

BlueView Transilluminator

(Order Code BLUE-VIEW)

and Blue Digital Bioimaging System (Order Code BL-DBS)

The Blue View Transilluminator is an illuminating base for observing fluorescently stained nucleic acid and protein gels. Using a filtered bright blue LED light source, this transilluminator excites stained gel bands resulting in light emissions in the visible light region of the spectrum.

Use the BlueView Transilluminator:

- To visualize fluorescent bands from gel electrophoresis results.
- To safely observe gel digest results.
- As part of the Blue Digital Bioimaging System to photodocument and analyze gel electrophoresis results.
- To analyze transformation results using Green Fluorescent Protein (GFP).

What is Included with the BlueView Transilluminator?

- BlueView Transilluminator
- 12 V AC Power Adapter

How to Use the BlueView Transilluminator

Connect the BlueView Transilluminator to AC power using the cable provided.

Note: Do not use any other power supply with the transilluminator. Lift the lid and place the gel or tray holding the gel on the blue platform. Close the lid. Turn on the unit by turning the knob and adjust the brightness for optimal viewing.

How the BlueView Transilluminator Works

The BlueView Transilluminator uses bright blue LEDs and a blue filter to produce light with a peak wavelength of 470 nm as shown in Figure 1. This wavelength excites nucleic acids and proteins stained with certain dyes, causing them to fluoresce. The orange lid filters out the blue light to reveal only the fluorescently stained bands.

A rotary dial control switch adjusts light intensity to optimize visualization. A magnetic switch turns off the LEDs when the lid is open.

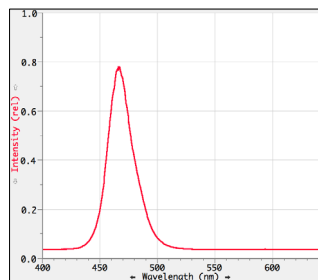
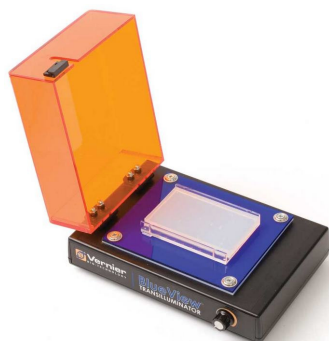


Figure 1: Emission spectrum of the BlueView Transilluminator

Which Stains Can Be Used with the BlueView Transilluminator?

Fluorescent stains and dyes that work well with the BlueView Transilluminator include, but are not limited to, the following.

For nucleic acid gel electrophoresis:

- SYBR[®] Safe DNA Gel Stain
- SYBR[®] Green I DNA Gel Stain
- SYBR[®] Gold DNA Gel Stain
- GelStar[®] Nucleic Acid Gel Stain
- GelGreen[™] Nucleic Acid Gel Stain
- Ethidium bromide

For protein gel electrophoresis:

- SYPRO[®] Orange Protein Gel Stain
- SYPRO[®] Ruby Protein Gel Stain
- Coomassie Fluor[™] Orange

BlueView Transilluminator Specifications

AC power supply to external power brick: Input 0.8 A @ 100 to 240 V AC

DC power input to transilluminator: 2.0 A @ 12 V

Dimensions (excluding power supply): 17 cm × 23 cm × 10.5 cm

Care and Cleaning

For best results, keep the viewing surface as dry as possible. Should the lid or viewing surface require cleaning, disconnect from power, use soapy water, and wipe dry with a soft cloth to avoid scratching. Do not use solvents, glass cleaners, cleansers, or any solution containing ammonia on these surfaces. If liquid wicks under the blue viewing surface, disconnect power, unscrew and remove the four Phillip's screws, separate the white and blue plates, wipe dry with a soft cloth, and reassemble before connecting power. If the lid fogs when viewing a gel, lift and gently wipe with a soft cloth.

Patent Information

The BlueView Transilluminator includes Clare Chemical Research, Inc.'s Dark Reader[®] transilluminator technology and is covered by one or more of Clare Chemical Research, Inc.'s U.S. Patent nos. 6,198,107, 6,512,236, and 6,914,250.

Warranty

Vernier warrants the BlueView Transilluminator to be free from defects in materials and workmanship for a period of five years from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use.

Note: This product is to be used for educational purposes only. It is not appropriate for industrial, medical, research, or commercial applications.

Blue Digital Bioimaging System

(Order Code BL-DBS)

The Blue Digital Bioimaging System is a total system for illuminating, observing, digitally photographing, and analyzing fluorescently stained nucleic acid and protein gels.

Use the Blue Digital Bioimaging System:

- To view gel electrophoresis results.
- To document and analyze gel electrophoresis results using Logger Pro software (Logger Pro sold separately. See p. 7 for ordering information).



What is Included with the Blue Digital Bioimaging System?

- BlueView Transilluminator
- ProScope HR Body
- 1–10X ProScope Lens
- ProScope Stand
- Imaging Hood

Setting Up the Blue Digital Bioimaging System

- Place the gel in the BlueView Transilluminator and adjust for optimal viewing.
- Assemble the ProScope, lens, and Stand, and position above the Transilluminator as shown in Figure 2.
- Place the Imaging Hood over the entire apparatus.
- Connect the ProScope USB cable to the computer and follow the documentation and analysis sequence in the following section.



Figure 2: Blue Digital Bioimaging System

Obtaining a Digital Photo

There are two ways to obtain a digital photo for Gel Analysis in Logger Pro. In one method, a photo is inserted into Logger Pro from an existing file on your computer. In the second method, Logger Pro actively captures a photo of a gel using a digital camera such as the ProScope HR.

Method 1: Inserting a Digital Photo from File

1. Start Logger Pro.
2. Choose Gel Analysis from the Insert menu, then choose From File...
3. Choose the photo you want to analyze from your desktop folder.
4. Once the photo is on the screen, choose Auto Arrange from the Page menu.

Method 2: Taking a Digital Photo with a ProScope HR

1. Start Logger Pro.
2. Choose Gel Analysis from the Insert menu, then choose Take Photo. A dialog box with a live picture from the ProScope, as shown in Figure 3, should appear.

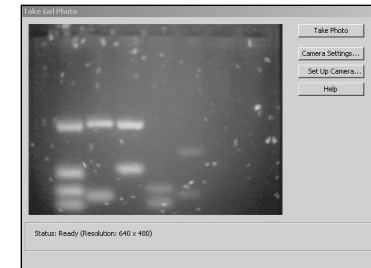


Figure 3: Take Gel Photo dialog box

3. When you are satisfied with the image, click the Take Photo button. Your screen should now look similar to the one in Figure 4.

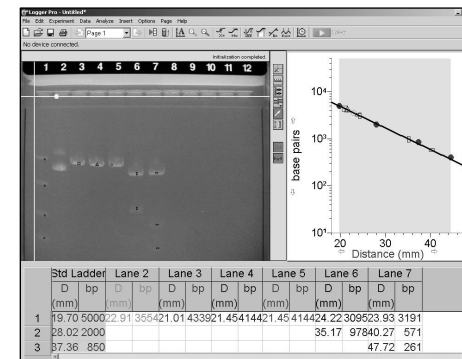


Figure 4: Logger Pro ready to begin Gel Analysis

Gel Analysis in Logger Pro

The buttons along the right side of the photo will be used. The first four, shown below, are the primary Gel Analysis tools. Holding the mouse over each button will display its function. Text above the photo serves as a reminder of the next step in the analysis.

 **Set Origin**

 **Set Scale**

 **Set Standard Ladder**

 **Add Lane**

4. Set Origin. In this step, you will show *Logger Pro* the position of the wells on the photo.



- Click the *Set Origin* button. Click on the photo just to the left of the first well. A yellow coordinate system will appear on the photo. The x-axis should go directly along the bottom edge of the wells. You can move the origin by grabbing either axis with the mouse and dragging it to the desired location. The axes can be rotated by grabbing the round handle on the x-axis.

5. Set Scale. This optional step converts the units of distance measured from number of pixels into millimeters or centimeters.



- Click the *Set Scale* button. Drag the mouse between two points of known distance apart. A window will appear prompting you to enter this distance and its units. Note: If your gel tray does not have a built-in ruler, you could measure either the width or length of the gel tray and use as your reference. If no reference is available, distances will be displayed in pixels, but base pair calculations will be correct.

6. Set Standard Ladder. In this step, you will identify the bands of the standard ladder and input their base pair values. *Logger Pro* will automatically create a standard curve on the graph.



- Click the *Set Standard Ladder* button. Click on the band closest to the well of the standard ladder lane. Type the corresponding number of base pairs into the field provided in the resulting dialog box and click OK. Moving down this lane, repeat these steps for each visible band of the standard ladder. Notice the Standard Curve being created on the graph once you have added the second point.

7. Add Lane. In this step, you will identify the experimental bands on the photo. *Logger Pro* will then plot and calculate their respective number of base pairs



- Click the *Add Lane* button and choose the Add Lane option. Position the cursor over the leading edge of the band closest

to the well of the first experimental lane and click. Take a moment to notice that when you click, three things happen: a marker with a distinct shape and color was placed on the photo, a matching marker was placed on the graph, and the distance and number of base pairs is added to the data table as shown in Figure 3.

- Continue in order down the lane, clicking on each of the remaining bands.
8. To analyze another lane, click on the *Add Lane* button again, choose Add Lane, and repeat Step 7. Repeat this process for each experimental lane until the entire gel has been analyzed, as shown in Figure 5.

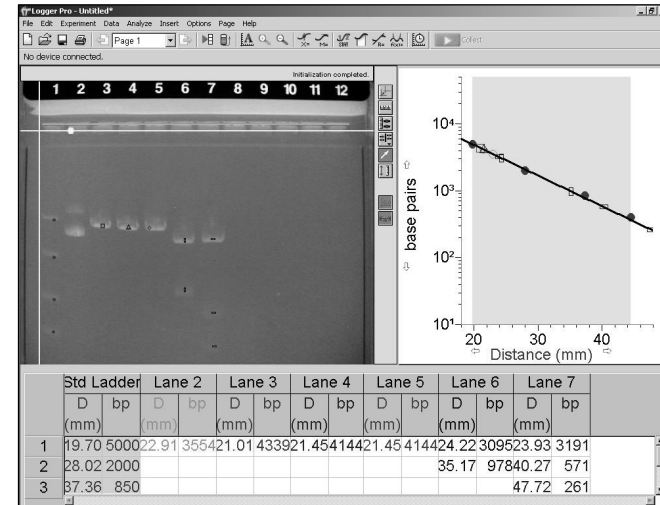


Figure 5: Completed Gel Analysis

Vernier Products for Biotechnology

- Logger *Pro* Software (LP)
- Blue Digital Bioimaging System (BL-DBS)
- BlueView Transilluminator (BLUE-VIEW)
- Imaging Hood (HOOD)
- ProScope HR Body Only (BD-BODY)
- 1–10X Lens (BD-10X)
- ProScope Stand (BD-STAND)
- SpectroVis Plus Spectrophotometer (SVIS-PL)
- Vernier UV-VIS Spectrophotometer (VSP-UV)

Additional Information

For more information on Vernier products for Biotechnology, please visit www.vernier.com/biotech

Warranty

Vernier warrants this product to be free from defects in materials and workmanship for a period of five years from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use.



Measure. Analyze. Learn.™
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