

Gel Documentation System Model Series YR04961 Instruction Manual

Thank you very much for purchasing our Gel Documentation System model series YR04961.

Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the "Warranty" at a hand place for future reference.

Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.





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NAME AND MODEL

Gel Documentation System

USE

Kalstein's Gel Documentation System 1 and Analysis System is designed for the detection and documentation of nucleic ac-ids and proteins. It adopts a high resolution and high sensitive scientific CCD-Camera, which enables the instrument to capture utter weak signals under extremely low illumination condition.



• Panel Components

Kalstein's Series front panel components:





Kalstein's YR Series side panel Components:



Kalstein's YR Series side panel Components



Kalstein's YR Series side panel Components





The back sides of these two series keep consistent



IMPORTANT NOTICE

Read the user guide carefully !

The instrument is suitable for research use only. Therefore, it must be used only by specialized personnel who know the health risks associated with the reagents that are normally used with instrument



WARNING! This instrument must be connected to an appropriate AC voltage outlet that is properly grounded.



Do not leave the instrument in a damp, dusty or hot place.



Do not pour liquids or inside the instrument!

Do not drag or scratch with hard or sharp objects to prevent scratches.





The product must not be dismantled without authorization. If you have any

problems, please contact us or our authorized distributor.



Clear the sample tray after use!

• Safety Information

UV Danger! Do not look directly unless use UV shielding guard or goggles! The product involves UV illumination. It must be used only by specialized personnel who know the health risks associated with the UV radiation that are normally used with instrument.



The UV[™] SMART UV Transilluminator is "no-lamp" design. It seems even no tubes under the high intensive light, when the power is on.



Note 1: If the blue light of power is on, the UV works.

Note 2: Using UV shield is a must, when you need to observe or to cut gel.



Note 3: Wearing the goggles for protection of your eyes away from the blue light illumination, when your need to observe the gel with blue light transilluminator.

HARDWARE GUIDE

• Check Packing list

Please open the box carefully and check the items up as packing list. If any parts are missed or damaged, please contact your provider immediately.

- 1
 2

 image: state stat
- Standard Accessories

• Optional Accessories

According to your option, we provide the following accessories:



- 1. Ultra-slim white LED transilluminator
- 2. Ultra-slim blue LED transilluminator

Configuration and application list

Configuration	Application
Main System	Gel Documentation with EtBr, etc.
White LED Transilluminator	SDS PAGE, Silver staining, etc.
Blue LED Transilluminator	Gel Documentation with Gel Green, etc.
RGB-Fluorescence	Support various fluorescence dyes

• Instrument installation

1. Ensure the machine is plugged in and turn on using the POWER switch on the back of instrument.

2. Connect USB cable to computer if you want to use the stand alone PC) Power

switch and USB port are shown as below:



• Installation of super slim Trans white/blue sample stage

The ultra-thin blue light sample stage has a magnetic thimble port:

*

Magnetic thimble

The side of the magnetic thimble port should be aimed at the inside of the



instrument and push the blue light stage into the "drawer". Position is as shown.



• The use of super slim Trans white/blue sample stage



The operation is designed by touch-sensitive design

1. Power On : To power the sample stage on by touching the "power" icon.

2.Brightness adjustment: Based on indication of brightness in the picture, you can adjust brightness by touching and dragging. The intensity of white and blue light is increased from the left to right.

SOFTWARE INSTALLATION

• Software Introduction



Kalstein's Gel Documentation System image capture and analysis software is designed for Kalstein's gel documentation system.

• Installation guide





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https://kalstein.net/







• Software icons

Two icons will be generated on the desktop after the software installation:



GEL CAPTURE

Notice

Before you take pictures of nucleic acid gel, please make sure that your machine is equipped with one of the following transilluminator:

1. UV Transilluminator

UV Transilluminator has an excitation wavelength of 302nm and 590nm filter. Support dyes such as EB and Gel Red.

2. Blue LED Transilluminator

Blue LED Transilluminator has a excitation wavelength of 470nm. Support safety dyes such as Gel Green and SYBR™Green.

Transilluminator Installation

Please read Chapter "Hardware Guide"!

Run "Gel image capture" software



Now click on the icon and start the software and "Gel image capture"!

• Interface Overview

Main Window

https://kalstein.net/



Tool Bar



Camera setting interface

Sample Name			\supset	
Resolution	High	Low		
Exposure Time	12!	āms -	F	
ms			00 9999	

Display setting interface



Autosave setting



OPERATION GUIDE

- UV Transmission
- a. Image preview under Epi-White light

To make sure, that the sample image should be in the middle of the image window,

we have to use the preview function under Epi-white light.

1. Click "Preview" to start the software

Sample Name	ings				
Resolution	High	Low			
Exposure Time ms	- 125 5 10 60 2	ms	+		
Preview he button turns	from white to bl	re) (A Ca	apture		K
O Previ	ew —		→ (Close 	

2. Turn on the Epi-white light LED to check if your sample is in the middle of the sample tray





3. Adjust the Iris on the tool bar

Larger is the Iris number, bright is the image. We recommend you to set the Iris number to 6 or 7. The following images shows the different light intensity, when the iris number got larger and the exposure time remains.



4. Adjust the Exposure time on in the Capture settings

Longer is the exposure time, bright is the image. We recommend you to set the exposure time to 300-400 ms, when the Epi white LED is on. The following images shows the different light intensity, when the iris number remains and the exposure time went longer.



Now we are sure about the position of the sample!



5. Turn off the Epi-White LED



b. Image preview via UV Transmission

If you use EtBr as dye, you have to use UV transmission.

1. Click "Preview" to start the software



The button turns from white to blue thereafter.



2. Turn on the UV transilluminator



3. Adjust the Iris on the tool bar

Larger is the Iris number, bright is the image. We recommend you to set the Iris



number to 7 (maximum). The following images shows the different light intensity, when the iris number got larger and the exposure time remains.



4. Adjust the Exposure time on in the Capture settings

Longer is the exposure time, bright is the image. We recommend you to set the exposure time to 900-1000 ms under UV transmission. The following images shows the different light intensity, when the iris number remains and the exposure time went longer.



5. Adjust the zoom to match the sample size

To match the sample size with the capture area, we have to adjust the zoom.



6. Adjust the focus to make the bands more clear

Sometimes we have to adjust the focus to make the image more clear, especially the

bands.



c. Image Capture via UV Transmission

The software provides two capture modes: Manual-exposure and Auto-exposure



We recommend you the use Manual exposure mode, because the capture parameters (such as exposure time and iris value) remain constant with the settings you have adjusted.

Please click on 🔝	Capture !!	
O Close	Capture	Capture

d. Edit the Images

We can edit the captured images by click the icons on the tool bar and the functions



in display settings window.

The buttons on the tool bar:



The functions in the display settings window:

💽 Display Settings	8	
Zoom fit	•	
Pseudo Color		
Low	0	
High	65535	
1. Invert button		
反色		

Inverted function is shown as below:





Original file

Inverted effect

2. Crop function







Press the left mouse button and select area you want to crop, as shown on the left.





3. Reset



Cancel image processing and restore the original image by clicking.





Pseudo Color

5. Adjust the grayscale range

We also need to capture images before adjusting grayscale. To adjust grayscale range is for the background and the brightness of bands to be best to watch. The grayscale range is from 0 to 65535.

The lower value means that the background is darker (suggestion: not to adjust).

The lower is the high value, the brighter band is. You can control the brightness of



band by decreasing the value. We only turn the High value down.

e. Save the file

1. Auto Save file path
💾 Autosave Path 🛞
· · · ·
Click this icon to select folder path which is automatically saved. It will be automatically saved into this folder when picture is taken in every time, and the customized file name , the date and time of the shooting will be displayed , shown as below:
Data (D:) > Clinx
Ps SAMPLE_AutoSave_2019-05-10 15.56.33
Ps SAMPLE_AutoSave_2019-05-10 15.56.36
2. Save the captured picture in specified path
File format software supports is shown as below:
TIFF Bitmap (24bit)
JPEG Bitmap (JPG) Windows Bitmap (BMP) TIFF Bitmap (16bit) RAW file(16bit)

• Blue Light Transmission

a. Image preview under Epi-White light

To make sure, that the sample image should be in the middle of the image window,

we have to use the preview function under Epi-white light.

1. Click "Preview" to start the software The button turns from white to blue thereafter.

🕵 Capture S	ettings	8
Sample Name		
Resolution	High	Low
Exposure Time	– 125r	ms +
ms		
 Prev 	iew 🕜 Capture	e 🔁 Capture

https://kalstein.net/

The button turns from white to blue thereafter.



2. Turn on the Epi-white light LED to check if your sample is in the middle of the

sample tray



3. Adjust the Iris on the tool bar

Larger is the Iris number, bright is the image. We recommend you to set the Iris number to 6 or 7. The following images shows the different light intensity, when the iris number got larger and the exposure time remains.



4. Adjust the Exposure time on in the Capture settings



Longer is the exposure time, bright is the image. We recommend you to set the exposure time to 300-400 ms, when the Epi white LED is on. The following images shows the different light intensity, when the iris number remains and the exposure time went longer.



Now we are sure about the position of the sample!

5. Turn off the Epi-White LED





b. Image preview via Blue Light Transmission

If you use Gel Green[™] as dye, you have to use Blue Light transmission.

1. Click "Preview" to start the software

🖁 Capture Setti	ngs			۲	
Sample Name				\supset	
esolution	High		Low	\supset	
Exposure Time	-	125ms	-	Ð	
ms	 5 10 60	200 700	3000 800	0 9999	
Preview	Car	oture	Capt	ture	

2. Turn on the Blue Light transilluminator



Click on the icon to turn the Trans Blue Light!

3. Adjust the Iris on the tool bar

Larger is the Iris number, bright is the image. We recommend you to set the Iris number to 7 (maximum). The following images shows the different light intensity, when the iris number got larger and the exposure time remains.



4. Adjust the Exposure time on in the Capture settings

Longer is the exposure time, bright is the image. We recommend you to set the exposure time to 900-1000 ms under UV transmission. The following images shows the different light intensity, when the iris number remains and the exposure time went longer.



5. Adjust the zoom to match the sample size

To match the sample size with the capture area, we have to adjust the zoom.





6. Adjust the focus to make the bands more clear

Sometimes we have to adjust the focus to make the image more clear especially the

bands.



c. Image Capture via UV Transmission

The software provides two capture modes: Manual-exposure and Auto-exposure





We recommend you the use Manual exposure mode, because the capture parameters (such as exposure time and iris value) remain constant with the settings you have adjusted.

Please click on 🔝	Capture !!	
 Close 	Capture	Capture

We can edit the captured images by click the icons on the tool bar and the functions in display settings window.

The buttons on the tool bar:



1. Invert button



Inverted function is shown as below:





Original file

Inverted effect

2. Crop function







Press the left mouse button and select area you want to crop, as shown on the left.





3. Reset



Cancel image processing and restore the original image by clicking.

			4.	Pseudo Color
Pseudo				
COIOI	Blue			
Low	Coomassie	0		
High	False1	65535		
	False2	00000		
	False3	8		
	Glow			
D:\Ca	Gray			
_	GrayOVUN			
	Green			
	Printer			
	Red	9/12/3 17:31:59	2	3

5. Adjust the grayscale range



We also need to capture images before adjusting grayscale. To adjust grayscale range is for the background and the brightness of bands to be best to watch. The grayscale range is from 0 to 65535.

The lower value means that the background is darker (suggestion: not to adjust).

The lower is the high value, the brighter band is. You can control the brightness of band by decreasing the value. We only turn the High value down.

e. Save the file



WHITE LIGHT TRANSMISSION

a. Image preview under Epi-White light

To make sure, that the sample image should be in the middle of the image window,

we have to use the preview function under Epi-white light.

1. Click "Preview" to start the software

Capture Settings	Capture S	ettings	6
Sample Name	Sample Name		
Resolution High	Low Resolution	High	Low
Exposure 400m	s + Exposure Time	- 125ms	+
ms 1 5 10 60 200	700 3000 8000 9999	1 5 10 60 200	1 I I I 700 3000 8000 9999
1 5 10 60 200	700 3000 8000 9999	1 5 10 60 200	700 3000 8000 s

The button turns from white to blue thereafter.

https://kalstein.net/

2. Turn on the Epi-white light LED to check if your sample is in the middle of the sample tray



3. Adjust the Iris on the tool bar

Larger is the Iris number, bright is the image. We recommend you to set the Iris number to 6 or 7. The following images shows the different light intensity, when the iris number got larger and the exposure time remains.

4. Adjust the Exposure time on in the Capture settings

Longer is the exposure time, bright is the image. We recommend you to set the exposure time to 300-400 ms, when the Epi white LED is on. The following images shows the different light intensity, when the iris number remains and the exposure time went longer.

Now we are sure about the position of the sample!

5. Turn off the Epi-White LED







b. Image preview via Blue Light Transmission

If you use Gel Green[™] as dye, you have to use Blue Light transmission.

1. Click "Preview" to start the software

	💽 Capture Settings	۲
	Sample Name	
Capture Settings	Resolution High	Low
Name	Exposure 125ms	+
solution High Low	Time	
Exposure _ 200ms +	ms I I I I I 1 5 10 60 200	700 3000 8000 9999
ms • •		Canture
1 5 10 60 200 700 3000 8000 9999	C Treview Capture	captare
O Close (Capture) (Capture)	The button turns from white to blue	thereafter.
	Preview	
	- Inclication	

2. Turn on the Blue Light transilluminator



3. Adjust the Iris on the tool bar

Larger is the Iris number, bright is the image. We recommend you to set the Iris number to 2 or 3. The following images shows the different light intensity, when the iris number got larger and the exposure time remains.

4. Adjust the Exposure time on in the Capture settings

Longer is the exposure time, bright is the image. We recommend you to set the



exposure time to 200-300ms under UV transmission. The following images shows the different light

intensity, when the iris number remains and the exposure time went longer.

5. Adjust the zoom to match the sample size

To match the sample size with the capture area, we have to adjust the zoom.



6. Adjust the focus to make the bands more clear

Sometimes we have to adjust the focus to make the image more clear, especially the bands.



c. Image Capture via UV Transmission

The software provides two capture modes: Manual-exposure and Auto-exposure We recommend you the use Manual exposure mode, because the capture parameters (such as exposure time and iris value) remain constant with the settings you have adjusted.

Please click on Capture !!



d. Edit the Images

We can edit the captured images by click the icons on the tool bar and the functions

in display settings window.

The buttons on the tool bar:



The functions in the display settings window:





Inverted function is shown as below:





Original file

Inverted effect

2. Crop function







Press the left mouse button and select area you want to crop, as shown on the left.





3. Reset



Cancel image processing and restore the original image by clicking.

			4.	Pseudo Color
Pseudo				
COIOI	Blue			
Low	Coomassie	0		
High	False1	65535		
	False2	00000		
	False3	8		
	Glow			
D:\Ca	Gray			
_	GrayOVUN			
	Green			
	Printer			
	Red	9/12/3 17:31:59	2	3

5. Adjust the grayscale range



We also need to capture images before adjusting grayscale. To adjust grayscale range is for the background and the brightness of bands to be best to watch. The grayscale range is from 0 to 65535.

The lower value means that the background is darker (suggestion: not to adjust).

The lower is the high value, the brighter band is. You can control the brightness of band by decreasing the value. We only turn the High value down.

e. Save the file



GEL OBSERVATION

Part 1: Using UV transilluminator for observing and cutting gel

- Installation for UV shield

The product's UV transilluminator is designed with a shadow less lamp that does not see the UV lamp when the power is turned on. Installation method is as shown on the left: Please pull the UV transilluminator out of the dark box and place the UV shield on the two iron clamps of the transilluminator

- Turn UV transilluminator on



Due to the UV damage to the human body, the UV transmission of the product will automatically close when the door is opening. Please read safety warnings on page P3-P4 of the manual if you need to cut gel recovery.

- Turn the UV transilluminator on by pressing panel

Turn on the UV transilluminator by pressing UV transmission button on the front panel of the instrument. (As shown on the left).

- Indicator light of UV working

When indicator light in the front of UV transilluminator is light, it means that the UV



transmission has been turned on.

Warning: Please pay attention to the eye protection from the UV to

avoid looking directly.

Part 2: Using blue (white) LED Transilluminator

Transilluminator Installation





Transilluminator Installation, please refer to Chapter 3

in manual.

Turn on the LED Transilluminator

No need to turn on blue(white)LED Transilluminator

through the software. For details, please refer to Chapter 3 in manual.



Blue and white light, and other types of visible light are exposed to eyes that can cause harm. When using blue and white light transmission stations, please be sure to protect your eyes when using blue (white) LED Transilluminator. For details, please refer to Chapter 3 in manual.



ANALYSIS SOFTWARE

• Enter the main interface

https://kalstein.net/



No.	Description	
1	Menu bar	
2	Tool bar	
3	Main image windows	
4	Thumbnail and data window	
5	Bands window	
6	Adjustment of Grayscale range window	



NO.	Function
1	Open the experimental image. System supports JPG, TIFF and BMP formats.
2	After clicking on the image menu, you can save or print the image of results.
3	After clicking on the "selected lane", you can save save or print the image of lanes
4	Save the analyzed results to an Excel or JPG files
5	Select and set your printer properties
6	Exit the software

Image Menu



Invert Color



Image cropping

OCustom

Confirm

90

Cancel





After click the Image cropping, the menu bar "Cropping" will be ticked Short-cut of the crop will be active.

Cline image Analysis Re Lenage Options Disp







After selecting, press the "Enter" key to complete the cropping of image, as shown on the left.

Horizontal rotation





Hold the left mouse button and select area you want to keep, as shown on the left.



After selecting, press the "Enter" key to complete the cropping of image, as shown on the left.



Adjusted picture is shown on the figure above. The bands basically kept in a horizontal position for later analysis.

Vertical rotation





When the bands of the original image is not horizontal (as shown on the left). We can also use this function to put bands horizontally for image analysis.



After click this function, we can use the mouse to pull a vertical line along the edge of the bands.

Adjusted picture is shown on the figure above. The bands basically kept in a horizontal position for later analysis.

Main function for tool bar

https://kalstein.net/

A. Open files

3

Click the icon to open the experiment picture quickly. Support 8bit, 16bit, 24bit of TIFF, JPG and BMP files.

B. Image size display

Display	82%	-

Display	82% 🗸
	Auto
	25%
	50%
	75%
	100%
	125%
	150%
	200%

On the right side of the short-cut bar, you can adjust the size of the image in the main window by using the drop-down box, or you can select "Auto" function to automatically match the size of the image.



Place the mouse in the main image window, we can adjust the size of the picture display by scrolling the mouse roller up and down.

C. Image editing tools



Click the icon to activate "Auto lane detection "and hold left mouse button to select

the area you want to identify.

Lanes can be identified automatically.



Click the icon to activate "Manual lane configuration" and enter number in the lanes



then define the percent (Percent means the proportion of the space occupied by bands. If the percent is 90%, 10 % is the distance between the lanes. The percent is generally set to 90%).



After setting, hold left mouse button to select the area you want to identify. It will be framed if the number of the bands is set to 6. The size and distance of each band is fixed.

At the same time, use the mouse to select

the bands box in the image window, selected bands box is yellow. We can pull the width of the selected electrophoresis by mouse.

F. Bands identification, addition and elimination



Manually add bands. Select the lane in which the band is located (yellow box). The



image of the selected lane is displayed in the band window at the right of the software interface. As shown below:



After click the Icon, use the left mouse button to click strip in the right strip window



to add a strip. The added bands will be added synchronously on the main window as shown below:



Manually delete strip. The operation method is the same as adding band. Select the lane and use the left mouse button to click the band you want to delete in the strip window.

G. Molecular weight



Setting molecular weight: Mark the molecular weight of each band according to the Marker instruction.





As shown above, we first select lane in the area and identify the bands. Click the left

mouse button to select the standard lane (in the yellow box).





I. Choose Marker' lane

The selected lane and identified bands are displayed simultaneously in the Marker

bands view window.



II. Input molecular weight of Marker

II. Input molecular weight of Marker





After you enter the molecular weight, the bands corresponding to the standard Marker will displayed in the view windows simultaneously. The related data of the band identified in the lane will be automatically calculated and showed in the "Data" window.

As shown below:



0.000

0.00

0.00

H. Show or hide of lanes and data windows

0.160

2281.659



Show/Hide button of lanes window To display the lanes window by default.



Show/Hide button of Data window To display the data window by default.

Bands window

When we select lane and identify the band, the selected bands (yellow box) will be



displayed in the windows, including the grayscale value of the band.

As shown below:



Save all the data(Can reload) Save all the data Save the lane results Save selection Load all the data Molecular size Isoelectric point Content Setting	You can save the image in the band window as a JPG, BMP or TIFF file by right-clicking on the band window area, and you can directly print the image. (As shown on the left)

Thumbnail and data window

The analysis software can open multiple image files and they are displayed as

thumbnails. We can select the images to be analyzed by clicking the thumbnail, as

shown below:



Once the band is recognized, the thumbnail window will automatically switch to the data window. You can also switch manually by clicking the "Thumbnail" or "Analysis



Report" tab on the left.

Save all the data(Can reload) Source all the data(Can reload) 0.00 2 2347.023 0.157 0.000 Save all the data 0.00 3 3548.605 0.37 0.000 Save all the data 0.00	
3 3548.605 0.237 0.000 Country the large service 0.00	
Save the lane results	
4 2266.767 0.151 0.000 Save selection 0.00	
5 1640.209 0.110 0.000 Load all the data 1.00	
6 1870.930 0.124 0.000 Molecular size 0.00	
Isoelectric point	

Right click on the data window area, you can open the "Molecular Weight Settings" window in the drop down box, or you can click the "Molecular Weight Settings" button on the toolbar.









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