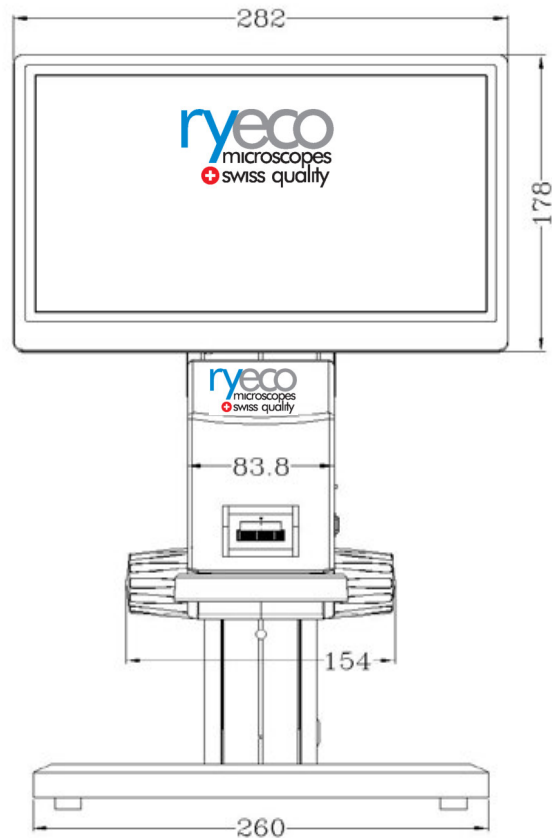
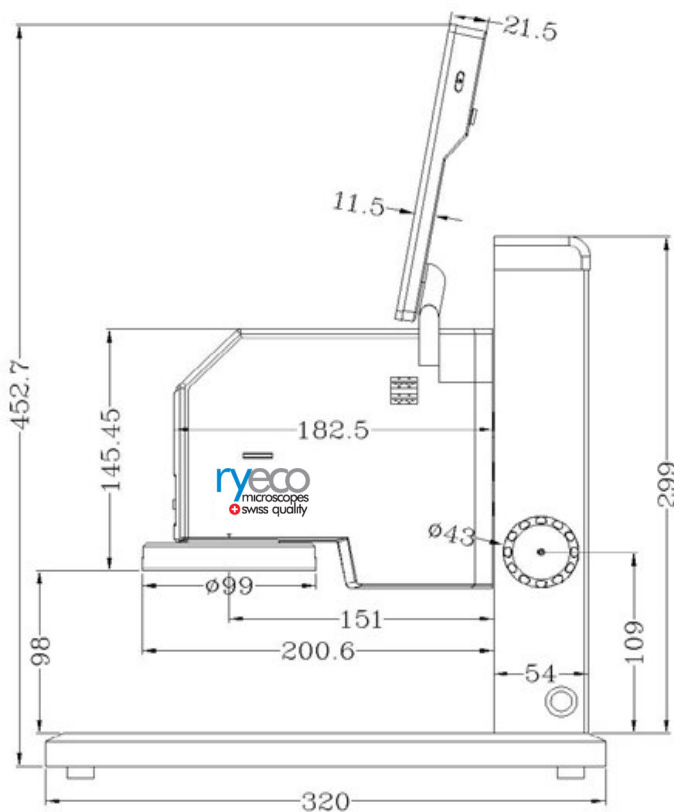
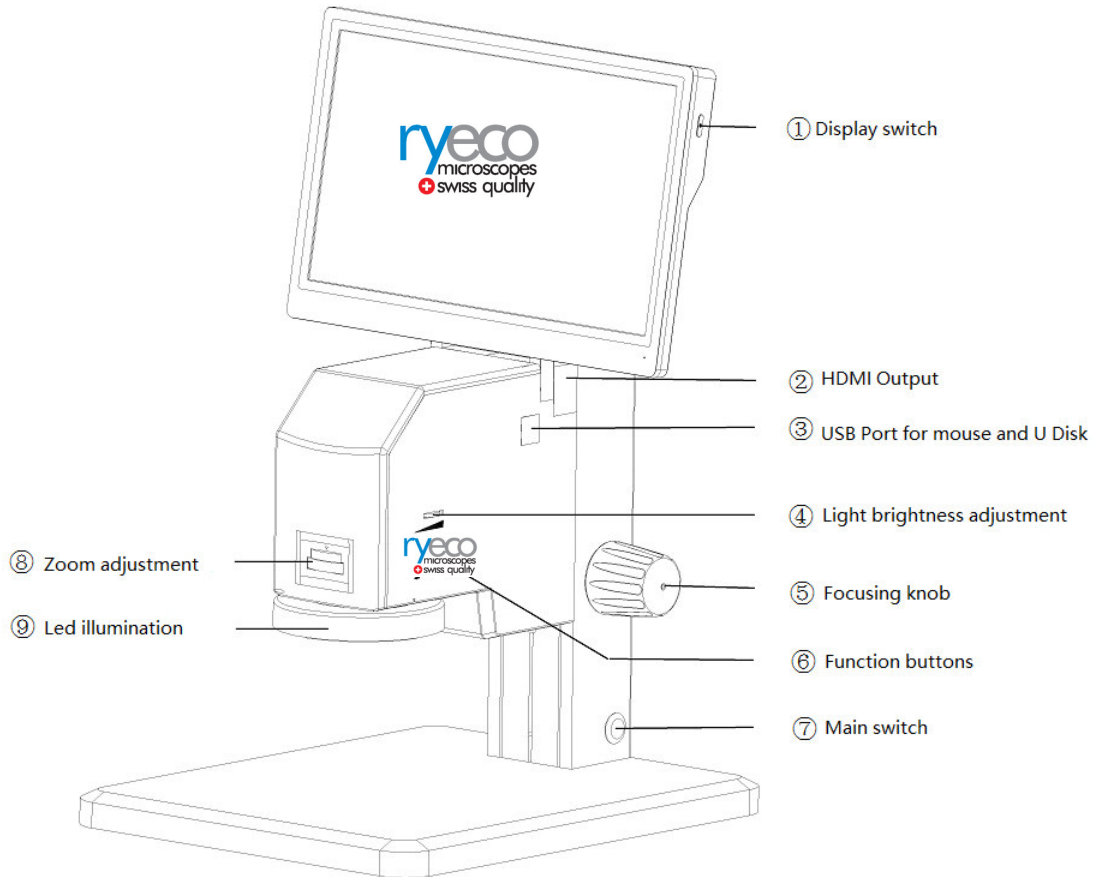
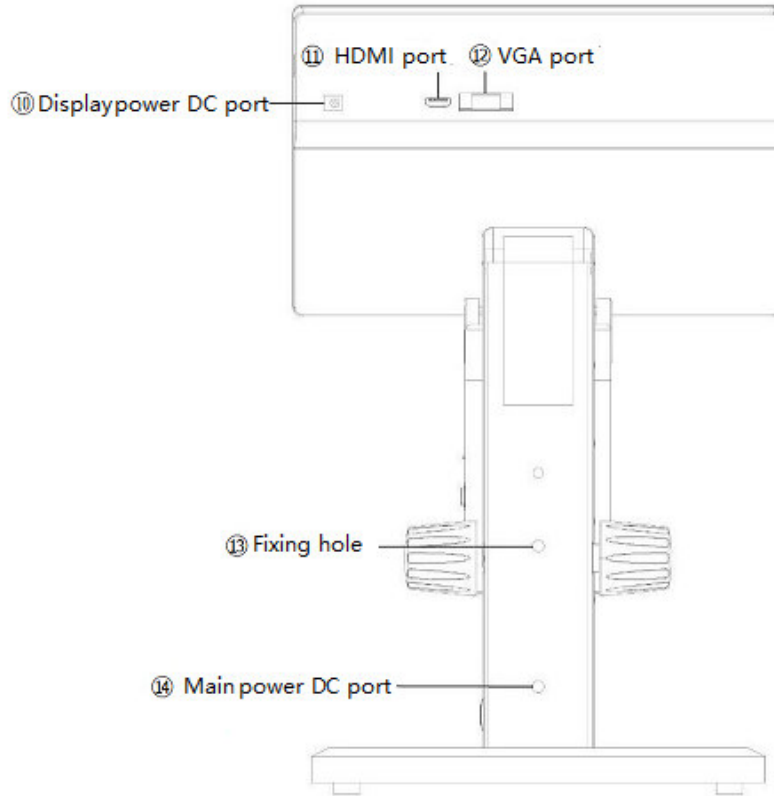




## ***Operating & User Manual RyEcoCam FHD***





## Chapter 1 Ryecocam FHD Introduction

### 1.1 Summary

This Ryeco manual combined with the characteristics and functions of the software system with the microscope, to the user introduced this type of microscope environment, software function, camera peripherals and precautions, allows users to perform accurate operation according to the manual, to ensure the normal operation of the Ryeco microscope.

### 1.2 Readers

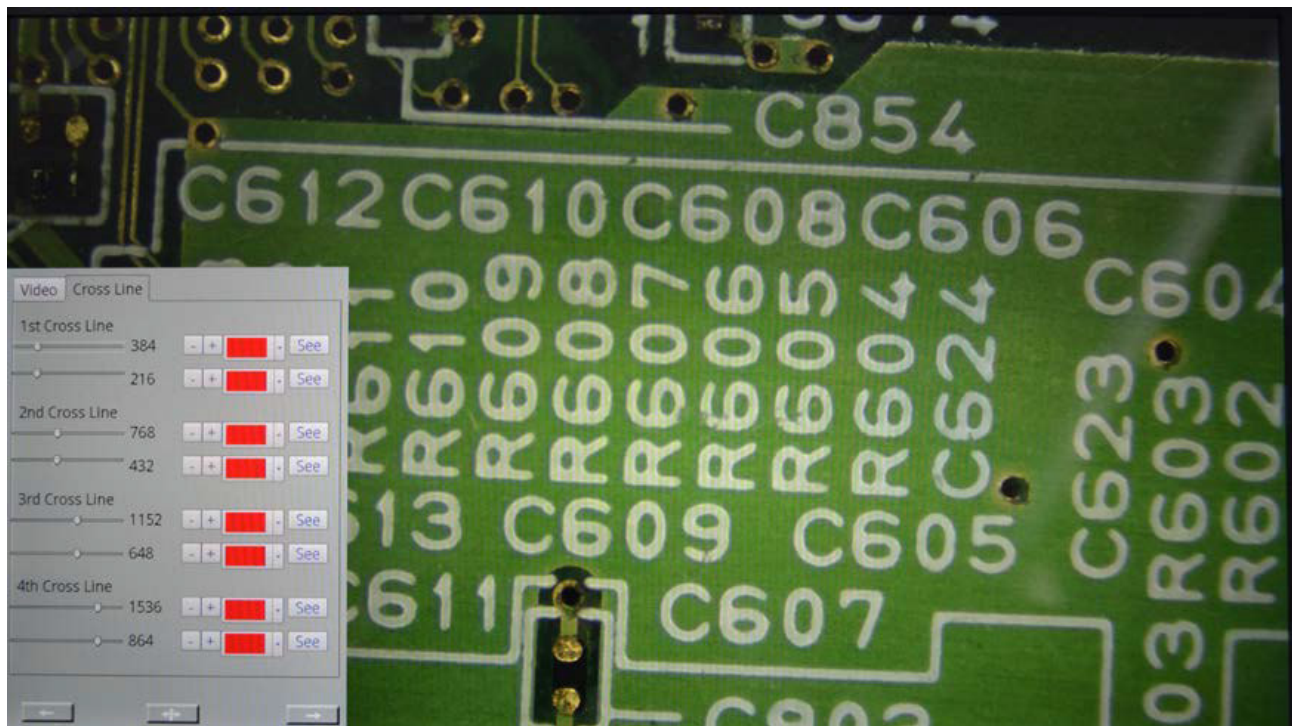
This manual is mainly for users who use this series of microscopes.

## Chapter 2 Ryeco Video Microscope software introduction

### 2.1 user interface

#### 2.1.1 Boot interface

After the video microscope is connected to the power supply, it will automatically start and display the boot interface. After running for some time, the program will automatically open.

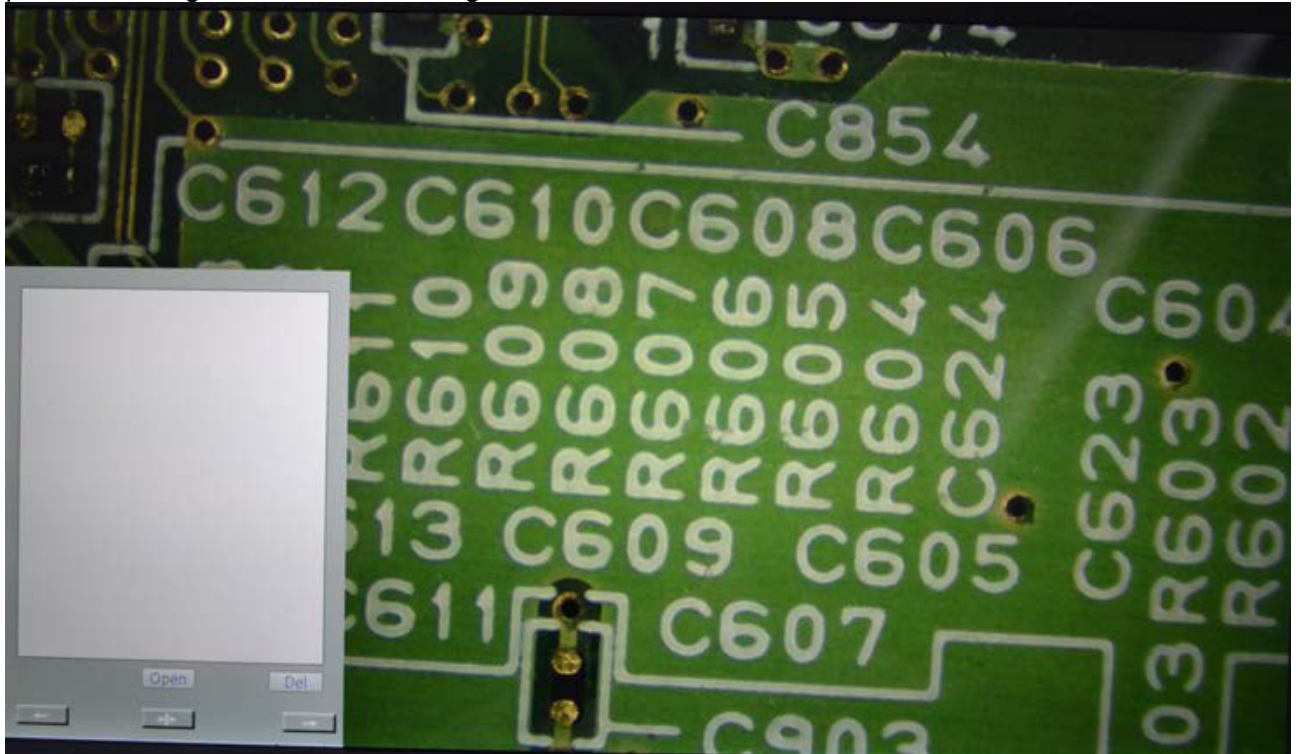


#### 2.1.2 Video interface

Video interface is mainly divided into 2 parts. The first part of the video display area; the second part of the main interface, as follows.

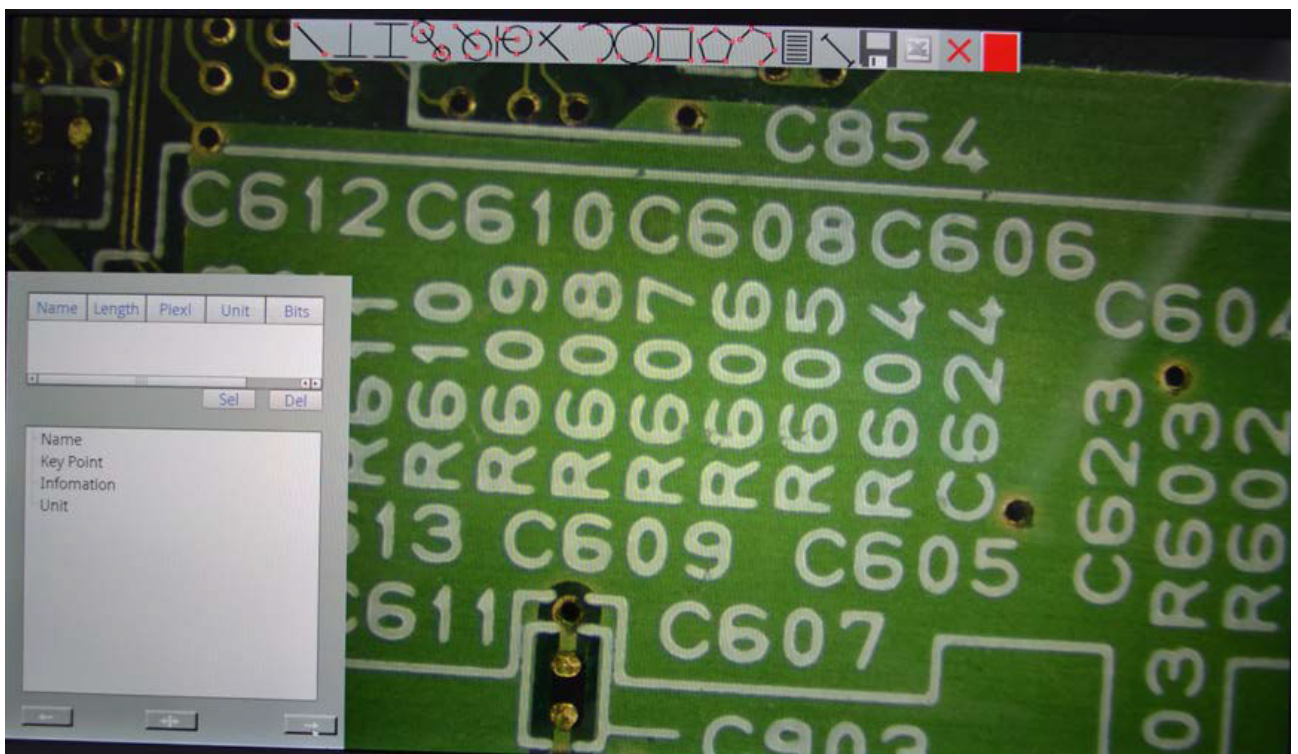
### 2.1.3 Video interface

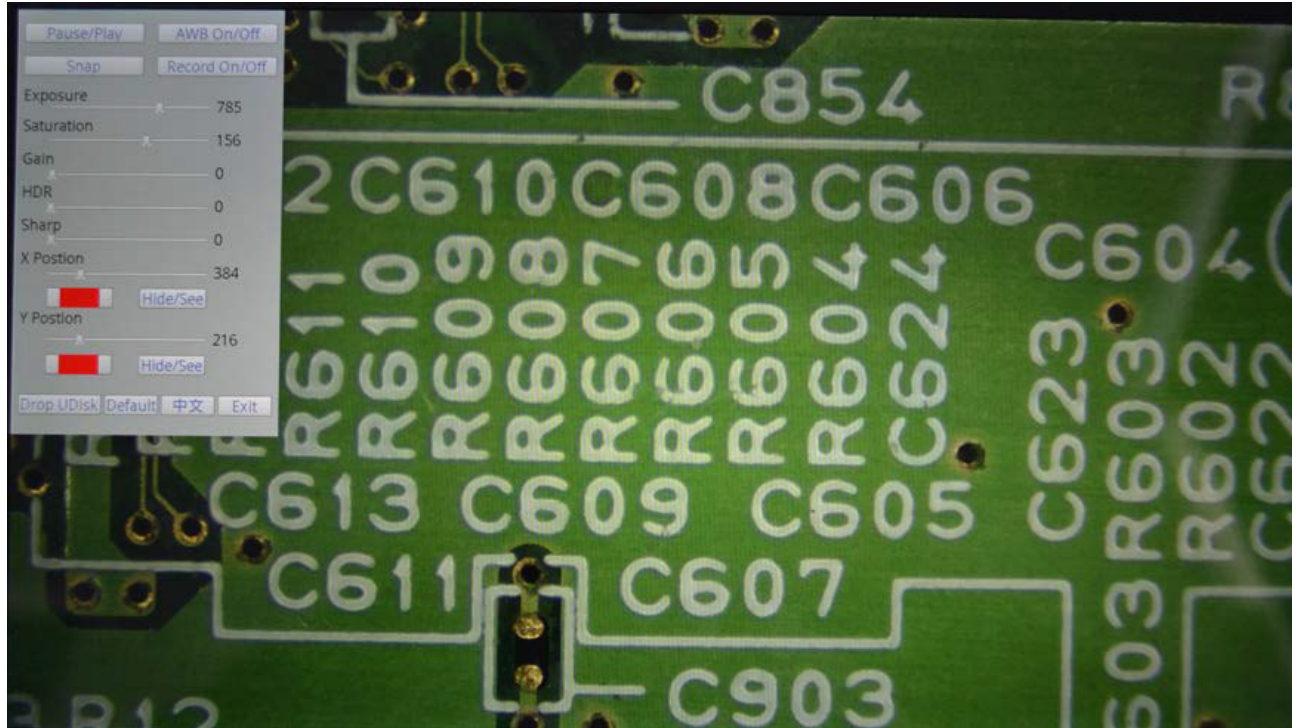
The image interface is mainly divided into 2 parts. The first part of the image display area; the second part of the image toolbar; the following chart.



### 2.1.4 Measurement interface

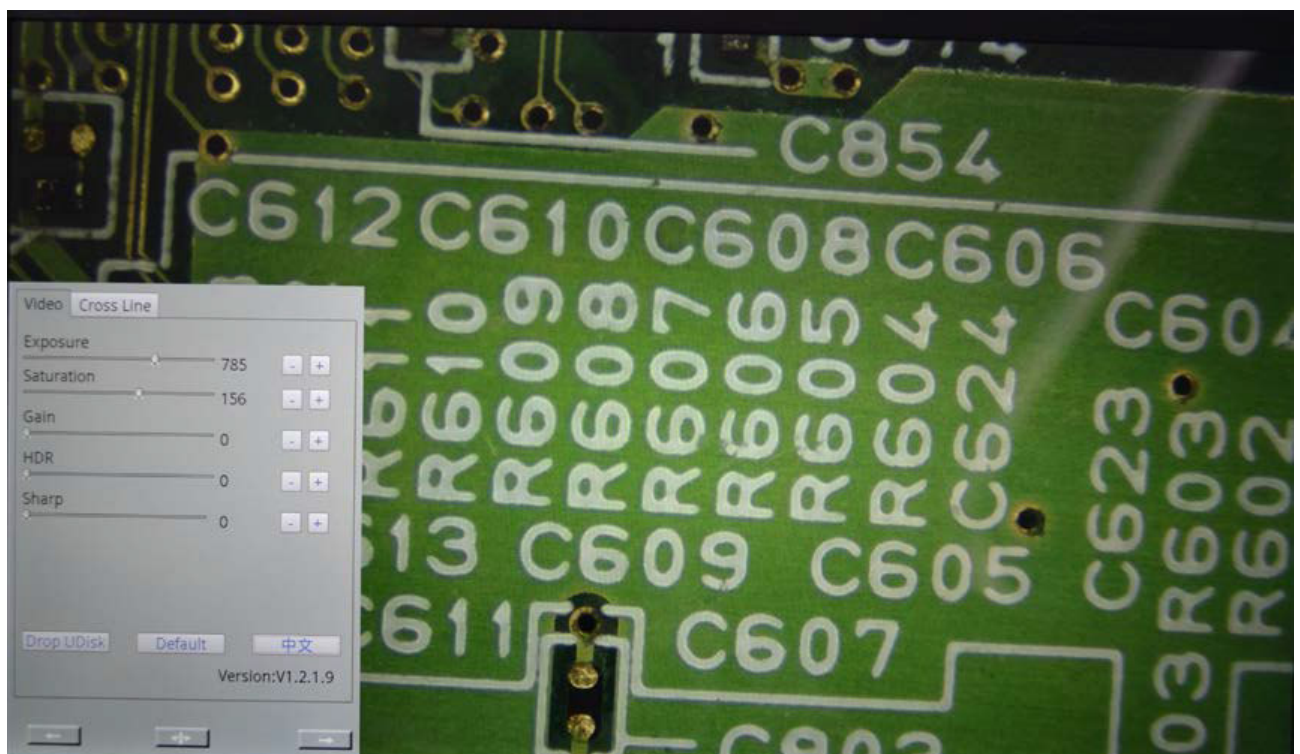
The measuring interface is mainly divided into 3 parts, the first part is the lower left corner of the measurement information bar; the second part is the middle of the top measurement toolbar; the third part for the measurement of the drawing area. as follows. **2.1.5 Button control interface**

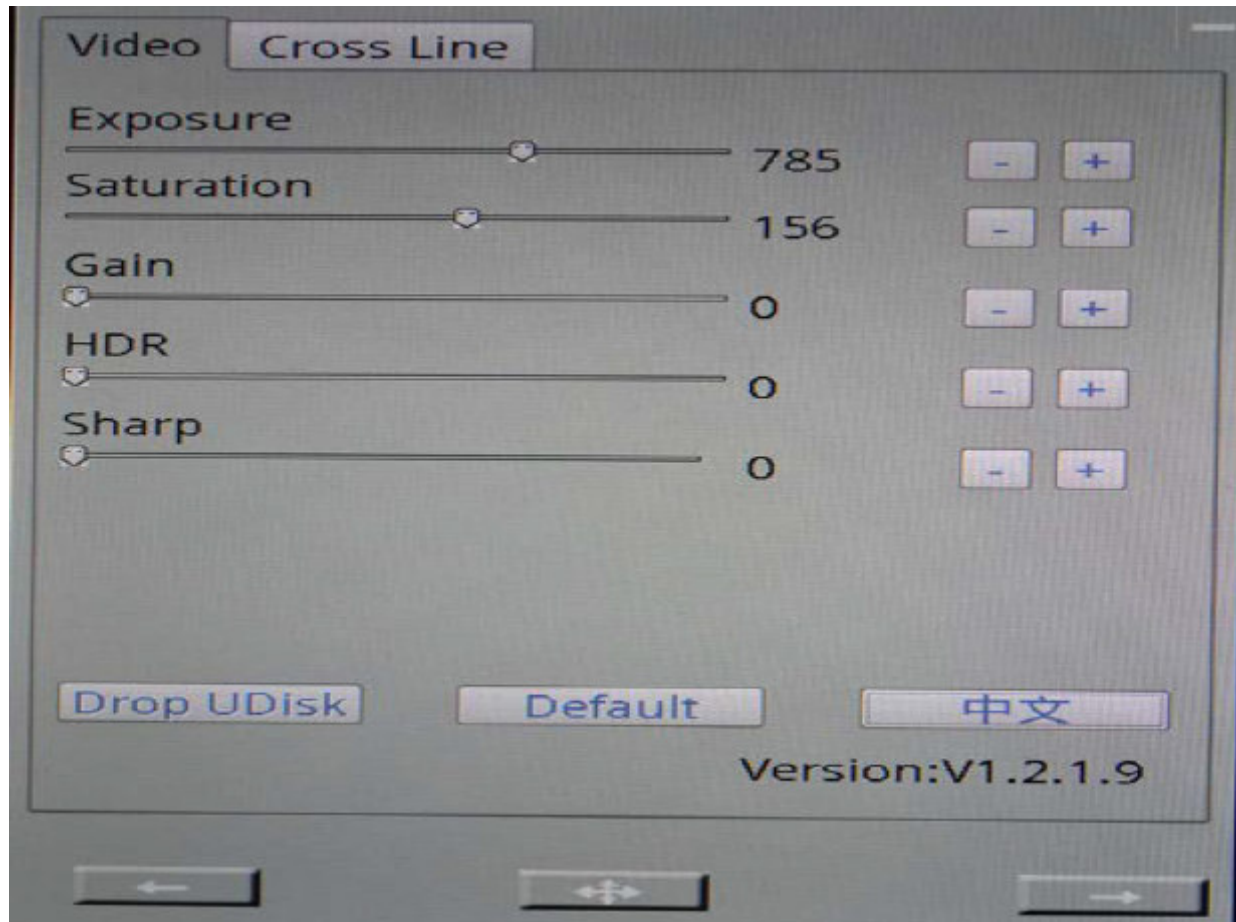




## 2.2 Video control interface

The software system is reset by default, the interface is empty, when the mouse moves to the lower left corner of the form, the video control interface will appear on the screen. **2.2.1 Parameter adjustment**





### 2.2.1.1 Exposure adjustment

The initial state of the adjustment value is 900, range 1-1125.

Adjust the way: by dragging the mouse and control the right side of the button to add or subtract.

### 2.2.1.2 Saturation adjustment

The initial state of the adjustment is 167, and the range is 0-255.

Adjust the way: by dragging the mouse and control the right side of the button to add or subtract.

### 2.2.1.3 Gain adjustment

The initial state of the adjustment is 0, and the range is 0-80;

Adjust the way: by dragging the mouse and control the right side of the button to add or subtract.

### 2.2.1.4 Reflection adjustment

The initial state of the adjustment is 0, and the range is 0-3;

Adjust the way: by dragging the mouse and control the right side of the button to add or subtract.

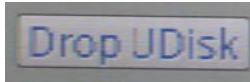
### 2.2.1.5 Depth control

The initial state of the adjustment is 0, and the range is 0-3;

Adjust the way: by dragging the mouse and control the right side of the button to add or subtract.

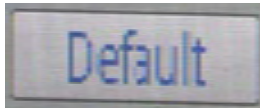
## 2.2.2 Uninstall U-sticks

After clicking the uninstall U button, the device will cancel the connection with the U disk. Note: if the U disk is not connected, you can not click, uninstall the U Disk button is not a trigger state.



## 2.2.3 Default value

Default button, when you click the default button, you will restore the original value of the video control interface and the cross line interface.



## 2.2.4 Language switching

The software based on domestic and international. In order to facilitate customers at home and abroad, an increase of one key language change

## 2.2.5 Version number

In order to facilitate the distinction between software updates and facilitate communication between customers. At the bottom of the language button, indicate the version number of this software. The version number of the current Ryeco software is V1.1.0.9.

## 2.2.6 Left switch

Left under the video control interface with the left switch button. This button to switch the interface into the left interface. When you click on the left, click on the left to enter the measurement interface.





### 2.2.7 Right switch

At the right bottom of the video control interface, there is a right switch button. This button to switch the interface into the right interface. When you click on the right switch, you will enter the image interface.



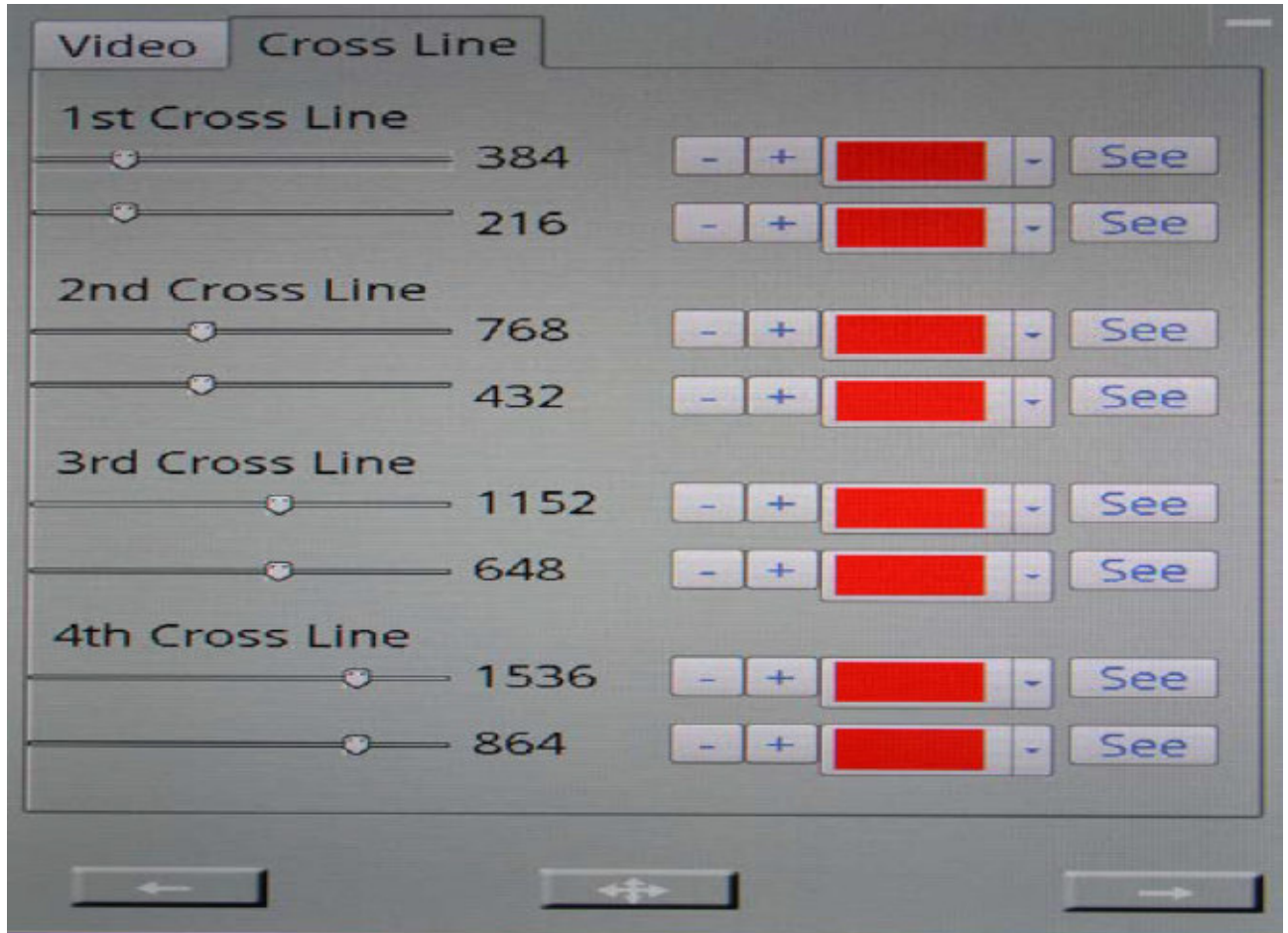
### 2.2.8 Move button

A mobile button is arranged between the left and the right of the video control interface. This button is the position to move the current interface.

Operation method: when the button is pressed, the button is displayed as the button state, which is the interface can drag the state can move through the mouse interface to any location. When you click again, the default state is restored. Do not move with the mouse, position fixed.



## 2.3 Cross line interface



### 2.3.1 First set of cross

The first set of cross lines is divided into upper and lower two control bars, the upper control strip is perpendicular to the X axis direction, and the lower control strip is a line perpendicular to the Y axis. The default value is 0; click on the right side of the "show" button on the right of a set of cross lines to open the cross line display, button at this time is displayed as "hidden". Customers can use the list to display the different groups of colors, have been carried out to distinguish. Adjust the size of the mouse to drag the control bar or the right side of the button to change the addition and subtraction.

### 2.3.2 Second sets of cross lines

Second sets of cross lines display the same way with the first group.

### 2.3.3 Third sets of cross lines

Third sets of cross lines display the same way with the first group.

### 2.3.4 Fourth sets of cross lines

Fourth sets of cross lines display the same way with the first group.

### 2.3.5 Left switch

Left under the control interface of the cross, there is a left switch button. This button to switch the interface into the left interface. When you click on the left, click on the left to enter the measurement interface.



### 2.3.6 Right switch

At the right of the cross line control interface, there is a right switch button. This button to switch the interface into the right interface. When you click on the right switch, you will enter the image interface.



### 2.3.7 Move button

With the same video control mobile buttons.



## 2.4 Measurement model

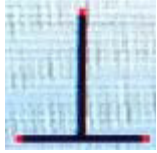


### 2.4.1 Point spacing measurement



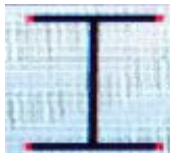
Click the button and click on the screen on the first measurement point, the position of a circle, and then drag the mouse, will be formed from the first measurement point to line the current location of the mouse, then click on the second measuring points, measuring line. In the measurement of the middle position of the straight line, it will be based on the detailed number of the current marking distance. After setting the second point, the pixel information box will display the current map element name and label, select the key points (measurement points) coordinates and measurement information, including the measurement value (length) and the unit.

#### 2.4.2 Point line distance measurement.



Click the button and click on the screen on the first measurement point, the position of a circle, and then drag the mouse, will be formed from the first measurement point to line the current location of the mouse, then click on the second measuring points, measuring line. In the measurement of the middle position of the straight line, it will be based on the detailed number of the current marking distance. After setting the second point, the pixel information box will display the current map element name and label, select the key points (measurement points) coordinates and measurement information, including the measurement value (length) and the unit.

#### 2.4.3 Parallel straight line distance measurement



Click on the button, click on the two points on the screen to form the first measuring straight line, and then click on the screen to form the first straight line parallel to the second straight line. Between the two straight lines will form a detailed distance mark. In the determination of the distance between lines to complete, primitive information frame, will display the name of the current pixel and label, key points selected (three points, two lines ranging points) and coordinate measurement information, including measurements (distance and location) and units.

#### 2.4.4 The distance between the center of the circle measurement



Click on the button, click on the screen three points to form the first measuring circle, and then click on the three points to form a circle of second measurement. Between the two circles will form a detailed distance mark.

In the determination of the distance between the centers, meta information frame, will display the name of the current pixel and label, key points selected (two round six points) and coordinate information and measurement units, including distance, two circle.

#### 2.4.5 Point to the center distance



Click on the button, click on the screen to form a point of the first point, and then click on the three points to form a circle. Between the point and the circle will form a detailed distance mark.

In the distance from the center point to the determination, the element information box, will display the name of the current pixel and label, key points selected (a point and round three points) and coordinate information and measurement units, including the radius and the center distance.

#### 2.4.6 The distance from the centerline



Click on the button, click on the two points on the screen to form the first measuring straight line, and then click on the three points to form a circle. With the formation of marking distance between lines and circle.

In line for the determination of the center distance, the element information box, will display the name of the current pixel and label, key points selected (two endpoints of a straight line and circle which is the endpoint) coordinates and the measurement information and units, including distance, radius, and pedal center.

#### 2.4.7 Angle measurement



Click on the button, click on the two points on the screen to form the first measurement of a straight line, and then click on the two points to form second lines of measurement. Marks are formed between the two straight lines.

In complete the determination of the angle, pixel information frame, will display the name of the current pixel and label, key points selected (four points two lines constitute angle) and coordinate measurement information and units, including the intersection angle.

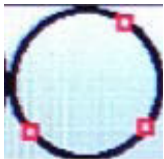
### 2.4.8 Arc measurement



Click on the button, click on the three points on the screen to form a measuring arc, the right end of the curve on the right side of the mark.

In complete the radian measured, pixel information frame, will display the name of the current pixel and label, key points selected (three point arc) and coordinate information and measurement units, including arc length, arc radius and center position of.

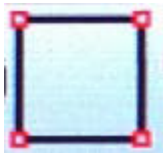
### 2.4.9 Three point circle



Click the button, click on the screen three points to form a circle, in the circle of the end of the edge of the formation of a mark.

In complete the round test, meta information frame, will display the name of the current pixel and label, key points selected (three point circle) and coordinate information and measurement units, including a circle diameter and area.

### 2.4.10 Rectangle



Click on the button, click on the two points on the screen to form a fixed edge of the rectangle, the process of moving the mouse, in the vertical direction on the screen to draw a fixed edge, forming a rectangle.

After the completion of the determination of the rectangle, the graphic element information box, will display the name and label of the current map element, the key points of the selected coordinates and measurement information and units, including the perimeter and area of the rectangle.

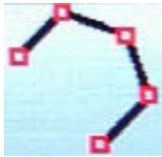
## 2.4.11 polygon



Click on the button, click on the screen in order to form a polygon, in the final point of a polygon again click will constitute a closed graph

In complete the polygon determination, pixel information frame, will display the name of the current pixel and label, key points selected (polygonal all points) and coordinate information and measurement units, including a polygon perimeter and area.

## 2.4.12 Polygonal line

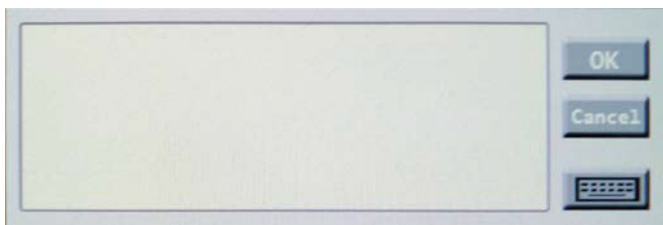


Click on the button, click on the screen in order to form a number of continuous line, in the last point of the vertex once again click will constitute a broken line segment and display information.

In the complete line for determination, pixel information frame, will display the name of the current pixel and label selected key single (consisting of segments of all points) and coordinate information and measurement units, including a broken line perimeter, area.

## 2.4.13 Text display

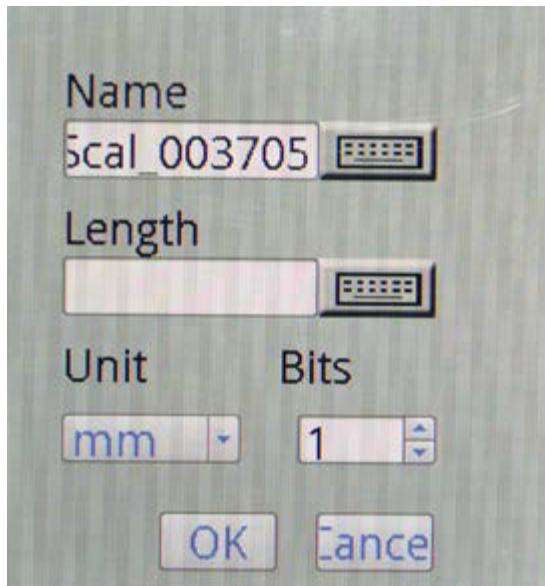
Click the button, the screen will enter the text dialog box appears, the right side of the dialog box list three button "OK" button: when the input information is completed, click will display the text on the screen. "Cancel" Cancel button: when you want to exit the current text input box, click will cancel the current input status. Keyboard button: when you click on this button, it will appear by the letters and numbers, such as the composition of the input button, as the input text of the tool.



#### 2.4.14 Scale setting

Click the ruler button to enter the setting scale. By clicking on the screen will form the corresponding line segment, and show the need to enter the dialogue information. Dialog information is: the name of the ruler, the length of the measurement, the measurement unit, the effective number, determine, cancel. The 5 function modules.

When the scale name, measurement length, measurement unit, effective digital input is completed, click the confirmation button, which means that the length of the corresponding line segment is the size of the input dialog box information.



#### 2.4.15 Scale selection

In the scale information list, display the currently added scale name, length, pixel, unit, accuracy. Click the "select" button after selecting one of the rulers, and the corresponding changes will occur on all the graphic elements on the screen. Click the "delete" button, the current selected ruler information will be deleted.

#### 2.4.16 Moving and deleting elements

1 right click on the screen when rendering primitives on existing primitives, the primitives will happen change color, sketch the graph has been chosen, and pop-up menu, right-click menu for the completion of primitive operation (delete and move the current).

The selected graphic elements are listed in the graphic element information box.

2 when the right mouse button has been mapping the arbitrary end position of the element, there will be a small icon of hand type, then the selected figure can be changed with the mouse to drag and drop location, until the new position again to confirm the new location.



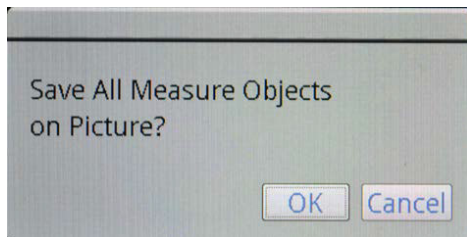
## 2.4.17 Save element



Click the "save" button, will be the current test for all the test elements to save as a new picture with a picture, the name of the source file name + current time.

Note: 1 when the device is not inserted into the U disk, the Save button is not a trigger state.

2 after the save is completed, the need to perform the uninstall U disk operation.



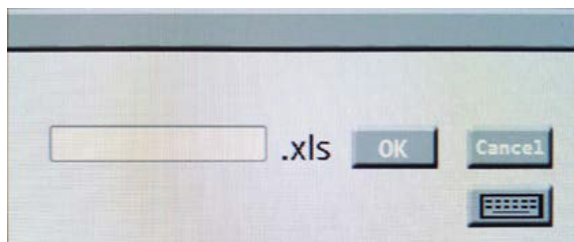
## 2.4.18 Excel save



When you click the Excel button, the screen will appear in the excel name of the dialog box, enter the name of the current excel through the soft keyboard, and save.

Note: 1 when the device is not inserted into the U disk, the Save button is not a trigger state.

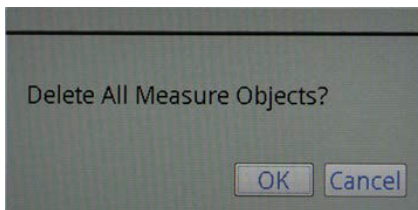
2 after the save is completed, the need to perform the uninstall U disk operation.



### 2.4.19 Delete all of the elements



Click the red button, will remove all the elements on the screen, regardless of whether there is a state of being selected.



### 2.4.20 Color Selection



When the current button is selected, the color displayed by the screen is painted on the screen, and the color is red. Through the drop-down box can choose the appropriate color, when the drawing, the screen will display the color of the current selected.

### 2.5 image mode

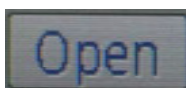


#### 2.5.1 Image selection

In the list of images, images are automatically listed in the measurement interface, including image thumbnail images and image names. When you double click the image list item, you will display the full saved image on the screen.

#### 2.5.2 Open button

When you select an item in the image list, click the "open" button, the screen will display the image saved in the current option.



### 2.5.3 Delete button

Select the item in the image list, click the "delete" button, and then delete the current item in the list.



### 2.5.4 Left switch

Left under the video control interface with the left switch button. This button to switch the interface into the left interface. When you click on the left, click on the left to enter the video control interface..



### 2.5.5 Right switch

At the right bottom of the video control interface, there is a right switch button. This button to switch the interface into the right interface. When you click the right switch in this interface will enter the measurement mode interface.



### 2.5.6 Move button

There is a shift button between the left and right of the image mode interface. This button is the position to move the current interface.

Operation method: when the button is pressed, the button is displayed as the button state, which is the interface can drag the state can move through the mouse interface to any location. When you click again, the default state is restored. Do not move with the mouse, position fixed.



## 2.6 Button mode

When the screen interface is in the video control or cross line interface, click on the middle button of the hardware device, there will be a button control interface, in this interface, mainly through the hardware buttons to operate. Through the left and right buttons to achieve the choice between the controls.

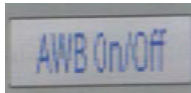
## 2.6.1 Video pause / open

When the screen into the button control interface, through the middle button to select the current control, in the selected control state, the left button and the right button can adjust the video between the suspension and open for switching. By pressing the middle button again, you can exit the current selected control.



## 2.6.2 White balance on / off

When the screen to enter the button control interface, through the middle button to select the current control, in the control state, the left button and the right button can adjust the white balance between the open and close to switch. By pressing the middle button again, you can exit the current selected control.

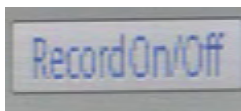


## 2.6.3 Photography

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the left button and the right button can achieve the picture function. Note: when you click on the U disk, the control button is not used. By pressing the middle button again, you can exit the current selected control.

## 2.6.4 Video start/ off

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the left and right buttons can be adjusted to switch between the start and stop. By pressing the middle button again, you can exit the current selected control.



## 2.6.5 Exposure

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. Left button to reduce the current exposure value, the right button to increase the current exposure value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 10.

Exposure value range: 1-1125, by pressing the middle button again, you can exit the current selected control.

## 2.6.6 Saturation

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. Left button to reduce the current saturation value, the right button to increase the current saturation value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 10.

Saturation range: 0-255, by pressing the middle button again, you can exit the current selected control.

## 2.6.7 Gain

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. Left button to reduce the current gain value, the right button to increase the current gain value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 10.

Gain range: 0-80, by pressing the middle button again, you can exit the current selected control.

## 2.6.8 Anti- reflection

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. Left button to reduce the current reflection value, the right button to increase the current reflection value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 1.

The reflection range is: 0-3, through the middle button once again, you can exit the current selected control.

## 2.6.9 Depth control

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. The left button is reduced the depth value, the right button to increase current depth value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 1.

Depth of field: 0-3, once again press the middle button to exit the current selection control.

## 2.6.10 Cross line X

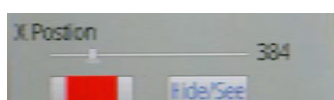
When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. Left button to reduce the current cross line X value, the right button to increase the current cross line X value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 10.

Cross line X range: 0-1920, by pressing the middle button again, you can exit the current selected control.

Under the control of the

Color button: select the color button, you can switch the current color through the left and right buttons.

Show hidden button: through the middle button to select the button control, you can switch the current through the left and right buttons to display the hidden state.



### 2.6.11 Cross line Y

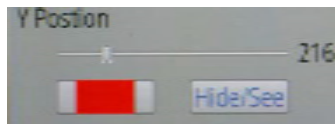
When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, the control color white blue. Left button to reduce the current cross line Y value, the right button to increase the current cross line Y value. Press a value to increase or decrease by 1. When the button is pressed, the number is increased or reduced by 10.

Cross line Y range: 0-1080, by pressing the middle button again, you can exit the current selected control.

Under the control of the

Color button: select the color button, you can switch the current color through the left and right buttons.

Show hidden button: through the middle button to select the button control, you can switch the current through the left and right buttons to display the hidden state.



### 2.6.12 Uninstall U-sticks / Drop UDISK

When the screen into the button control interface, through the middle button to select the current control, in the selected control state, the left button and the right button can achieve U disk unloading. Uninstall the U Disk button, U disk will cancel the connection with the device.

By pressing the middle button again, you can exit the current selected control.

### 2.6.13 Default value

When the screen to enter the button control interface, through the middle button to select the current control, in the selected control state, left and right buttons can be set to achieve the default value. When you press the middle button again, you can exit the current selected control.

### 2.6.14 Language switching

When the screen into the button control interface, through the middle button to select the current control, in the selected control state, the left button and the right button can be achieved in the "Chinese" and "English" between the switch. By pressing the middle button again, you can exit the current selected control.

### 2.6.15 Sign out

When the screen enter the button control interface, select the current control through the middle button, select the controls in the state, the left and the right button can exit the function, click on the button, will exit the current control interface. By pressing the middle button again, you can exit the current selected control.

## Third chapter peripheral and Application of the RyecoCam

### 3.1 external storage devices

**3.1.1 U-sdicks** Connect U disk, U disk in the unloading button video control interface, interface measurement mode save button, click the excel button to trigger state. Image list in the image mode interface to display the current image.

When the U disk is not connected, the video control interface of the uninstall U Disk button, measurement mode interface to save the button, the excel button is not available. Image can not be displayed in the image list in the image mode interface.

### 3.2 mouse

In the video control interface and the cross line interface, click the right mouse button will appear in the menu list, the function is to pause the video, pictures, video, open the white balance, cross line, update.

Note: film, video, software updates, kernel updates only in the U disk insert can be used, U disk is not inserted, the button is gray, can not be clicked.

Ryeco / Ryecocam: Ryf AG / Ryf Ltd. May 2019