

Beta Video Ruler Hardware Assembly

Attach the two posts to the horizontal beam as shown in photo #1.

1



2

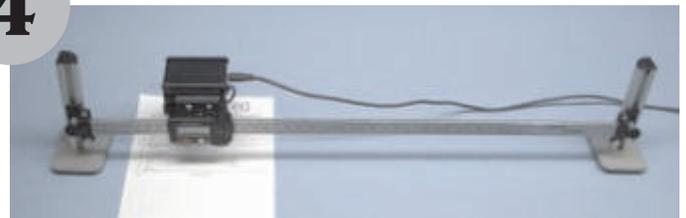


Place a sample of the material to be measured at the left end of the scale. Loosen the attachment screw slightly and slide the beam up or down to bring the image into sharp focus. Move the sample and camera to the right end of the scale and repeat the operation. The image will now be in sharp focus across the entire width of the device.

3



4

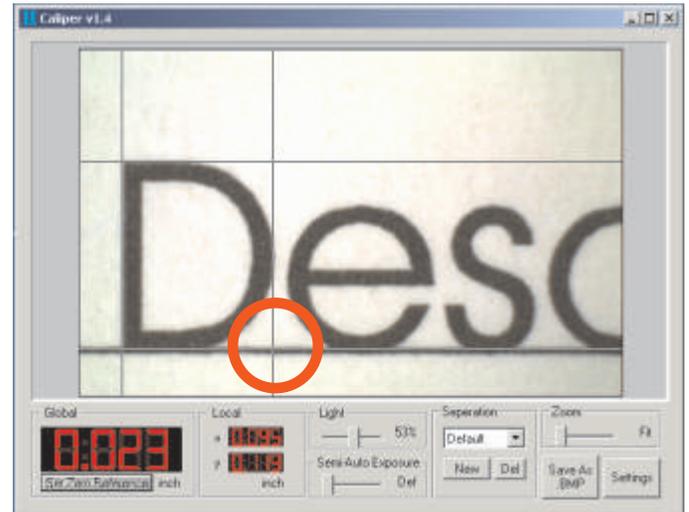
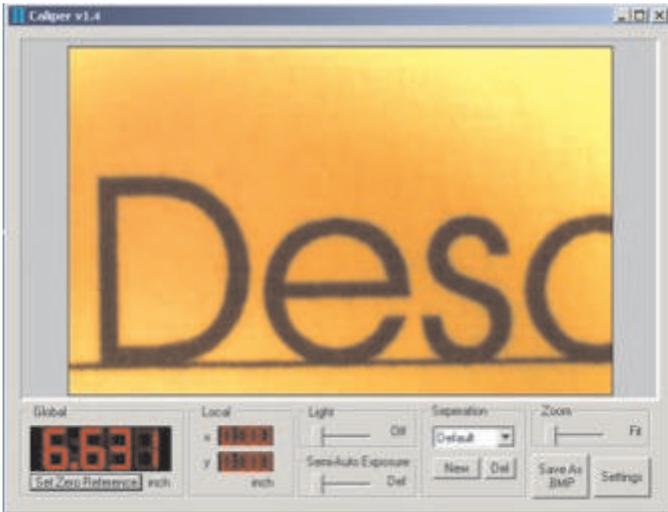


The assembled unit should be arranged as it is in photo #4. If a thick sample to be measured is smaller than the distance between the posts, the focus may need to be adjusted.

Beta Video Ruler Quick Start Guide

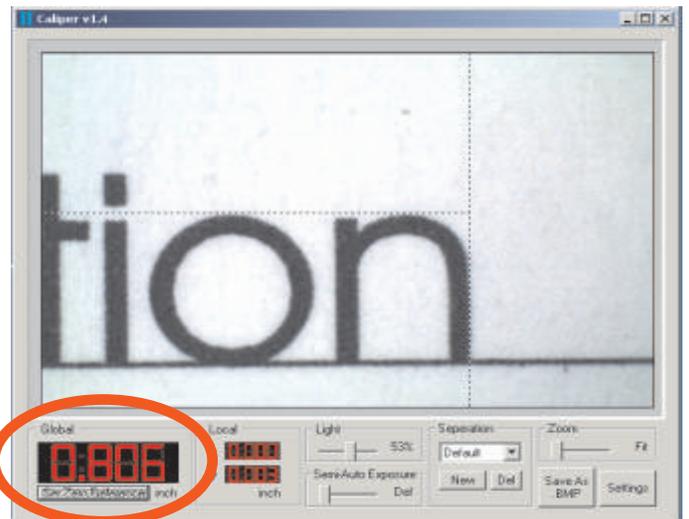
Run the SETUP program on the CD to install the application software and camera drivers. When installation is complete, plug in the device and launch the application.

To make measurements of objects that are completely contained within the field of view such as the letter D shown here, click the mouse on the upper left corner of the letter.



Raise or lower the horizontal beam on the vertical posts until the image is sharp at both ends of the beam. Move the **Light** control to about 50% as shown below.

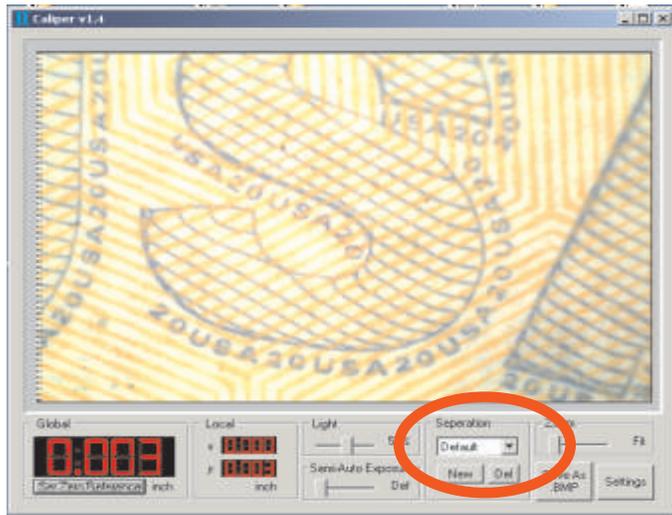
Drag the cursor to the lower left until the horizontal and vertical guidelines are aligned with the object. Read out the height and width in the small **Local X** and **Y** display box.



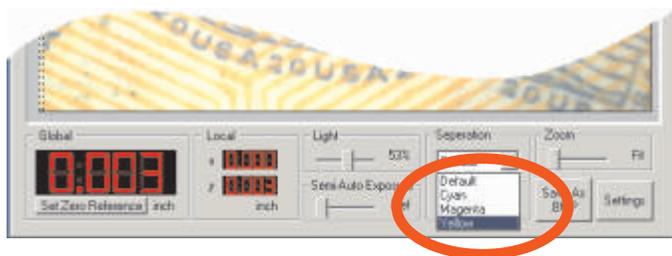
Both small and large objects can easily be measured using either the **Global** or **Local** mode of operation.

To measure objects that are larger than the field of view click on the Set Zero Reference and place the cursor at the beginning of the object. Move the camera to the opposite end of the object, place the cursor over the edge, and read the total length of the object in the large Global window.

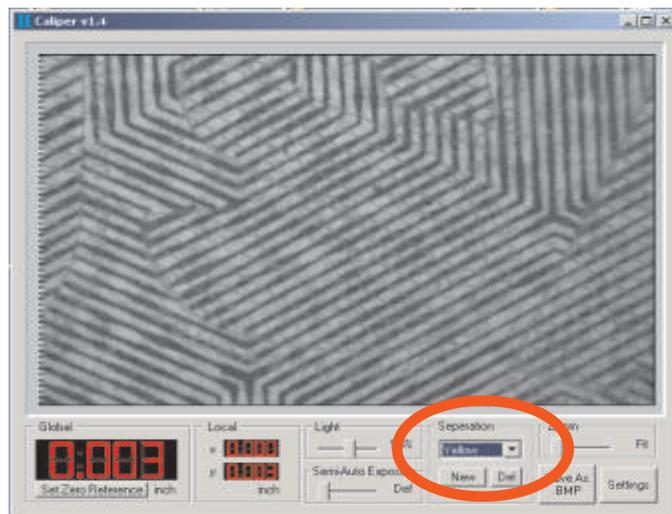
The **Separation** function is used to enhance the contrast of selected colors. When using the Default settings, the object is rendered in true color.



The yellow pattern is difficult to see in the image above. Click on the drop down arrow and select **Yellow** from the list as shown below.



A high contrast monochrome image is now created, making the original pattern more readily visible. The low-contrast yellow pattern is now readily visible while the other colors are suppressed. The other process color filters are available and arbitrary spot color filters can be created.



System Operation

The Beta Video Ruler integrates a high quality digital camera and illuminator with a Digital Scale to produce a low cost , easy to use traveling microscope for linear measurements.

The scale is powered by its internal battery. There is no need to touch the buttons or see the readings on the display, as this is all done via the software.

Using the Software

The Video Ruler Software consists of a scalable viewing area for the image, and a series of functions along the bottom for different operations.

The application can be scaled to fit your screen or any other size you want to make the image easier to view, using standard Windows commands to do so. If under **Illumination & Zoom** the bottom slider says 'Fit' at the right of the slider then the image will automatically scale to fit the screen to the new size. If the zoom cursor is moved to the right it will display a number 1-6 representing the pixel zoom factor. On higher magnifications not all of the image may be visible. In this case the image can be scrolled around using the RIGHT HAND mouse button. Just put cursor in image, right click and drag. To restore to default 'Fit' position simply double click either left or right buttons.

Global

The position of the scale is shown in Global display. This is with reference to a cursor which is brought up by pressing the left mouse button. To make a reading between 2 points follow the steps below.

Move the camera slider to the first reference position. It is not necessary to accurately position the camera over the first point, as long as you can see it on the screen. Click the Zero Reference button to bring up a dotted vertical line, and then move this dotted cursor to the first reference point and left click mouse button. A second dotted vertical line will appear which is connected to mouse movement, with a horizontal dotted line joining them. Now slide the camera to a second reference point and bring it near the center of the screen. Move the second dotted line to the desired point, and double click the left hand button. The global display will now show the total distance for the scale.

In addition the global value is loaded into the Windows Clipboard, so that this value may be simply pasted into any Windows application such as an Excel spreadsheet or Word document. Double click again to unlock the destination cursor for additional measurements from the Zero Reference.

Local

It is also possible to make local area readings within the image area. This feature is particularly useful when looking at registration marks or bar codes on a printed piece.

Simply move the cursor to the first starting point. Hold down left mouse button and drag the cursor and a box is formed with the length of sides being displayed as **Local X** and **Y**.

Also in this box is a **CAL** button. View an object the size of which is accurately known, and measure it using local measurement. The X value will be displayed in the **Local X** line, underneath simply type in the real value in the Actual Value line. You only need to do this once when initially setting up the Beta Video Ruler.

Illumination & Zoom

You can either use the existing room lighting or use the built in LED lighting which is controlled by the top slider showing % illumination.

Zoom was described under the general setting.

Filter

By default you have full color, and Red/Green/Blue color channels pre-defined.

It is also possible to set up a color filter to a unique color range using a range of hue values. These are set as upper and lower limit hues, and then saved as a filter. This is very useful for looking at spot colors on a press sheet. To ensure that you are using the correct hue range it is important to use the LED illumination, rather than room light.

Pressing **New** will bring up a window with a Hue scale going from purple to red. A slider above this sets the width of the color window you are looking at, and a slider below selects the color. It is very easy to use, simply select the color you want to look at and then save as a filename. For example to just look at a yellow object, select Yellow on the hue scale by moving slider to near middle, and give it a window that still looks yellow. Save this as Yellow, and it will now appear in the drop down list. The displayed image is a digitized signal with only two levels where Black is the color in the window, and everything else is white. To revert to normal color select 'Default'.

Any entry except the defaults can be deleted with the Del Button. You are asked to confirm a deletion in case you have accidentally clicked on Delete.

Save

Allows saving an image file as a 24 bit .bmp file using standard Windows features. This is true even if looking at a monochrome color-separated image.

Settings

You can choose between **Metric** (mm) or **Imperial** (inch) units of measure. Millimeters are shown to two decimal places (hundredths) and Inch to three decimal places (thousandths).

Invert or **Flip** the video, and reverse the scale direction to allow all possible camera/scale configurations.

Calibrate: Image an object of an accurately known size, and measure using local measurement. The X value will be displayed in the 'Local X' line, underneath simply type in the real value in the Actual Value line. You should only need to do this once when initially setting up the Video Ruler.

White Balance: Remove lighting and camera imbalances by targeting a clean white surface and pressing the White Balance button. This information is subtracted from all subsequent video frames to improve image quality.

File Tab

This is the general utility tab, for saving images, printing, setting up local calibration etc.

TECHNICAL SPECIFICATIONS

Field of View 10mm x 6.5mm
Resolution in local mode 0.01mm
Camera & illumination system USB powered
Scale Video Ruler battery powered
Camera resolution 752 x 480 pixel

Minimum computer system requirements:
Beta Video Ruler is a multi-threading application and will benefit from Hyperthreading and multi-core CPU's.

Windows XP computer running at 1.4Ghz or better
256Mb or more of available memory
USB 2.0 interface

For further information please contact:
Beta Industries
707 Commercial Ave., Carlstadt, NJ 07072
800-272-7336 www.betascreen.com