Quick Start

CMOS Usoria™
Megapixel USB 2.0 Camera

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CMOS Usoria™
Megapixel USB 2.0 Camera

This Quickstart guide shows how to take basic pictures and videos quickly.
For more detailed instructions, please consult the User Guide on the Usoria USB 2.0 Camera CD. (Insert the CD into your CD-ROM drive and select **"View User Guide"**.)

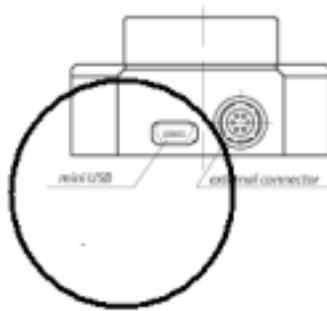## 1. Connecting the Camera to Your Computer

1A. This package contains the CMOS Usoria USB 2.0 camera, a USB cable to connect the camera to your computer, and a half-inch C-mount adapter to connect the camera to a tripod.

1B. Screw your half-inch camera lens onto the front of the camera.

1C. Connect the USB cable (included in the package) to the mini USB port on the left of the camera.

1D. Connect the camera to the USB 2.0 port on your computer with the USB cable.

1E. When the camera is plugged in for the first time, use the defaults suggested by the **Install New Hardware** wizard.

1F. If additional Microsoft warnings are displayed, press the **Continue Anyway** button. Your camera is ready to use now.

2. Getting Started

2A. Double-click the **SMXM7x** icon on your desktop (the desktop is the main screen that comes up after your computer has completely started).

2A.

The USB 2.0 Camera application will start. This window will be displayed.

2B. Click the **Frequency** arrow and drag the slider up to the top level, 48 MHz (48 megahertz).

2C. Click the **Exposure** slider and drag it upward, to the top of the slider area.

2D. Click the **Gain** slider and drag it upward slightly, to about 1.5.
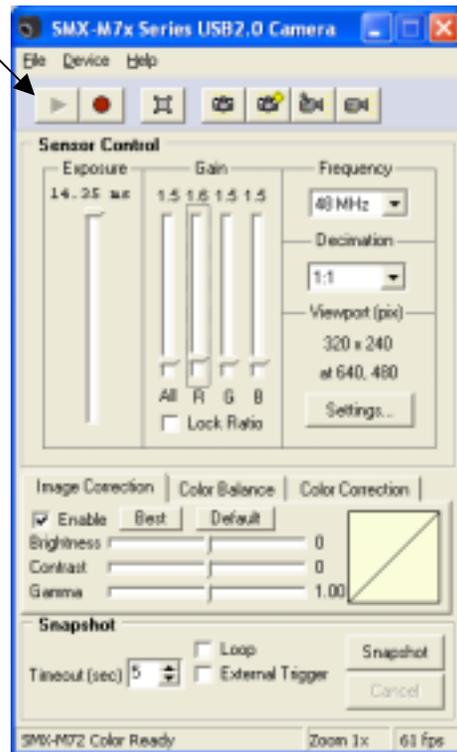
2E. Under "**Image Connection**", check **"Enable"**.

2F. Open the iris of the camera lens.

2B.

2C.

2D.

2E.
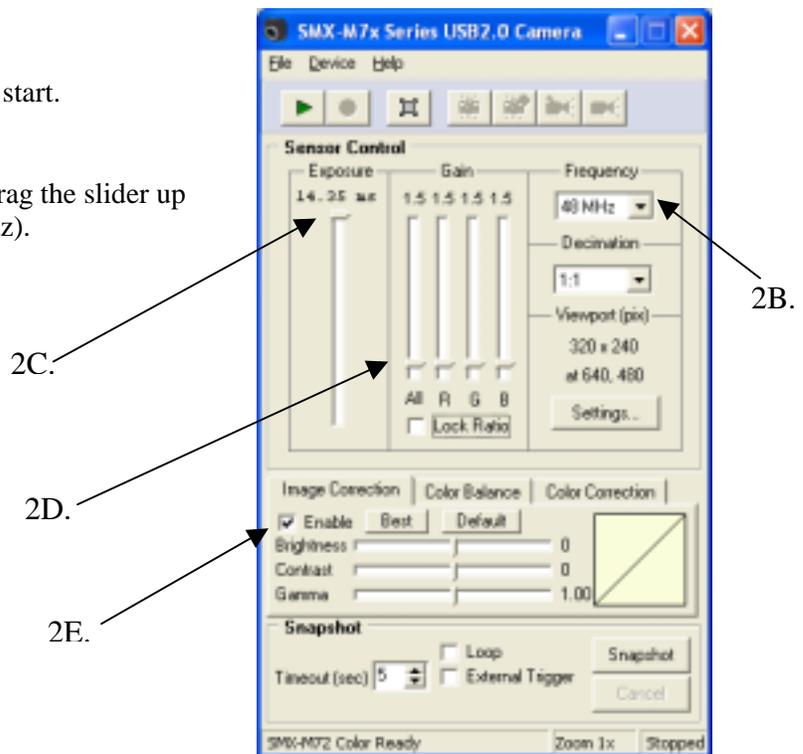
3. Getting An Image

3A. Press the **green arrow** icon in the upper left-hand corner.

3B. This **View window** will appear on your computer screen. It shows what the camera sees.

NOTE: **The camera view is black and white when the Usoria starts up**. You will change this in the next step, **Advanced Color & Image Settings**.

To focus the camera, adjust the focus on your camera lens.

If the view window is black, try the following:

- Be sure the lens cap is off.
- Check the lens to be sure it is properly connected to the camera.
- Open the iris on the lens to allow more light into the lens to see the image.
- Check the USB 2.0 cable to be sure it is properly connected to the camera.
- Check the USB 2.0 cable to be sure it is properly connected to the USB 2.0 port on your computer.
- If none of the above work, you are in trouble!

4. Advanced Color and Image Settings

4A. Type **Alt** and **S**. Or, click on "**Device**", then "**Settings**".
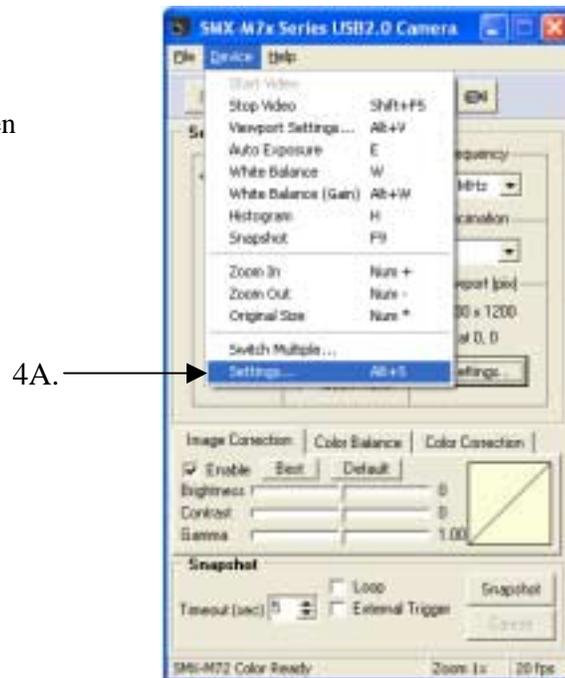
This **Device Settings** window will appear.

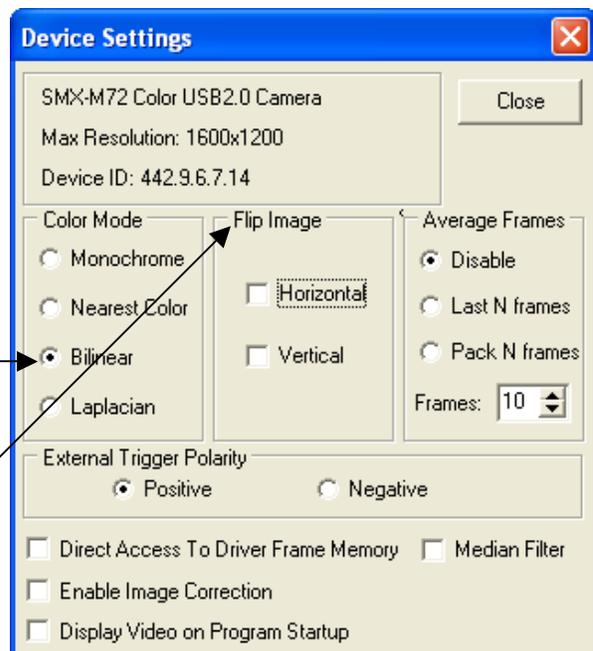4B. Select a Color Mode – Choose **Bilinear** for general use.
> **Monochrome** is black and white.
> **Nearest Color** gives you the fastest transport stream with the worst image quality.
> **Bilinear** gives you medium speed and quality.
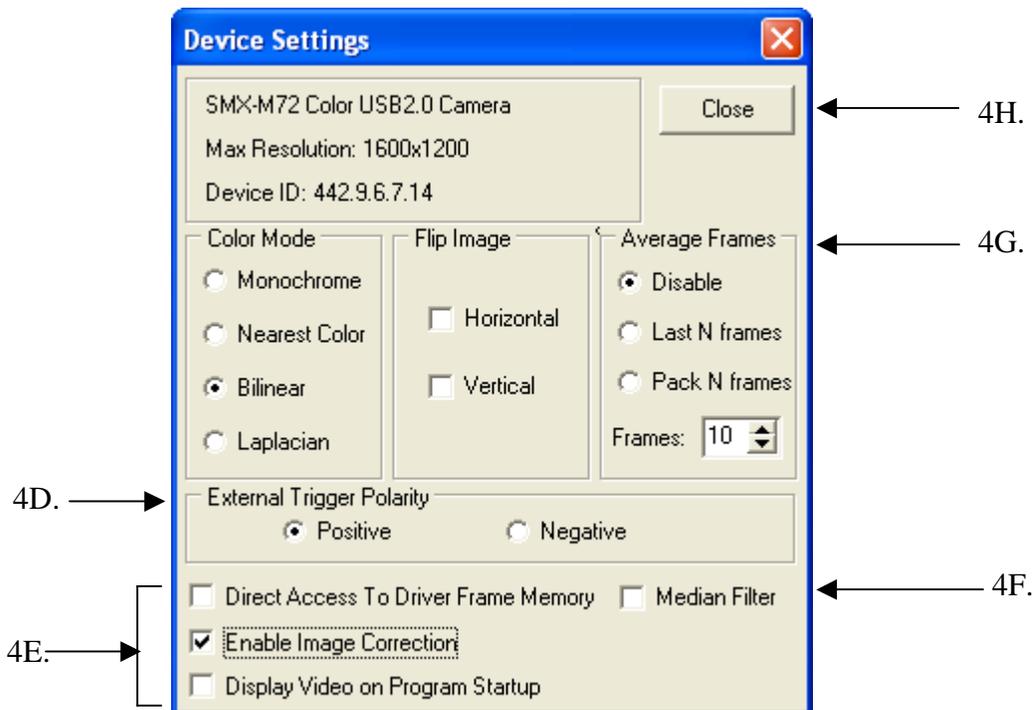> **Laplacian** gives the best image quality with a slow transport stream.

4C. The **Flip Image** controls will flip the image horizontally (sideways) and/or vertically (upside down). Leave these unchecked.

4. Advanced Color and Image Settings -- Continued

4D. **External Trigger Polarity**: This option is for taking snapshots with an external trigger. "Positive" enables the Trigger input #1, and Negative enables trigger input #2. For more information, see the **External Trigger Connector Pinout** diagram in the User Guide.

4E. Additional Options:
Direct Access to Driver Frame Memory: For general use, leave this unchecked. For more information, see the User Guide.

Check **Enable Image Correction**: This enables the controls for brightness, contrast (the difference between light and dark areas of the image), and gamma (the overall brightness and hue).

Display Video on Program Startup: This option is not currently enabled.

4F. **Median Filter**: For general use, leave this unchecked. Use the **Median Filter** to reduce camera "noise" – unwanted specks in your camera image. It can also be used to smooth a sharp transition between light and dark areas of the image. The **Median Filter** will slow the frame rate by about five to seven percent.

4G. The **Average Frames** controls are used to increase the image quality of still pictures. For more information, see the User Guide.

4H. Press the **Close** button to close the Device Settings window.
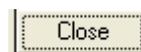
5. Adjusting the Area Viewed by the Camera

The viewport is the rectangular area where the image seen by the camera lens is scanned. The smaller the viewport size, the higher the frame rate for your video. For general use, you will want a larger Viewport so that you can see more of your image. However, when the frame rate is important, select a smaller Viewport.

5A. To open **Viewport Settings**, press **Alt** and **V**, or press "**Settings**" under "**Viewport"** on the main menu.

5A.
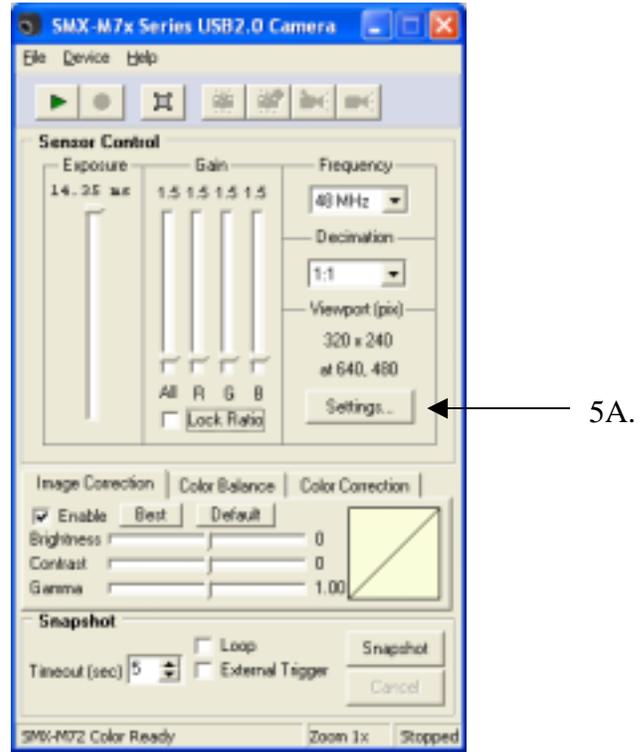
This window called "**Viewport** Settings" will appear. The blue shaded rectangle in the center represents the size of the current Viewport area compared to the size of the total possible Viewport area.

5B. To change the viewport size, check one of the buttons on the "**Predefined**" control. For general use, a larger Viewport setting is best.

5B.

When you change the viewport size, you may need to provide more light to the camera lens. Adjust the exposure control slider upward, or open the iris on the lens.
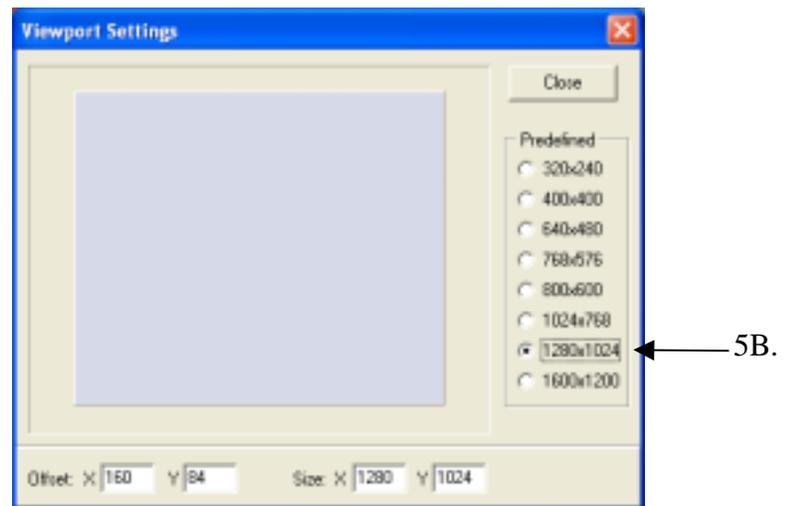
5C. To capture just one section of the total view, click on the blue shaded rectangle with the left mouse button and drag it to the area you want to view. (Drag to the right to see an area on the right, and drag to the left to see an area on the left.) The changes are displayed in the View window immediately.
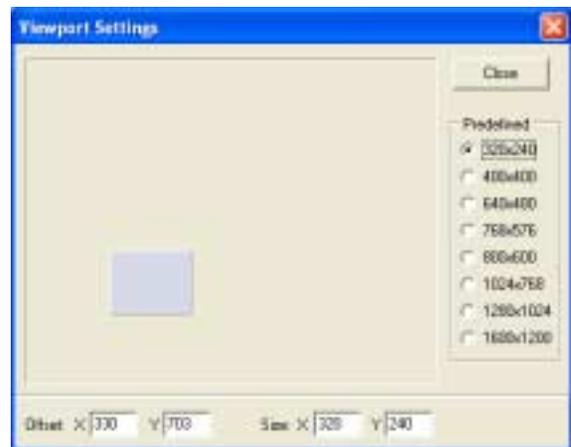
5C.
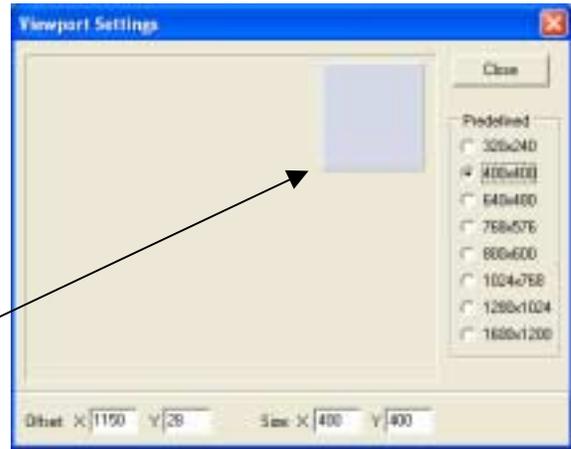
These pictures below show how capturing different sections of the Viewport Settings will give you different views. Here, the Viewport setting shows the largest area possible.
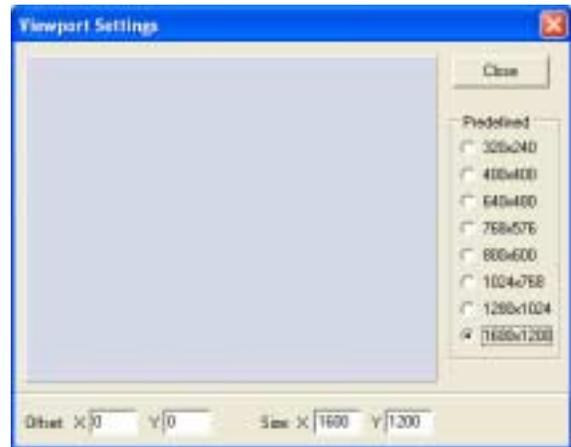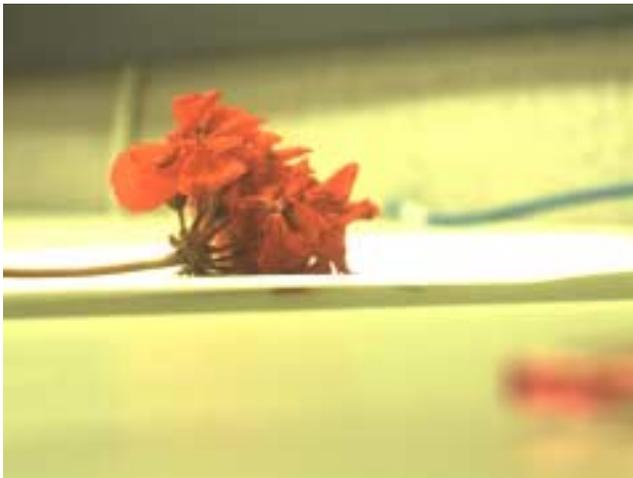
In this example, the Viewport Setting shows just a small area of the total view. For this picture, the Exposure slider was adjusted upward to allow more light into the lens.

5D. As you change your Viewport settings, your frame rate will be displayed in the far right corner of the main menu. In this example, the smallest View window size will give you a frame rate of **62 fps**, or 62 frames per second.
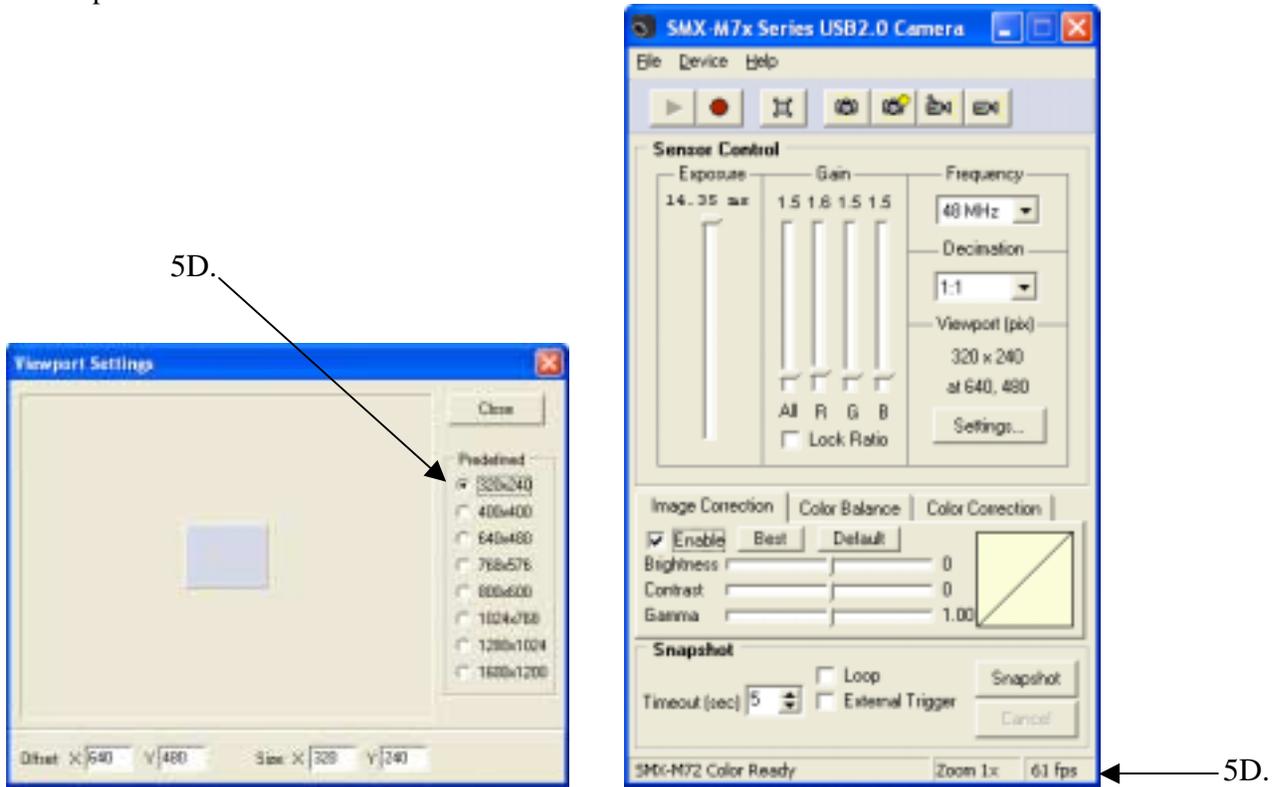
For information on manually setting the Viewport size with the "**Offset**" controls, please see the User Guide.

6. Calibrating for the Right Colors

To calibrate for the correct colors, set the "**White Balance**". "**White Balance**" tells the camera how to calculate the difference between white and other colors.

Always set the white balance when you start to use your camera, or whenever your lighting conditions change.

To set the white balance, the camera must be on.

6A. If the camera is off, press the **green arrow** icon in the upper left-hand corner.

6B. This **View window** will appear on your computer screen. To focus the camera, adjust the focus on your camera lens.

Point the camera lens at a large white object, such as a piece of blank white paper. Cover the whole field of view and use *good lighting*.

Under **Sensor Control** use the **Exposure** slider to adjust the exposure time.
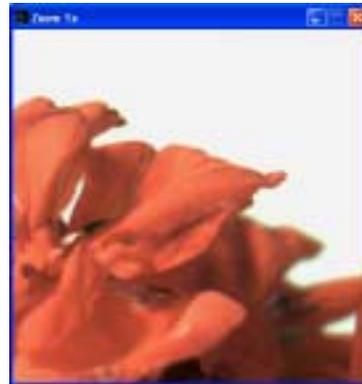
6C. Type "**W**" to set the white balance. Or, select "**Color** Balance", then "**White Balance**".

The image in the View window will immediately have more realistic colors.

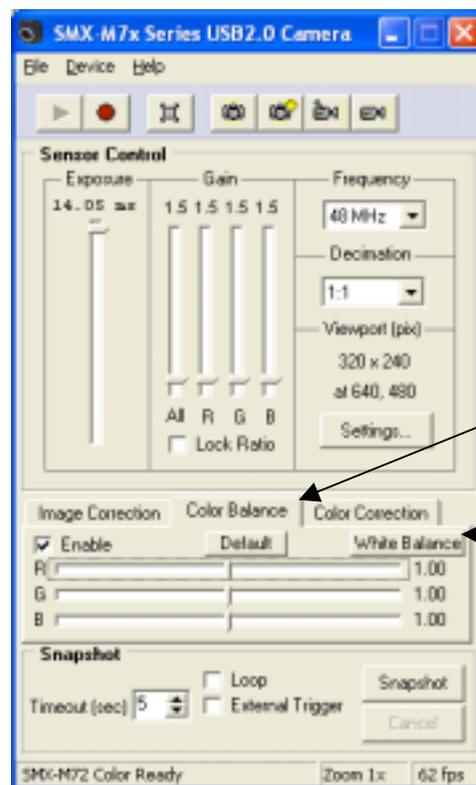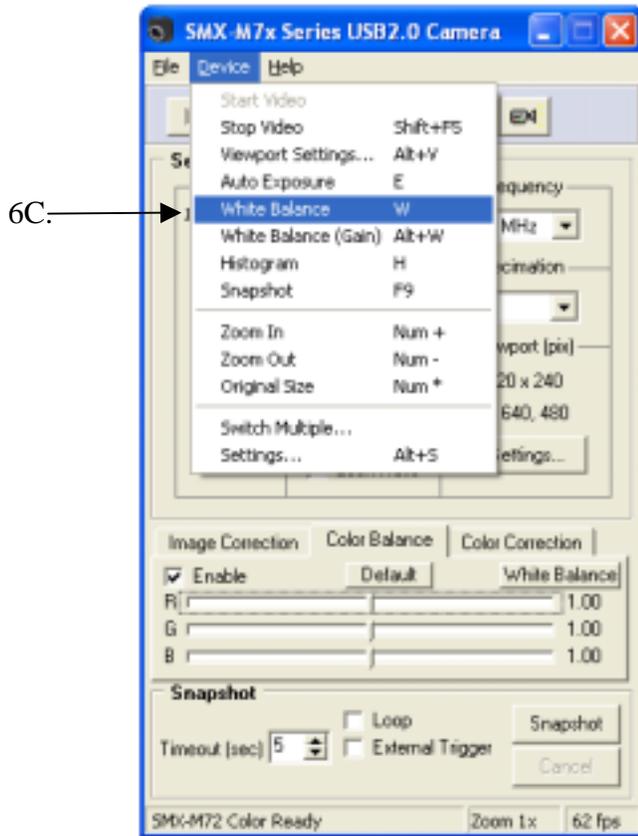6C. Another way to set the White Balance is to click on "**Device**", then "**White Balance**".
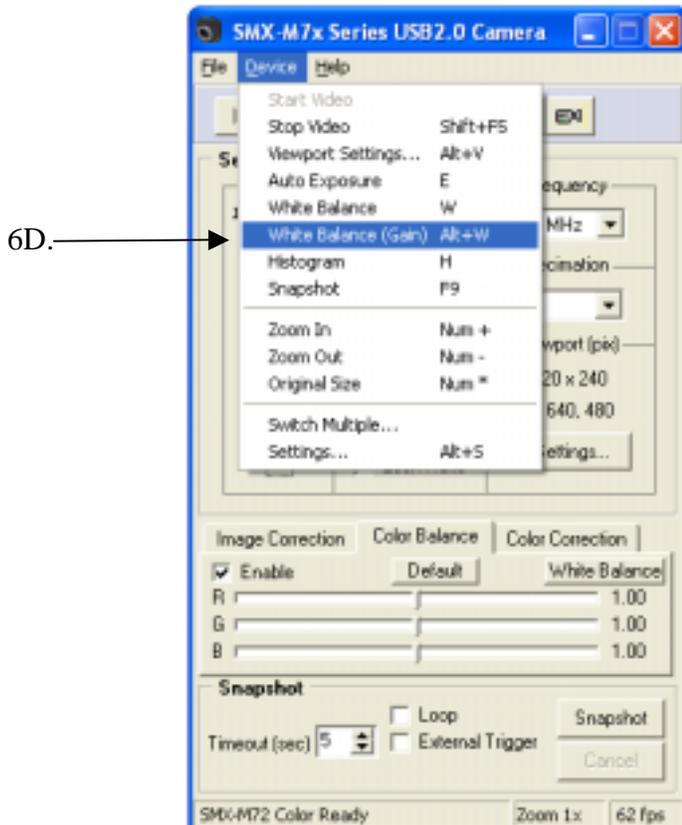
6D. If your image is not bright enough, use **White Balance (Gain)**. Type **"Alt"** and **"W"** at the same time, or select "**Device**", then "**White Balance (Gain)**".

Re-adjust the **Exposure** and **Gain** controls if needed. If the image is too dark, adjust the Exposure slider upward. If it is too light, move the Exposure slider downward. Your settings will be saved automatically.
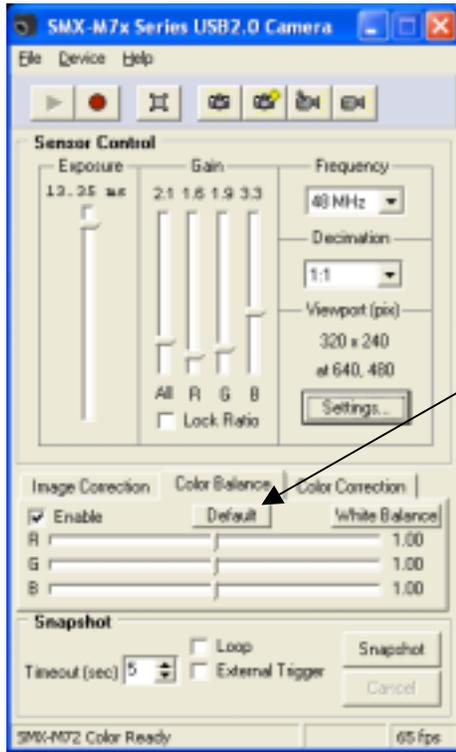
6E. To un-do the White Balance, select "**Default**".

6E.

7. Where and How to Store Videos and Pictures on Your Computer

In the Capture Options section, you can select where to store your videos and pictures on your computer.

7A. For Capture Options, press **Alt** and **C**, or select **File**, then **Capture Options**.

7A.
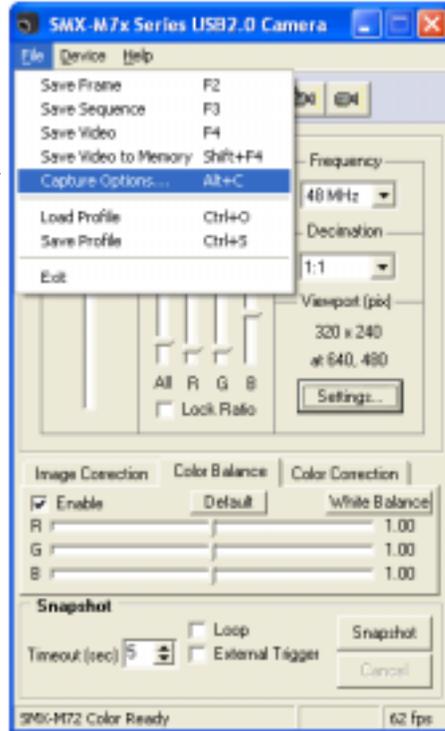
This Capture Options window will be displayed.

7B. In the Picture File Store Folder box, press the file folder icon.
Select the computer "folder" where you would like to store your videos or snapshots.

7B.

7C.
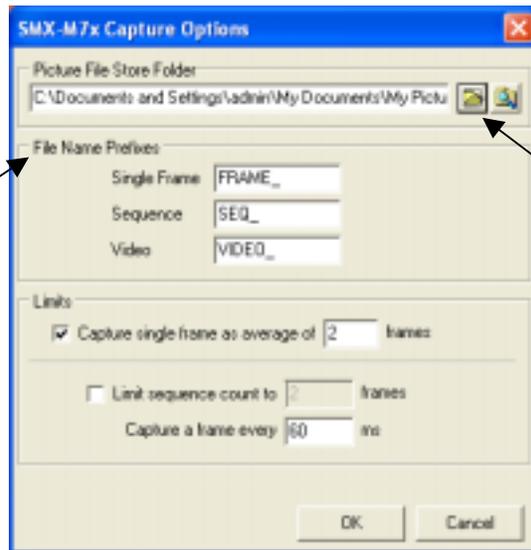
7C. **File Name Prefixes** are set automatically by combining a file name prefix and the number of the last captured file plus one. For example, if the last captured video file is "FRAME_15.bmp", the next file will be named "FRAME_16.bmp". If you prefer, you can change the file name prefixes.

You can also change single file names. Open the file folder on your computer where the files are stored, right click on the file and select "Rename".

For information on "**Limits**" and sequence counts, please see **Section 9** of this Quickstart Guide, Shooting Frames or Frame Sequences.

8. Capturing Video Sequences

8A.

8B.

8C.

8E.

8D.
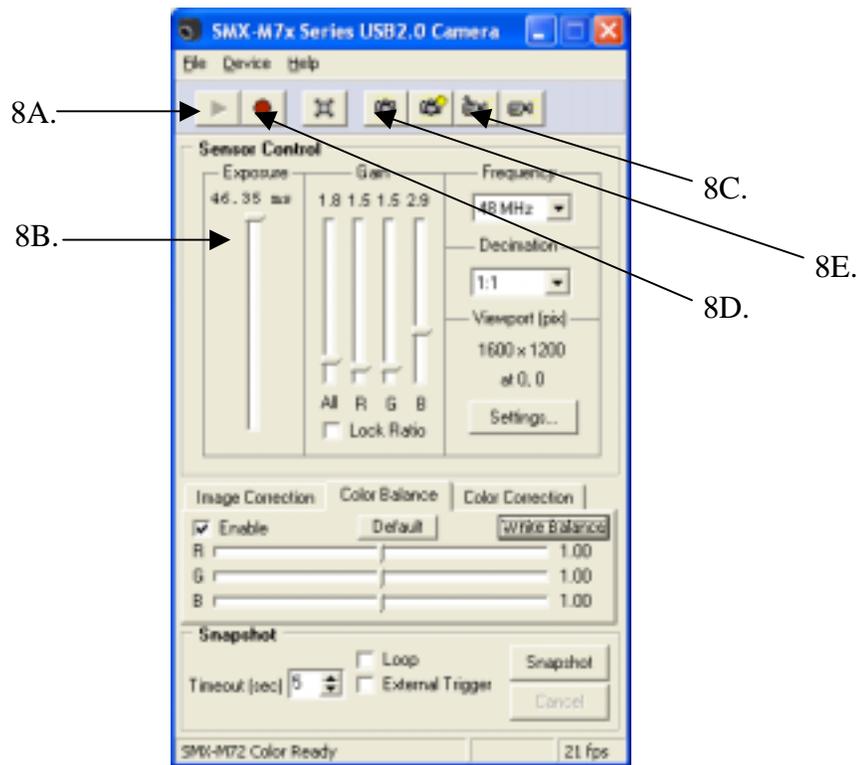
8A. Press the **Green Button** to start the Video mode.

8B. Set the camera settings as desired -- exposure, gain, viewport, etc.

8C. To shoot video and save it to a file on your computer, press **F4** or the video camera button.

8D. To stop shooting video, press Esc or the red **Stop Video** button.

8E. To capture a single frame of a video, press **F2** or the plain camera icon.
(For example, you might shoot single frames before shooting video to check colors and camera angles.)

9. Shooting Frames or Frame Sequences

To shoot a frame sequence, bring up the Capture Options screen.

9A. Press **Alt** and **C**, or select **File**, then **Capture Options**.

9A. →
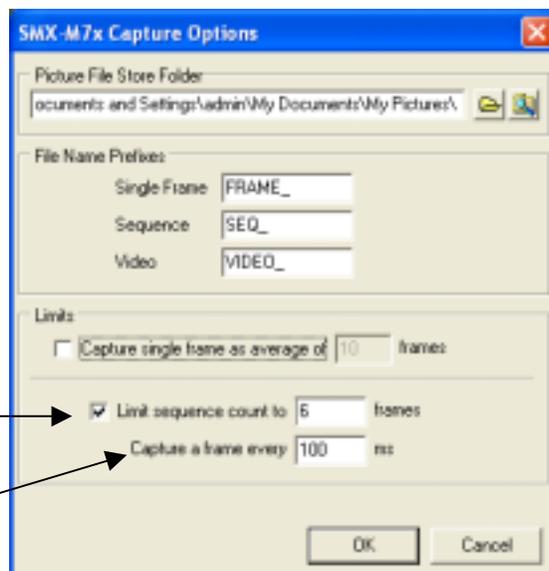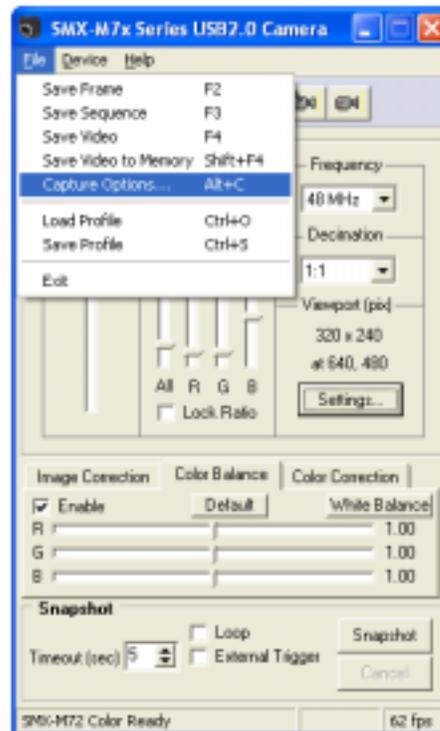
9B. Check "**Limit Sequence Count**" and enter the number of frames you want to shoot in sequence. (This number must be higher than one.)

9C. Enter a number for the timing of your frame sequence. A millisecond (ms) is 1/100th of a second. If you set "**Capture a frame every**" to 100, you will take one picture every 100 milliseconds.

9. Shooting Frames or Frame Sequences -- Continued

For example, if you set "**Limit Sequence Count**" to six frames and set "**Capture a frame**" to every 100 milliseconds, you will take six pictures at the speed of one picture every 100 milliseconds, or six pictures at the speed of one picture every tenth second.

The millisecond interval where you capture a frame must be more than the current frame Exposure that was set with the Exposure slider on the main menu. For example, if your Exposure is 59, you must capture a frame at least every 60th millisecond. If it is less, an error message will display and you will need to change either the exposure time or the number of frames.

For information on capturing frames as an average of frames, see the User Guide.

9D. To shoot a frame sequence, press **F3,** or the camera icon with the yellow plus sign.
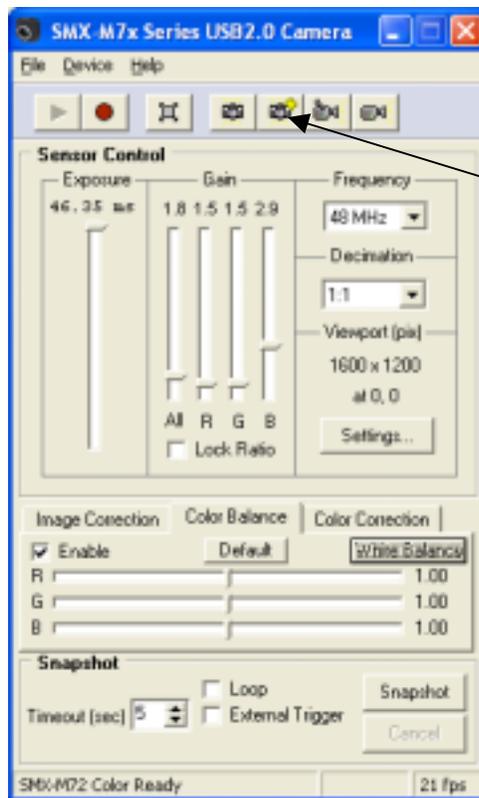
The frame sequence will be saved as a bitmap file.

10. Shooting Snapshots or Single Frames

10A. To shoot a single frame, press **F2,** or the camera icon. Your picture will be saved as a bitmap file.

10A.

10B.

10C.
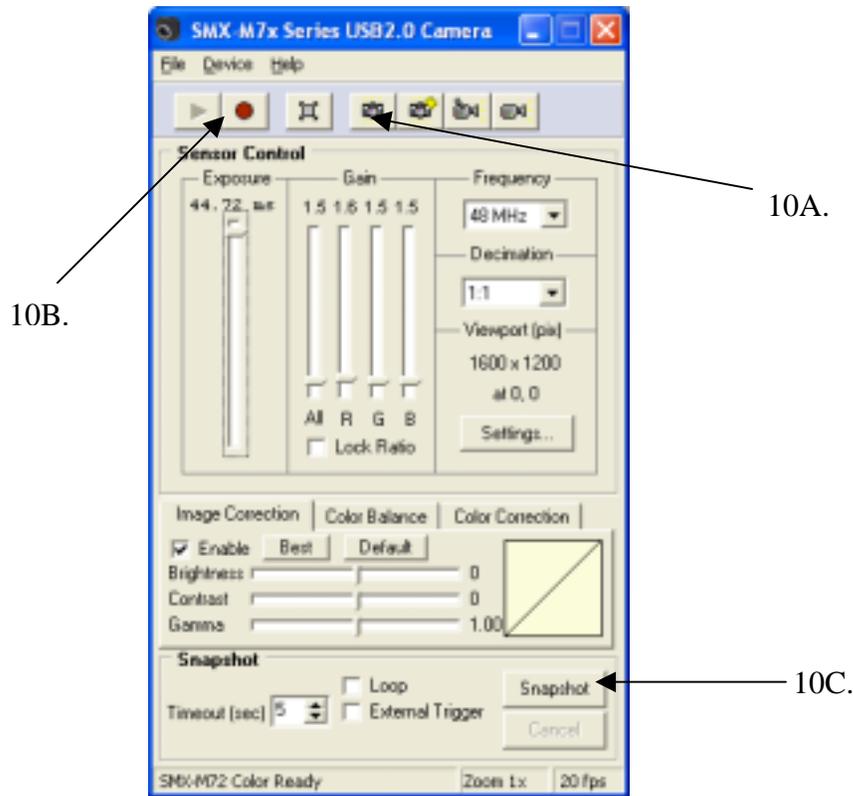
10B. To take a picture in **Snapshot** mode, press **Shift** and **F5**, or press the **Red Button**. This will stop the Video mode.

10E.

10C. Press the **Snapshot** button.

10D. The **Snapshot View** window will open and the camera will shoot the photo.

10D.

10E. To close the **Snapshot View** window, click on the **red "X"** in the upper right hand corner.

You can also shoot snapshots with a "hardware trigger" attached to your camera. For more information, please see the User Guide.

11. Saving Camera Settings in "Profiles"

All of your current camera settings are automatically saved when you exit the program.

Profiles are camera settings saved as files. To store current settings in the Profile files, press **Ctrl** and **S**. To load a saved profile, press **Ctrl** and **O**, then select the file name (*.pro).

12. Keyboard Shortcuts

Use these "shortcuts" to quickly start video displays and bring up different windows.

F2	Capture a single video frame as a picture
F3	Capture a sequence of frames into a series of pictures
F4	Capture a sequence of frames into an AVI (video) file
F5	Start the live video display in the View window
Esc	Stop the live video display and closes the View window
F12	Bring up the Main window when displaying the live video
Ctrl and **"S"**	Save a Camera Profile
Ctrl and **"O"**	Open a Camera Profile
Alt and **"C"**	Bring up the Capture Options Window
Alt and **"S"**	Bring up the Device Settings Window

13. Closing the Program

13A.

13A. To close the program, click the **red "X"** in the upper right hand corner, or…

13B. Select "**File**", then "**Exit**".

13B.—————▶

For the complete user guide, insert the CD into your CD-ROM drive and select **"View User Guide"**.