INSIZE

www.insize.com

ISM-DL301
DIGITAL MEASURING MICROSCOPE
(WITH DISPLAY)
OPERATION MANUAL

V2

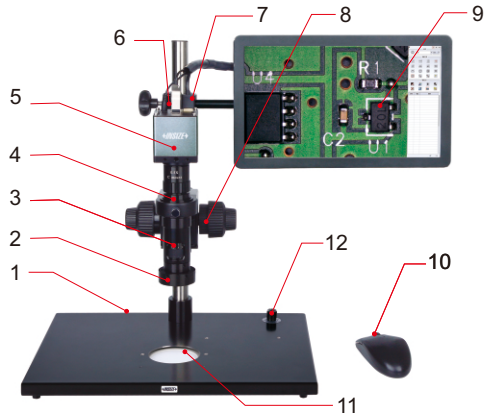
INSIZE

Attention

- 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

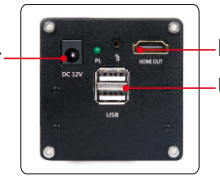
Structure

1 Name：



1. Stand;
2. LED light: Adopts many fill lamps, display a circle with even and abundant light. There have a controller with control the light power;
3. Zoom lens: 0.75X- 5X；
4. Camera adapter;
5. Camera：CMOS sensor, Pixel 2M；
6. USB ports;
7. HDMI ports；
8. Focus hand wheel：Focus adjustment is hand-actuated；
9. High-definition screen: 13.3"LCD;
10. Mouse.
11. Contour illumination
12. Contour illumination brightness adjustment

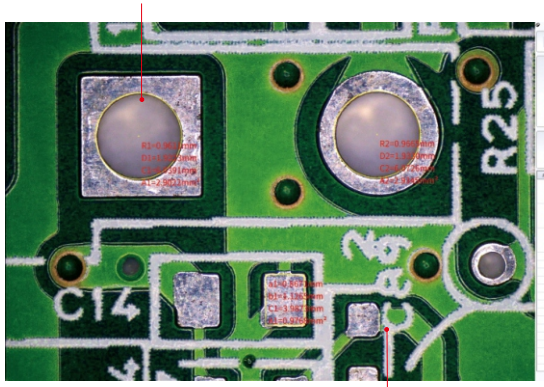
❷ Camera：



Camera Top

- The microscope has the function of taking pictures, The workpiece that is used for observation can be captured in real time. Pictures will be saved in the USB flash disk. You can reading the USB flash disk by computer.
- Camera can transmit the video signal for screen by the HDMI port and HDMI cable. The display is in real time.
- Microscope can be connected the controller by mouse.
- Power port connecting a power adapter.

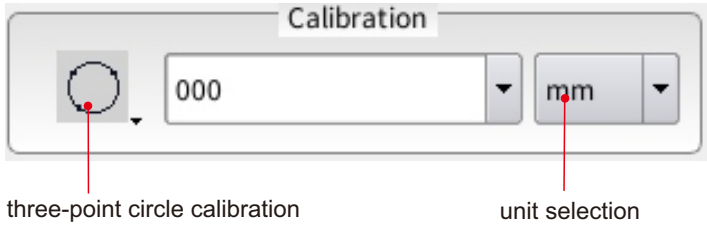
❷ Software：



Operation

❶ Calibration:

- Click the icon in the upper right corner of the menu. You can choose the line segment calibration or the three-point circle calibration. The line segment calibration is that you can choose two dots to demarcate the lens.
  The calibration is based on the circle selected on the calibration board. Users can choose according to the type of the calibration board. Choose three-point circle calibration methods, for example, place the circular calibration plate at the bottom of the lens, the image adjust after clear, freely choose three points on the outside perimeter of the circle, can draw a circle, check drawn and calibration plate coincidence degree, if not satisfied can draw circles until satisfied. Then in the dialog box enter the current lens of the multiplier, calibration of the actual size of the circle and other information. At this point in the menu "calibration" dialog box will appear the current calibration information.



- Unit selection: on the right side of the “calibration” dialog box, select the drop-down button. The user can select the appropriate unit

Notes:

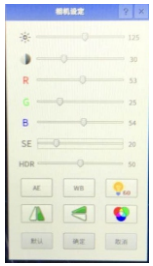
ⓐ **Confirm to do calibration before doing measurement.**

ⓑ **Measure different objects in same magnification after doing calibration.**

ⓒ **After calibration, rotate focus adjustment to focus the object. If rotating the magnification adjustment, do calibration again.**

2 assist tools:

- Adjust the camera Parameters. Select the camera Parameter key and appear as shown below. The current image can be set appropriately



brightness icon image contrast icon R red color ratio
G green color ratio B blue color ratio SE edge enhancement
HDR wide dynamic

"AE" is automatic exposure. Camera can automatic adjust to the most brightness on the basis of current brightness

"WB" is White Balance , Please put a white paper or other white object under the lens, then press the button, and the system will automatically perform the white balance until it is finished.

Electric frequency choice: user can choose according to the current market frequency, avoid the screen flashing.

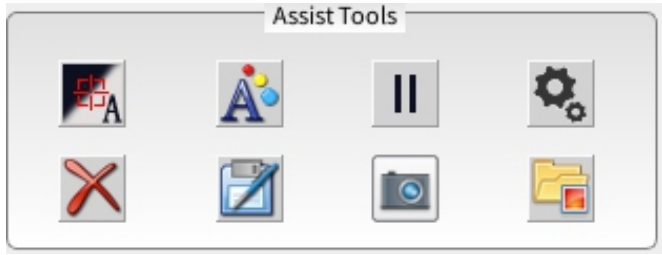
Mirror button: Image can be mirrored.

Image reverse adjustment button: Image can be reversed.

Color and monochrome image conversion: color or monochrome options for images.

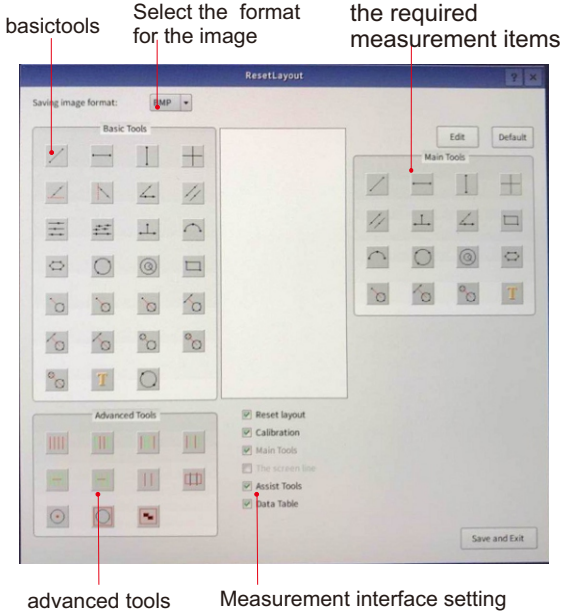
- Select manual/automatic selection. Select the points on the screen, and if you choose to select the points manually, the point where the mouse points are taken is there.If the automatic smart selection is selected, then the system automatically searches for edges automatically according to the 20 pixels around the mouse point. This approach can reduce the human error of selecting points. But you can't have more than two edges around the choice point, or you might choose to make a mistake.

- Pictorial information selection. A dialog box appears after the click. The user can set the line width, color, the font size,color and label of the image, etc.
- Screen freeze button. If the machine in the drawing is unstable, you can freeze the picture by freezing the current button. Press this button again to remove the freeze.
- Clear button. All items on the screen can be cleared, and the information on the right side of the data column will not be removed.
- Save the measurement data. the measurement data can be saved and can be opened in Excel in the computer.
- Save the measurement image. The image and data in the current screen can be saved in the form of pictures. The format is BMP or JPEG.
- Preview the saved image. You can preview the previously saved images.



3 measuring tools:

Click on the right corner of the measuring tools setting icon, appear as the following popover window, the user can choose the required measurement items.



- Measure Length of Line or Distance Between Two Points:
  Click at the start point, draw a line to the end of line and click. Put result in the appropriate position.
- Measure Length of Horizontal Line or Distance Between Two Points.
- Measure Length of Vertical Line or Distance Between Two Points.
- Select to display or hide screen cross lines.
- Measure Angle From Horizontal Line:
  Draw a line through two points to measure the angle of the line and the horizontal line.
- Measure Angle From Vertical Line:
  Draw a line through two points to measure the angle of the line and the vertical line.
- Measure Angle Of Two Lines:
  draw a line through two points, then draw another line through two points and then the system automatically calculates the Angle between the two lines.

- Measure Distance Between Two Parallel Lines:
  draw a line through two points, and then find another line, the second line will be automatically drawn, and the system will automatically measure the distance between the two lines.
- Measure Distance Between Three Parallel Lines.
- MeasureDistanceBetweenThreeParallelLines.
- Measure Distance Between Point And Line:
  Take a point and then draw a line through two points. Measure the distance between the first point and the line.
- Measure Radius, Length And Angle of Arc:
  An arc can be drawn from three points to measure the radius, length and Angle of the arc.
- Measure Girth And Area Of Polygon:
  Depending on the location of the polygon click the point, the system will automatically connect each point. When selecting the last point, press the right mouse button so that the system will automatically connect the last point after the first point to form a closed graph. Measure the perimeter and area of the polygon. Notice: the polygons can only pick up to 10 points.
- Measure Radius, Diameter, Girth And Area Of Circle:
  A circle can be drawn at three points to measure the radius, diameter, circumference and area of the circle.
- Measure Radius, Diameter, Girth And Area Concentric of Circles:
  Draw the first circle by three points and then drag the mouse around the edge of the second circle to take a point to draw the second circle. The two centers are concentric, measuring the concentric radius, diameter, circumference and area.
- Measure Length, Width, Girth And Area Of Rectangle:
  Choose two points, and the system will draw a rectangle based on these two points. Measure rectangle length, perimeter and area.
- Measure Minimum Distance Between Point And Circle:
  Select a point, and then draw a circle through three dots, and the system automatically measures the minimum distance between the first point and the circle.
- Measure Distance Between Point And Center Of Circle:
  Select a point, then draw a circle through the three points, and the system will automatically measure the distance between the first point and the center of circle.

- Measure Maximum Distance Between Point And Circle:
  Select a point, and then draw a circle through three dots, and the system automatically measures the maximum distance between the first point and the circle.
- Measure Minimum Distance Between Line And Circle:
  Draw a line through two points, then draw a circle by three points to measure the minimum distance between the line and the circle.
- Measure Distance Between Line And Center Of Circle:
  Draw a line through two points, then draw a circle by three points, measuring the distance between the center of line and center of circle.
- Measure Maximum Distance Between Line And Circle:
  Draw a line through two points, then draw a circle by three points to measure the maximum distance between the line and the circle.
- Measure Minimum Distance Between Two Circles:
  Draw two circles by three points. The system automatically measures the minimum distance between two circles.
- Measure Center Distance Between Two Circles:
  Draw two circles by three points. The system automatically measures the center distance between two circles.
- Measure Maximum Distance Between Two Circles:
  Draw two circles by three points. The system automatically measures the maximum distance between two circles.
- T Add Text:
  Click the icon to enter text with a pop-up soft keyboard.
- Measure Radius, Diameter, Girth And Area Of Circle With Two points:
  Select two points on the circle to measure circle radius, diameter, circumference and area.

Parameter

1 Specification:

Measuring accuracy

Magnification	Measuring accuracy
15X	±8μm
30X	±6μm
50X	±6μm
80X	±4μm
100X	±4μm
>100X	±4μm

Magnification, Foucs distance and View field

Auxiliary Objective	Specification	Camera adapter	
		0.5X (included)	1X (optional)
0.3X (optional)	Magnification	5~34X	10~68X
	Focus distance	287±2mm	287±2mm
	View field	42×26~6.5×4.5mm	21×13~3.3×2.3mm
1X (included)	Magnification	15~100X	30~200X
	Focus distance	70±2mm	70±2mm
	View field	16×11~2.5×1.6mm	7.8×5.3~1.2×0.8mm
2X (optional)	Magnification	30~200X	60~400X
	Focus distance	29±2mm	29±2mm
	View field	7.8×5.3~1.2×0.8mm	3.8×2.7~0.6×0.4mm

2 Standard delivery

Main unit	1pc
0.5X camera adapter	1pc
1X auxiliary objective	1pc
Calibration plate	1pc
16G USB flash disk	1pc
White/black plate	1pc
Mouse	1pc
HDMI cable	1pc
Power adapter	2pcs