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**5302 SERIES  
DIGITAL AUTO FOCUS MICROSCOPE  
OPERATION MANUAL**



**Attention**

- ◆ The camera use only DC12V power supply. Before connecting power supply, please connect mouse to the camera.
- ◆ Under AF mode, the program will automatically adjust the focus to provide a clear image; Switching to "Click F" mode, it will lock the focus after the system performed auto focus on the required image; Even if the image is blurry, with focus being locked, it will not trigger auto focus again; When "MF" (Manual Focus) is set, the MF can be adjusted.
- ◆ If auto focus cannot operate under special circumstances (e.g. Smooth reflect surface). Move the focus frame to objects with details, change to "Click F" mode to perform one-off auto focus operation, or switch to "MF" mode for manual focus operation.

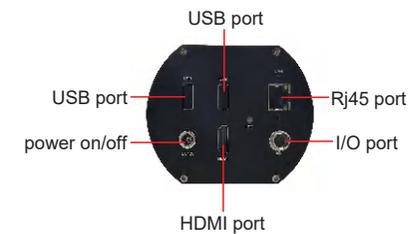
**Structure**

① Name:



- 1.Camera (1/2.8" CMOS sensor, Pixel 2M);
- 2.Stand;
- 3.Mouse;
- 4.Locking ring;
- 5.LED light: Adopts many fill lamps, display a circle with even and abundant light. There have a controller with control the light power;
- 6.The stand can be adjusted back and forth and rotate in any direction
- 7.HDMI port;

② Camera:



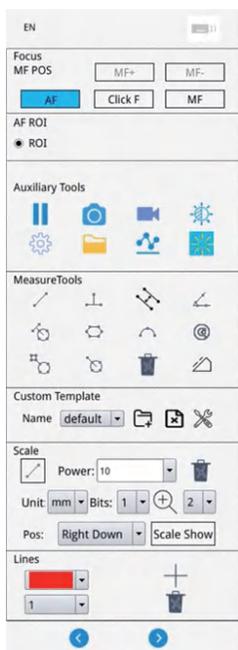
**Software**

1 Introduction to software functions:



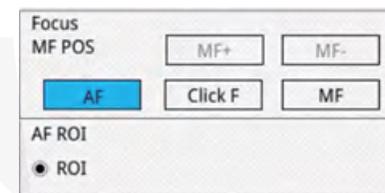
- ◆ The lower right corner of the monitor displays magnification;
- ◆ Mouse click zoom/ Zoom out icon to change magnification;
- ◆ Please refer to the screen size for the actual magnification.

2 Menu interface:

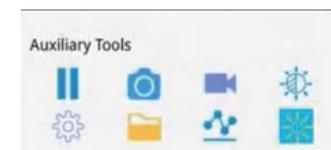


- ◆ U Disk Tips: When a U disk is inserted in the camera, the icon  will light up and the photo and recording functions will work properly. The icon turns gray when the U disk is not connected.

- ◆ Click on the upper right corner of the menu to switch the language mode, available in simplified Chinese and English.
- ◆ Focus: There are AF, click F and MF.



- ◆ Focus Position: After clicking the manual focus, the mouse drags the "MF POS" to control the focus position, so that the image is clearly focused. After clicking one-click focus, the phase opportunity will automatically focus once, change the distance, and after these operations, the camera will no longer automatically focus. After clicking on the autofocus, the phase enters the autofocus mode, change the distance, the multiplier of these operations after the camera can still autofocus itself.
- ◆ Focus area: When the focus box is not checked, the camera will focus globally by default, that is, the image in the whole screen will be focused. When the focus box is checked, the camera will focus on the center by default, that is, only the image in the square focus box that appears in the center of the picture will be focused.
- ◆ Auxiliary Tools



- ◆ Freeze: Click the "freeze" || icon to freeze the current image interface, and the image window is static and unchanged to observe the measured object; after freezing, the icon becomes a frozen state >, and click the icon again > to return to the real-time display interface.

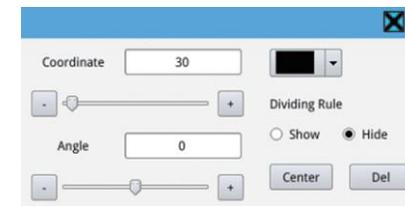
- ◆ Snap: Click the "Snap"  icon. When the naming method in the photo setting is manual, enter the picture name to save. Click OK; then enter the picture name automatically; then the "Catch In" icon is displayed in the center of the picture. The icon disappears to indicate the completion of the picture. Pictures will be saved in jpg or bmp format to the camera's external storage-picture folder.
- ◆ Video: The video recording function is only available if the U disk is inserted. Click the "Video"  icon, enter the file name you want to save, click OK, and then start the recording. During the video recording, the red dot icon in the video is flashing in the lower right corner of the video  icon again, the interface prompt "video save", and then stop the recording automatically. Note: Video and video is automatically saved in the "Video" folder of the U disk, The Format is the "mp4". The maximum size of a single video recording is about 4G, and it automatically stops the video recording beyond 4G.
- ◆ Automatic White Balance(AWB): After clicking the "AWB"  icon, the camera will automatically white balance the picture, and then automatically return to manual white balance. This feature can also be set up in the Settings page.
- ◆ Open: When the U disk is not inserted, click the "Open" icon  to pop up the camera's own storage interface. You can store a small number of photo images. After inserting the U disk, you can open the video file, and only support the video playback in mp4 format. Pictures are saved in external U Disk-Image-within the Manual / AUTO folder; Video is saved in the external U Disk-Video-Manual / AUTO folder (Manual is the manually named file storage path, and AUTO is the automatically named file storage path). After opening the picture, click the left and right page turning tool to browse the upper and lower pictures; click the black back arrow to exit the browsing interface. Double-click the video file to open the video with the return and pause / play function button.



- ◆ Dynamic and static Compare (original "Comparison picture") function: right-click on the picture to select the dynamic and static contrast picture interface can pop up. The left side of the screen is the real-time video interface, and the right side is the selected picture. The real-time video streaming picture on the left and the static picture on the right can be clicked and dragged for convenient comparison.
- ◆ Data: Click the icon  to enter the data display interface:
  1. Data pages can display up to eight data types, including: distance, perimeter, area, angle, radian, width, height, and radius. Data types can be changed in the main menu/settings/ edit.
  2. The measured element name cannot be customized. The default naming rule is: L starts with line segment distance class, R begins with circular class; and A starts with angle class.
  3. Click the Export data button in the lower left corner to export it. File data in csv format. Data units displayed in the bottom menu-Unit synchronization in the calibration menu area. A button option to close the page is located at the bottom of the page. The left and right arrow icon in the bottom right corner moves the page toward left / right. A long mouse press can also drag the data list to change the position. A data list can record up to 100 sets of data.
- ◆ Automatic Exposure(AE): Click "AE"  icon camera will be automatic exposure, click again to exit the automatic exposure into the manual exposure mode. This feature can also be set up in the Settings page.
- ◆ MeasureTools: Click on any measurement tool to enter the measurement mode, you can make a straight line and other ways of measurement. (In the measurement mode, the current focus will be locked. By default, manual focus, and other focus modes cannot be switched. You need to click the blue triangle icon in the upper right corner of the display interface to exit the measurement mode) Click the "Automatic edge finding"  icon, and select the icon to turn blue  . When measuring the picture, realize automatic edge search. Click the "Delete all"  icon to delete all the added lines. Click on the "Text"  icon to annotate the measurements, and the right-mouse button long press can drag the arrows and the annotation content to change their position.

- ◆ Custom Template: The custom module will have an automatically generated default template name "default". The default template does not support the deletion modification. After drawing the element in the image area, click the "New"  icon, and the window of "whether to convert the element to a template" will pop up in the interface, and click "OK" to establish a new template. A new interface then appears, naming the template in the Name column; and several icon options: Save As, Save the Element, and Cancel. Click the Delete  icon to delete the template; click the Modify the  icon to modify the template. Click the Save  or Save As  icon to save the modified template, and click the "Return to the "to do not save the modified template.
- ◆ Scale: Click "New Clrules"  there are "H Calibrate" and "Circle Calibrate" calibration two optional. Drag the marking line to the fixed scale marking line alignment, input the lens multiplier value (name), the actual length between the marking lines, select the unit, and complete the calibration once. Each calibration set of data is displayed in the multiplier list. Delete calibration: click the drop-down calibration list, select the calibration group to delete, and click the Delete icon to delete the group calibration. Click to modify the current password, click display to view the current password, the initial password is 123456.
- ◆ Scale bar function: Select the scale unit, precision, location, and display. (The units and accuracy here are common for calibration, measurement, scale, and data list)
- ◆ Picture in picture: Click  to open the picture, a small separately enlarged window appears in the lower right corner of the big screen to show the place of the mouse amplification picture, the magnification of the picture is 2 / 4 / 6.

- ◆ Lines: Click "+" to set the number of cross lines horizontal and vertical lines, set the horizontal and vertical lines are completed, select "Show", the image display area shows the set cross lines, check "hide" does not show the cross lines, select "Delete all" to delete all the cross lines. Set the number of horizontal and vertical lines. Hold down the right mouse button to drag the cross line. pull-down can set the cross line color and thickness, set the cross line, draw the cross line again, painted before the cross line does not change.
3. Right-click the cross line in the screen to open the cross line adjustment bar.



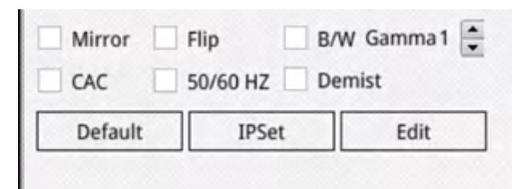
Enter or drag to adjust the position and angle of the crosshairs, select the color of a single line, and whether the scale is displayed. Click "Center" to adjust the crosshair to the center of the picture, and click "Delete" to delete the crosshairs.

- ◆ Logo: You can set the required logo in the identifier bar, and import the picture requirements: the name must be set to "logo"; the size should be less than 1MB; and the format is PNG; Import method: insert the U disk of the logo picture into the camera USB interface, and the left mouse button can double-click on the identification bar to complete the import. (The identification menu bar is closed by default. If you need to open, open in the Setting menu-interface Edit-interface Main interface layout)

2 Detailed Explanation For Setting

- ◆ Brightness: Manually adjust the overall brightness of the camera preview picture, brightness adjustable range: 0-100, reset the default value of 40. (Note: The brightness value is only adjustable in the automatic exposure mode)
- ◆ Exposure & Gain: Exposure value: 0-333 is adjustable. Gain: the value of 0-50 is adjustable. (Note: Exposure value and gain are only adjustable in non-automatic exposure mode)
- ◆ Red / Green / Blue Gain: Red gain, green gain, blue gain, and white balance influence, click on the "white balance AWB" phase opportunity to have an automatic white balance and then automatically exit the automatic white balance mode.  
Red gain: 0-4095 adjustable  
Green gain: 0-4095 Adjustable  
Blue gain: 0-4095 Adjustable
- ◆ Saturation / Contrast / Sharpness  
Saturation: 0-255 adjustable, reset the default value of 128  
Contrast: 0-100 adjustable, reset the default value of 50  
Sharpness: 0-15 adjustable, reset the default value of 4
- ◆ HDR:  
HDR (The ability to eliminate the reflection): 0-255 Adjustable, reset the default value of 100
- ◆ ZOOM:  
ZOOM: 1.0-6.0 Adjustable, reset the default value of 1.0. Ezoom can be adjusted from 1.0 to 6.0. So the overall magnification range is: 1.0-84.0.
- ◆ White Balance / Automatic Exposure:  
Click "AWB" to take an automatic white balance and then automatically exit the automatic white balance mode. Click "AE" to enter the automatic exposure mode. At this time, the exposure value and gain cannot be modified, so you need to exit the automatic exposure mode before making numerical adjustment. Both features are also available in the main menu interface.

- ◆ Other Settings:  
Mirror: The video on the screen is located in the opposite vertical direction;  
Flip: The horizontal direction of the video on the screen is opposite to the actual direction;  
Black and white mode: checked for black and white mode, the default is color mode.  
Gamma value: 0-3 adjustable, reset the default value of 1.  
CAC: Eliminate the color spots that appear at the intersection of the high light and low light parts.  
50 / 60HZ: Check to achieve the anti-screen flash effect.  
Demist: Open the defogging function can remove the fog on the lens surface.  
Default: Adjust all the camera parameter settings to the default initial value.  
IPSet: You can set the IP address of the camera.



- ◆ Edit:  
Data List: Adjust the data types listed by the main menu in the Data function in the secondary column. Click to select any two data types, and click the exchange icon to exchange the data list display sequence.  
  
Main interface layout: Adjust the type of function displayed in the main menu.- Click to select any two menu module types, and switch the module bar in the main menu interface.  
  
Data list and interface layout of each item data type and menu module before the fork check box indicates the display and hide of the item data type / menu module.

**Introduction to computer software functions (included)**

4-1.Introduction to computer measurement software:

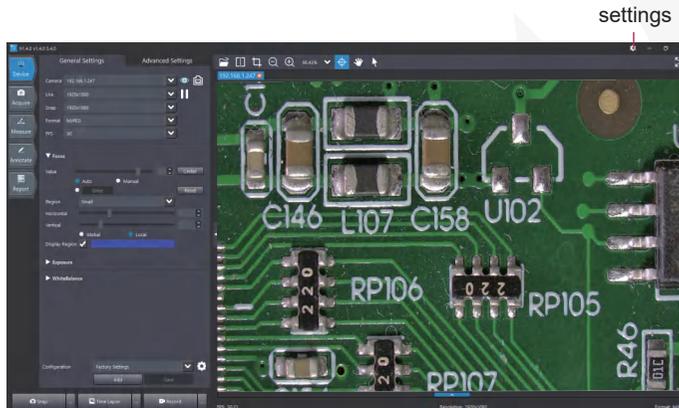
- ◆ connect to PC
  - network connection: set the camera-side IP address. for example, set the network segment to: 192.168.1.182, then set the PC-side IP address to: 192.168.1.183



USB connection:

use a USB 3.0 cable. connect one end to the camera and the other end to the USB 3.0 port on the PC. at the same time, switch the mode switch from HDMI back to PC.

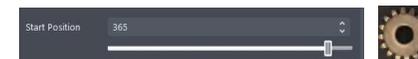
click  software is shown in the figure below



- ◆ Click "settings"to set language
- ◆ Focus modes: auto focus, manual focus, one-click focus, area focus
- ◆ The total vertical movement range of the sensor in the camera is 16 mm. click "center" and the sensor will move to the middle position.
- ◆ Click "Acquire", select the EDF tool, and click on different focal planes in the image display area respectively with the mouse.



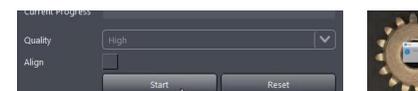
1.automatically generateNote: change the focus mode to manual focus.set the starting position until the initial position is clear; you can adjust it by scrolling the mouse wheel slightly.



set the end position until the end position is clear; slight adjustments can be made by scrolling the mouse wheel.



click "Start" for automatic synthesis; the generated image can be saved.

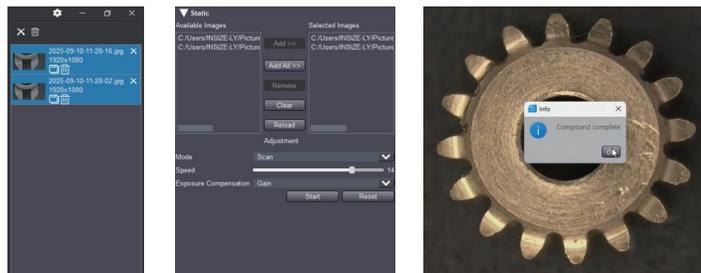


## 2. Image Synthesis

Note: change the focus mode to Auto Focus (AF), and use Area Focus.focus on the initial position and the end position respectively, and save the images.

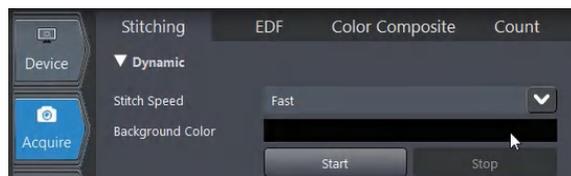


move the images to the synthesis area, click "Add All", and then click "Start" to complete the synthesis.



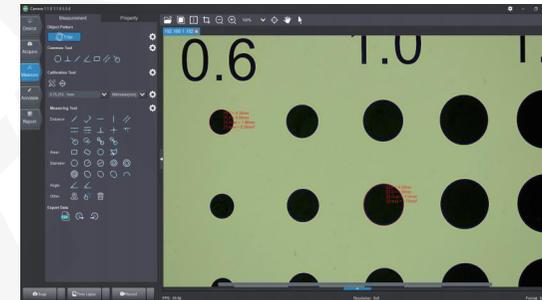
- ◆ click "Acquire", select the Stitching tool: After achieving clear focus, switch to Manual Focus (MF).set both white balance and exposure to manual exposure mode, then adjust the light source properly. click "Start", adjust the stitching speed: the moving speed should be kept constant, and the direction of image movement should be kept basically horizontal and vertical click "Stop" to complete the image stitching.

### 1. Automatically Generate

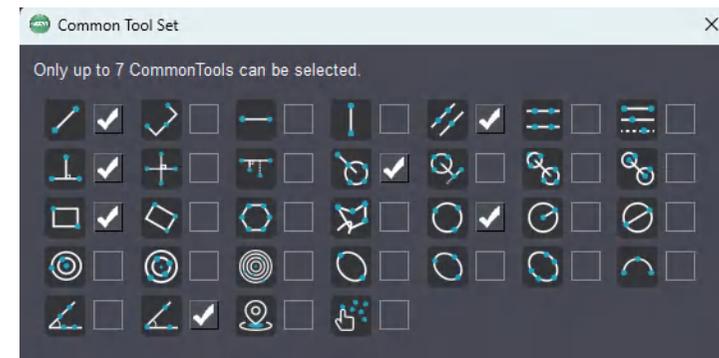


2. Image Stitching the method is the same as EDF synthesis: take photos of different positions of the workpiece, move them to the image stitching area, click "Add All", and then click "Start" to complete the stitching.

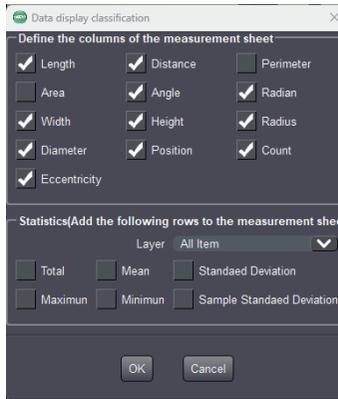
## ◆ Measure



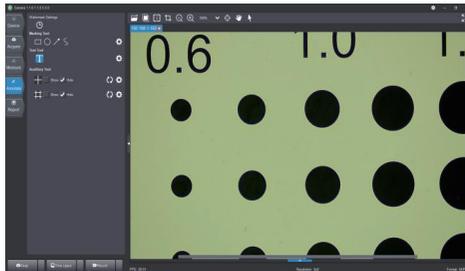
- 1.Object Mode: smart edge - finding, automatic edge-snapping
- 2.Common Tools: basic measuring tools, which can be added by clicking the "Settings" button.



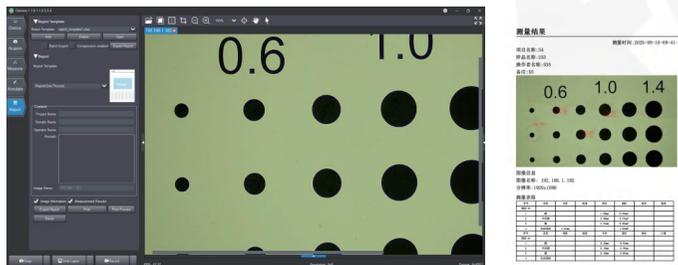
3. Calibration: the same as the camera software calibration
4. Measure tools: measurement data can be categorized (or: classified) as needed, and can be exported in CSV format.



- ◆ Annotate: watermark setting, marking tool, test tool, auxiliary tool



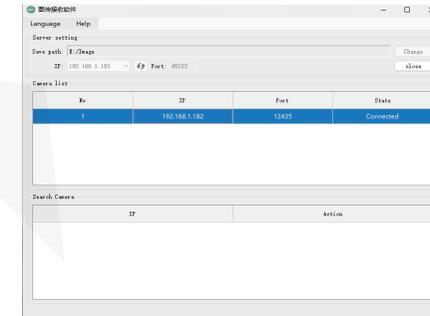
- ◆ Report: fill in the relevant content according to the report template, and the report can be exported.



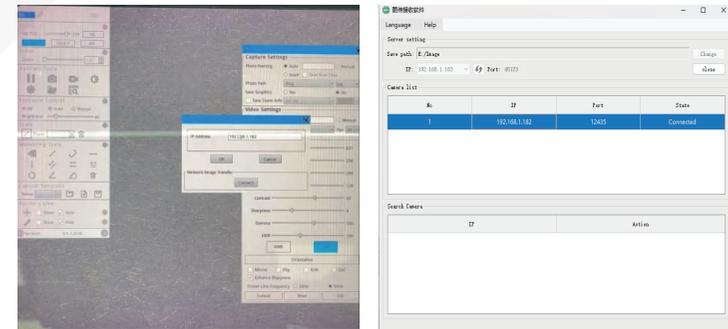
- ◆ photo shooting, continuous shooting, and video recording functions

4-2. Image Transmission Software: click

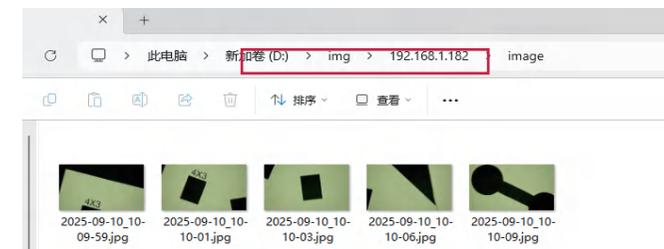
1. set the photo transmission path properly, select the IP address of the computer, and click "Start"



2. open the camera software, click "Settings", then select "IP Settings". check the computer IP address (192.168.1.183), and click "Connection".



3. on the camera software, click "snap", then open the save path folder (named after the IP address).open the "image" folder and check the image transmission files.



- ◆ To avoid danger or damage incurred to the lens, do not touch the lens or sensor directly with your fingers.
- ◆ To avoid failure or electric shock hazard and so on, do not disassemble or modify the internal structure of the device.
- ◆ Do not plug in or unplug the anything port when hands are wet.
- ◆ If the lens or sensor is dirty or damp, you should better use dry and non-linen fabric or professional lens tissue to wipe them. To avoid scratches on the surface, do not touch the lens with your fingers. Wipe the lens or sensor lightly.
- ◆ The products are not specifically designed for an outdoor use. Do not expose it to outdoor environment without any protection. Excessive temperature and humidity will damage the lens. Please avoid using the product under the following environment: high temperature or high humidity environment, places with direct sunlight, dirt or vibration and places near heat source.
- ◆ Please use and store in the following environment:  
Operating temperature: 0°C~ 40°C  
Storage temperature: -20°C~ 60°C  
Operating Humidity: 30~80% RH  
Storage Humidity: 10~60%RH
- ◆ If any foreign matter, water or liquid enter into the device by accident, disconnect the power cable immediately. Please send it to the maintenance center and do not use the hair dryer to dry it by yourself.
- ◆ To avoid electric shock by accident, please power off microscope before you move your computer or laptop.
- ◆ The cleanliness of the device lens will directly affect clarity degree of contents from the computer screen during preview. Problems like various circles or spots on the screen may mostly be incurred by dirt on the lens. When cleaning, please use professional lens tissue or other professional detergent to clear the dirt on the lens.
- ◆ Please do the confocal adjustment after changing camera adapter or auxiliary objective