

**Gigastone**

# **SI-100 Digital Microscope**

## **User Manual**

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Read this manual before use  
Keep for future reference

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## 1 Introduction

### 1.1 About SI-100

SI-100 is an USB3.0 digital microscope. This product allows you to observe, capture, record and measure real-time image through dedicated software on PC/Notebook. This operation manual is for users of SI-100. To ensure correct operation, please read this manual carefully before use, and keep this manual for future reference.

### 1.2 Advantages of SI-100

1. USB3.0 interface of 5Gbit/s data rate guarantees fast data transfer.
2. High resolution image sensor and backside illumination provides excellent image quality.

### 1.3 Product Specification

Operation System: Windows7 and Windows8

Magnification Rate: 5x ~ 200x

Lighting: 8 LEDs with adjustable illumination

Power Consumption: < 2.5W

Interface: USB 2.0, USB 3.0

Effective Pixels:

USB 2.0: 960(H) x 720(V), 640(H) x 480(V)

USB 3.0: 3264(H) x 2448(V), 1440(H) x 1080(V), 1024(H) x 768(V), 640(H) x 480(V)

Image Format: JPG, PNG, BMP

Video Format: MPEG 4

### 1.4 System Requirements

OS: Windows 7 or Windows 8

CPU: Pentium 1.4GHz and above (Core series is recommended)

RAM: Above 2GB

HDD: Free storage space  $\geq$  10 GB

USB Port: USB 2.0 or USB 3.0

Graphic card: 32bits or above

## 2 User Notes

1. Do not use or store the microscope in extremely high or low temperature or humid place.
2. Do not drop, knock, or shake this device.
3. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the microscope.
4. **Do not look directly into the LED light source. This may cause eye discomfort.**
5. Do not leave it to kids under 5 years old.
6. The measurement function can only provide rough values. Gigastone is not responsible for its results.

## 3 Software Installation

Important notice: DO NOT connect the USB cable of the SI-100 to the PC before installing the software. Otherwise, it may interfere installation process.

1. Use the CD delivered with your SI-100 to install software and drivers.
2. Execute "Setup.exe" and the Installshield wizard will start. (A "User Access Control" dialog may appear on some systems. Select "Continue" or "Yes").
3. Click "Next" and "Install". Install process will complete in a few minutes.
4. Click "Finish" to close the setup dialog when installation is complete.
5. Complete manual can be found in the SI-100 CD.

## 4 Hardware Installation

1. After install the SI-100 software and drivers, connect SI-100 to the USB port of your computer.
2. Please use USB 3.0 port if your computer has it to achieve best performance. SI-100 only supports VGA and 720p on USB 2.0 due to limited bandwidth.
3. The driver will be installed automatically at the first-time use. Please be patient and wait for the notification of installation success.
4. Start SI-100 Software by double clicking the shortcut on the Desktop or Start Menu.

5. The LED should be turned on and the software will show preview image of the microscope.

## 5 Software Interface

SI-100 software functions are grouped into following categories.

1. Menu Bar
2. Image Review List
3. Data Acquiring Tools
4. Preview Image Adjusting Tool
5. Image Drawing Tools
6. Measurement Tools

### 5.1 Menu Bar

	Folder Management Create folder or Import existing folders.
	Preference Set Preview and Capture resolution.
	Horizontal Mirror image
	Vertical Flip image
	Rotate image by 90 degrees counterclockwise
	Rotate image by 90 degrees clockwise
	Zoom-In has different behaviors between Preview and Review Preview: Preset 5 levels zoom. Review: Click and hold down the left mouse button and drag the mouse on the image to encompass the area you want to display.

	Reset zoom to default ( Fit to the window)
	Display / Hide grid lines

## 5.2 Image Review List

These functions are in the mouse right-click menu. Multi selection is supported.

Print	Print selected image This will bring up print setting dialog to select printer.
Delete	Delete selected images
Move To	Move images to the selected folder The moved image will be removed from the original folder.
Copy To	Copy images to the selected folder Both original folder and selected folder will have these images.
Export	Export image Both the captured result and the measurement result are included.

## 5.3 Data Acquiring Tools

	Capture image or Back to Preview Image
	Record video
	Freeze preview image The preview will freeze until you click again.
	Full Screen The preview area will expand to cover the full screen.

## 5.4 Preview Image Adjust Tool

LED Level	7 levels of LED illumination. Level 0 means no lighting.
Exposure	Exposure gain control.

White Balance Control	Adjust relative gains of colors
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## 5.5 Image Drawing Tools

	<p>Draw straight line</p> <p>Click and hold down the left mouse button and drag the mouse.</p>
	<p>Draw rectangle</p> <p>Click and hold down the left mouse button and drag the mouse.</p>
	<p>Draw circle in the selected rectangle</p> <p>The width and height of the selected area determines the shape of the circle.</p>
	<p>Text writing</p> <p>Click on the image to start writing text at the location.</p>
	<p>Pen Draw</p> <p>Draw arbitrary line. Release the mouse to finish the drawing operation.</p>

## 5.6 Measurement Tool

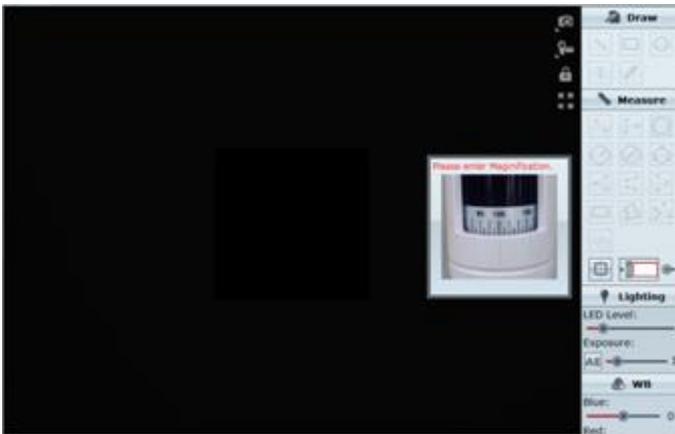
	<p>Distance</p> <p>Click at the starting point, hold down the left mouse button and drag the mouse cursor to the ending point.</p>
	<p>Points to line distance</p> <p>Click left mouse button to add more points for measurement. Double click to finish the measurement.</p>
	<p>Circle in Rectangle</p> <p>Click and drag to measure perimeter and area of the circle.</p>
	<p>Radius circle</p> <p>Click on the center of circle and drag to the desired radius.</p>
	<p>Diameter circle</p> <p>Click at the starting point and drag to the second point to determine the diameter of the circle.</p>

	<p>Three points circle</p> <p>Select three points to determine the boundary of the circle.</p>
	<p>Three points angle</p> <p>Select three points to measure the angle.</p>
	<p>Four points angle</p> <p>Select two lines with four points to measure the angle.</p>
	<p>Three points arc</p> <p>Select three points to measure the arc.</p>
	<p>Rectangle</p> <p>Click and hold down the left mouse button and drag the mouse to select the area.</p>
	<p>Polygon</p> <p>Click several points to measure a polygon.</p>
	<p>Polyline</p> <p>Click several points to measure a polyline.</p>
	<p>Distance between two circles</p> <p>Draw two "Three points circles" to calculate the distance of their centers.</p>
	<p>Calibration</p> <p>Open user calibration dialog.</p>
	<p>Magnification</p> <p>To enter the magnification when capturing image.</p>

## 6 Data Acquiring

You may start capturing an image or recording video after software and hardware installation. To generate correct measurement results, setting of the magnification in the software is necessary, since the software cannot detect the magnification roller of the microscope. The magnification must range from 5x to 200x.

1. Adjust the roller until the preview image is sharp and clear.
2. Enter the magnification rate that showed on the roller in the software.



3. Use  to capture image or  to record video.

## 7 Capture Options

Both Capture and Record video have options by right click the mouse button.

### 7.1 Capture Options



SI-100 can capture 1 image or 8 images in one click on the capture button. SI-100 also supports auto capture whose capturing interval is determined by user. The shortest interval depends on computer performance if the computer is not fast enough.

## 7.2 Record options



SI-100 can schedule record and auto stop at specific time.

The recording frame rate is determined by the preview resolution and zoom scale. In normal condition, SI-100 records video with 24 frames per second. If previewed in VGA resolution and zoom-in to the largest scale, 90 frames per second can be achieved with SI-100 connected to USB 3.0 port.

## 8 Preview Imaging Control

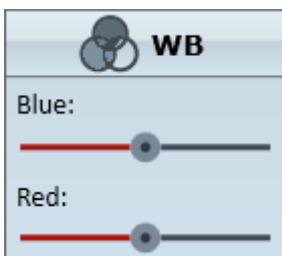
### 8.1 Lighting and Brightness

SI-100 supports 7 levels of LED illumination control and manual/auto exposure control.

Toggle auto exposure by  button.

### 8.2 White Balance

Color temperature can be adjusted by WB control.



## 9 Image / Video Review and management

### 9.1 Review Image or Video

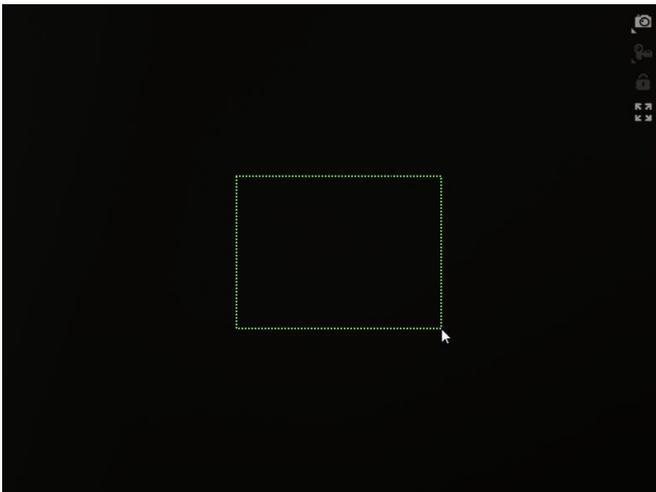
Double Click on the thumbnail at the image list to review the captured image.

### 9.2 Multi Select Image or Video

Right click on the thumbnail to select management functions including Print, Delete, Move, Copy and Export. Multiple images or videos can be selected by pressing “Ctrl” or “Shift” of the keyboard accompanying mouse clicks.

### 9.3 Zooming

Zooming in Review Mode is different from Preview Mode. Review Mode allows user to select the target area to zoom. Click, hold down left mouse button and drag to view a rectangle enclosing the area to zoom. Then release the button when finished.



### 9.4 Slow Motion Video Playback

If the Video is record with 90 frames per second, SI-100 software support slow motion playback. Click the button on the playback control panel to switch between normal / slow playback.



## 10 Line and Text Style Setting Tool

Click the drawing, measurement or text button to bring up the setting tool.

### 10.1 Line Style Setting

Set line width and color



### 10.2 Text Style Setting

Set font family, font size and color



## 11 Preference Setting

Use  to start the preference dialog.

### 11.1 Set Resolution

There are three resolution selections in USB 3.0 mode and two selections in USB 2.0 mode. Large resolution means better quality, but higher loading for the computer.

### 11.2 Image Format

SI-100 supports four types of image formats for saving image. The format setting in the dialog only determines image capturing file format. When exporting image, users may select different format.

### 11.3 Each format has its characteristic:

JPEG: Small image size with loss of some details.

BMP: Lossless in image details but large file size.

PNG: Lossless in image details. File size is between JPEG and BMP.

### 11.4 Language setting

After change the language, please restart the software to apply the new language setting. Otherwise the software will keep working with the old setting.

## 12 Folder Management

Folder manager set the default folder to store the image and video. Click  to control folders.

### 12.1 Select Default Image Folder

Select the folder and click “OK” to apply this setting. New image and video will be stored in the selected folder.

### 12.2 Import or Create Folder

Click  to create or import folder into SI-100 software for further use.

### 12.3 Remove folder

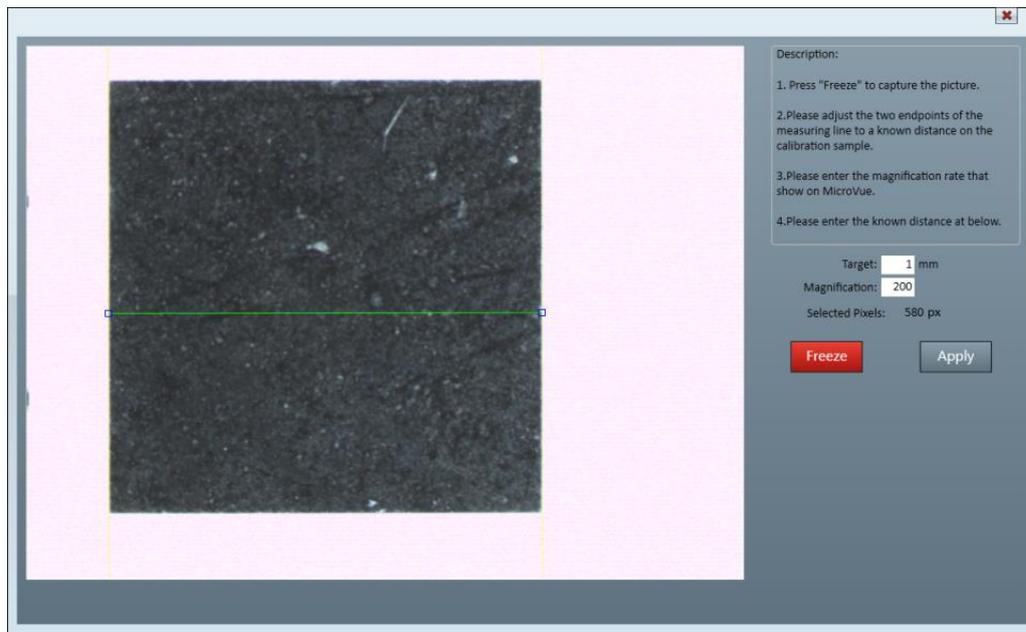
Right click on the folder and select “Exclude folder”.

## 13 Calibration

SI-100 is calibrated in the factory before shipping. User is not necessary to do calibration. The calibration function is provided for trouble-shooting only.

### 13.1 User Calibration Process

1. Use  at measurement tools to open the calibration dialog.
2. Place the calibration pattern sheet under the microscope for previewing.
3. Adjust the roller until the calibration pattern is very clear and sharp.
4. Press “Freeze” to freeze the video. That will make the following steps easier.
5. Enter the measured length of the pattern in the previewing window.
6. Enter the magnification on SI-100 roller.
7. Adjust two control points to the calibration pattern’s edge.
8. Click Apply to finish the calibration.



## 13.2 Use User Calibration Profile in Measurement

After calibration process is finished, user can select  at the Measure Panel as the below image to turn-on user calibration profile.

