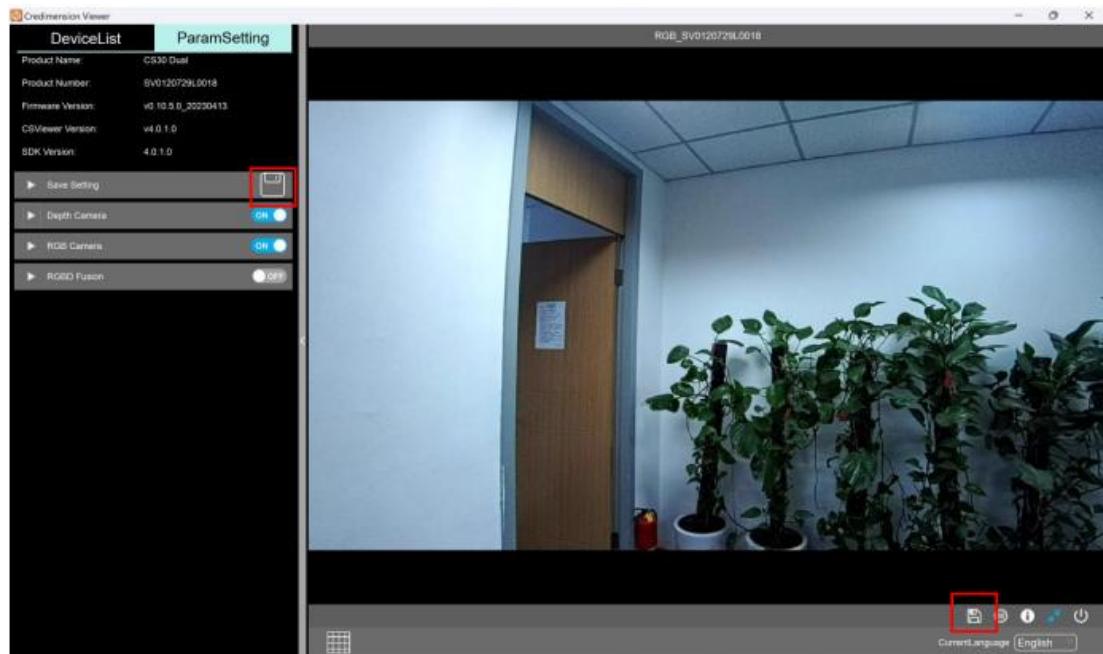


After saving, create folders in chronological order to automatically save data:



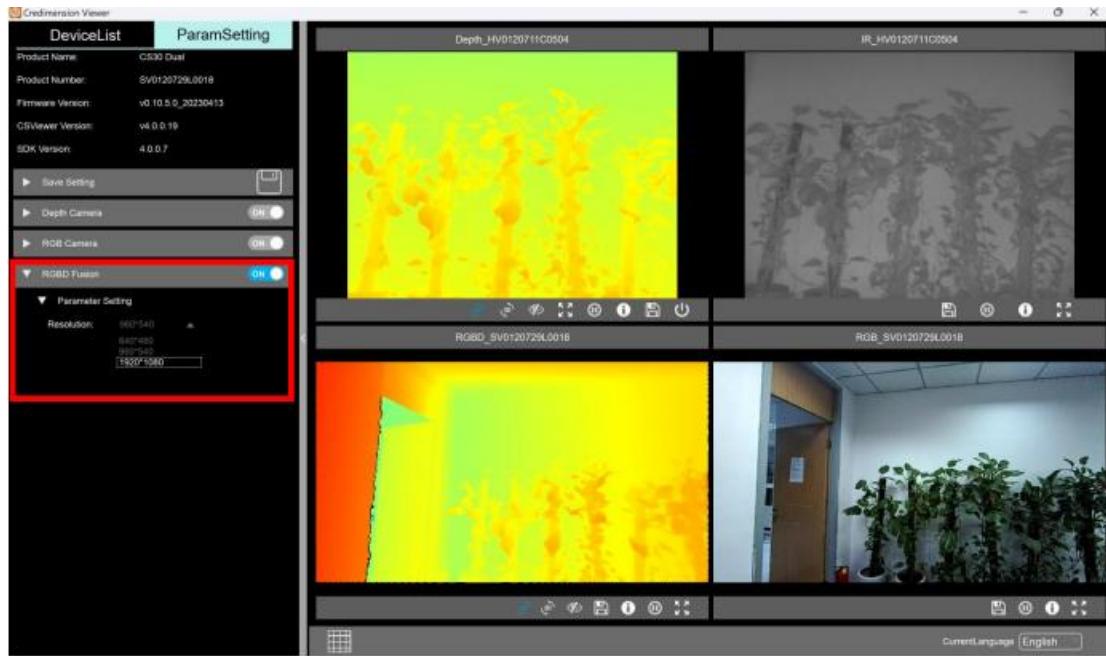
3.22. RGB switching resolution

RGB is currently enabled at 960*540 resolution by default, and can be switched to 1920*1080 resolution. Only the RGB window is enabled Click the Save button under the RGB screen window when you click the effect is the same as that when you click the total save. The saved data is the link of the current window For a few frames of RGB data, save the data at the same resolution as the current open resolution. Save path Settings and save frame number Set in RGB Save Setting under Save Setting. The default save path is in the path of the current program sibling. The default number of frames is 1. The software is started again after being changed once. The saving path and number of frames remain the same as the number after being changed once According to.



3.23. RGBD Fusion

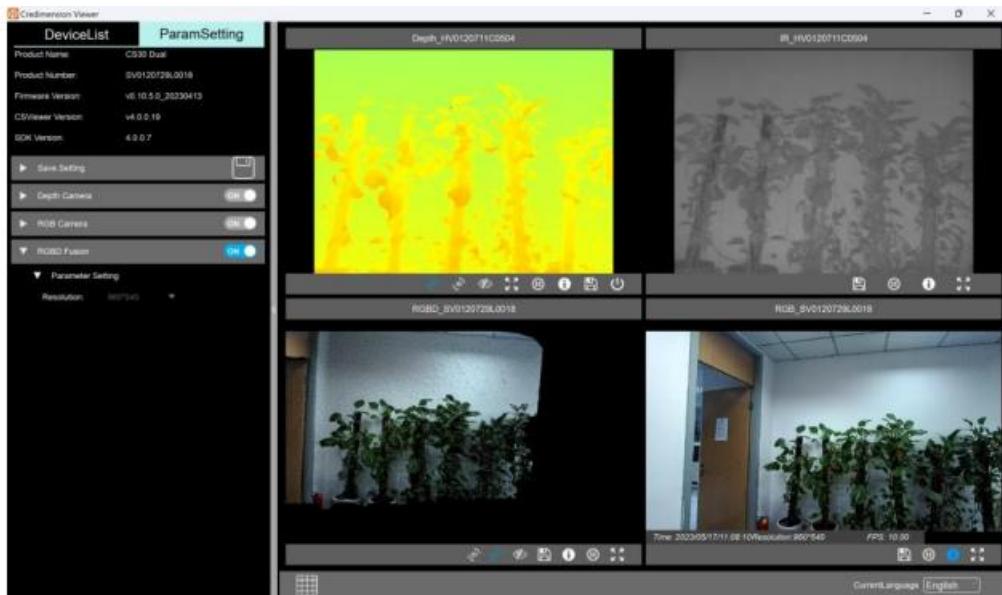
After the RGBD Fusion button is enabled, RGBD will be displayed on the screen. By default, the resolution is enabled to 640*480, while RGB is not At the resolution of 640*480, the content displayed in the RGB window is the RGBD (RGB mapping point) after 3D mapping Cloud), switching resolution 1920*1080, or 960*540.



Note: After RGBD is enabled, only adjustment of integration time +distance range+ filtering + drawing is allowed within Depth parameter. The other functions such as depth resolution and distortion removal are not allowed to be modified. Neither is the RGB resolution Modifiable; After RGBD is enabled, all point cloud data is saved as RGB mapping point cloud data.

3.24. RGB Mapping point Cloud (RGBD 3D)

Click the 3D button under the RGBD window to display the RGBD 3D fusion (RGB mapping point cloud) screen.



3.25. Save RGBD

Click the Total Save button to save the depth (currently selected save type picture) +RGB to Depth and RGB setting path (If RGBD is currently enabled, save the data as RGBD save the number of frames and save the Settings The path and saved contents prevail).

If RGBD is not enabled at present, click the total save button, save the data and create a folder according to the chronological order ToF/RGB tag folders, stored in their respective file paths; If you click Save after RGBD is enabled, it is guaranteed Set the path to the current RGBD and create a datetime +SN _RGBD folder.

> 此电脑 > Data (D:) > 20230519163332_SV0120729L0018_rgbd



Note: After RGBD is enabled, click Save. If the original RGBD frame rate is 10fps, the frame rate will be reduced by 4fps to 5fps during the saving process. For example, if RGBD is enabled and the number of frames saved is set to 50fps, click Save and the frame rate of RGBD will be displayed for about 10S 4fps-5fps)

3.26. Error message dmp address

In the crash folder of the same installation directory, locate the folder corresponding to the error date to find the dmp file Piece, as shown below.

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

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