

PXR Productivity Tool

The PXR Productivity Tool was designed to help you become a more productive software developer faster. It reduces your learning curve by letting you investigate the API through dialog boxes rather than source code. It shortens the “edit, compile, run” sequence to “click and watch.” The best way to learn to use the Tool is to use it. The only items you need are a PXR800, a camera, and a cable. We believe that the tool is intuitive and can be learned quickly and easily. This chapter pursues the few concepts and procedures that may require clarification; such as:

- Installing the Tool;
- Why you can benefit from using the Tool in your work;
- What the Tool can and cannot do to support your programming efforts;
- How to interpret and use the feedback generated by its windows and other controls; and
- How to save and load a PXR800 frame grabber configuration.

Installing The PXR Productivity Tool

Since the PXR Productivity Tool was developed and released after the first shipments of the PXR800, you might not have it available with the product CD you originally received. You can now download this Tool, along with updated drivers, samples, and documentation from our website, www.imagenation.com. The self-extracting executable from our website does not create a Start Menu shortcut for the application; so make sure you place it in the same directory with the rest of the PXR800 software for easy retrieval. Product CD's received after March 2003 have the Tool embedded into the PXR800 installation application and hence a Start Menu shortcut is created for your convenience.

Benefits Of Using The PXR Productivity Tool

Because the PXR Productivity Tool allows you to create and program any situation you choose, without writing any code, it represents a step beyond the samples we provide with our PXR800 frame grabber. While the samples illustrate how our frame grabber works and how to write your software application, the Tool lets you explore these issues through dialog boxes and eliminates the “edit, compile, and run” sequence.

PXR Productivity Tool Architecture

The PXR800 Productivity Tool is a multi-threaded application that gives you immediate and continuous feedback as you investigate the PXR800 API commands. The Tool lets you execute API commands through dialog boxes. There are ten dialog boxes (including the main control dialog box) that implement in excess of fifteen of the most important and useful API commands. The Tool has a display thread that gives you constant image feedback in a video window. There is no time lapse between the actions you take and their consequences—feedback. The Tool will let you configure the PXR800 for a particular camera and situation and then save that configuration to a file for later use.

Dialog Box Design

We tried to find a balance between the total number of dialog boxes and the number of API commands per dialog box. We also realized that it might be helpful to have several boxes open at once. Therefore, if the boxes are small and many, you can easily place them around the outside of the video window to avoid obscuring the image as you test and learn. In general, we tried to group the API commands in functionally related groups. The “Frame Size” dialog box is a good example. It incorporates the following API commands.

- `SetPixelClock()`

- SetInterlaceMode()
- SetVideoFrameSize()
- SetROI()
- GetFieldLength()

These commands are used to set up the image size according to the video format of the camera. They are all very closely related. A change in any one of them can require a change in the others. Since they are all on the same dialog box, you may make changes and view the effects immediately.

Although they may appear so at first glance, the dialog boxes are not inconsistent. The “Frame Size” dialog box shown in Figure 1 is a good example of an apparent inconsistency among dialog box controls. The values associated with each of the “SetPixelClock” radio buttons are sent to the PXR800 and generate feedback in the video window as soon as you click them—“take effect immediately”. In contrast, the four edit boxes in the “SetVideoFrameSize” group box are not sent to the PXR800 until you click the “SetVideoFrameSize()” pushbutton.

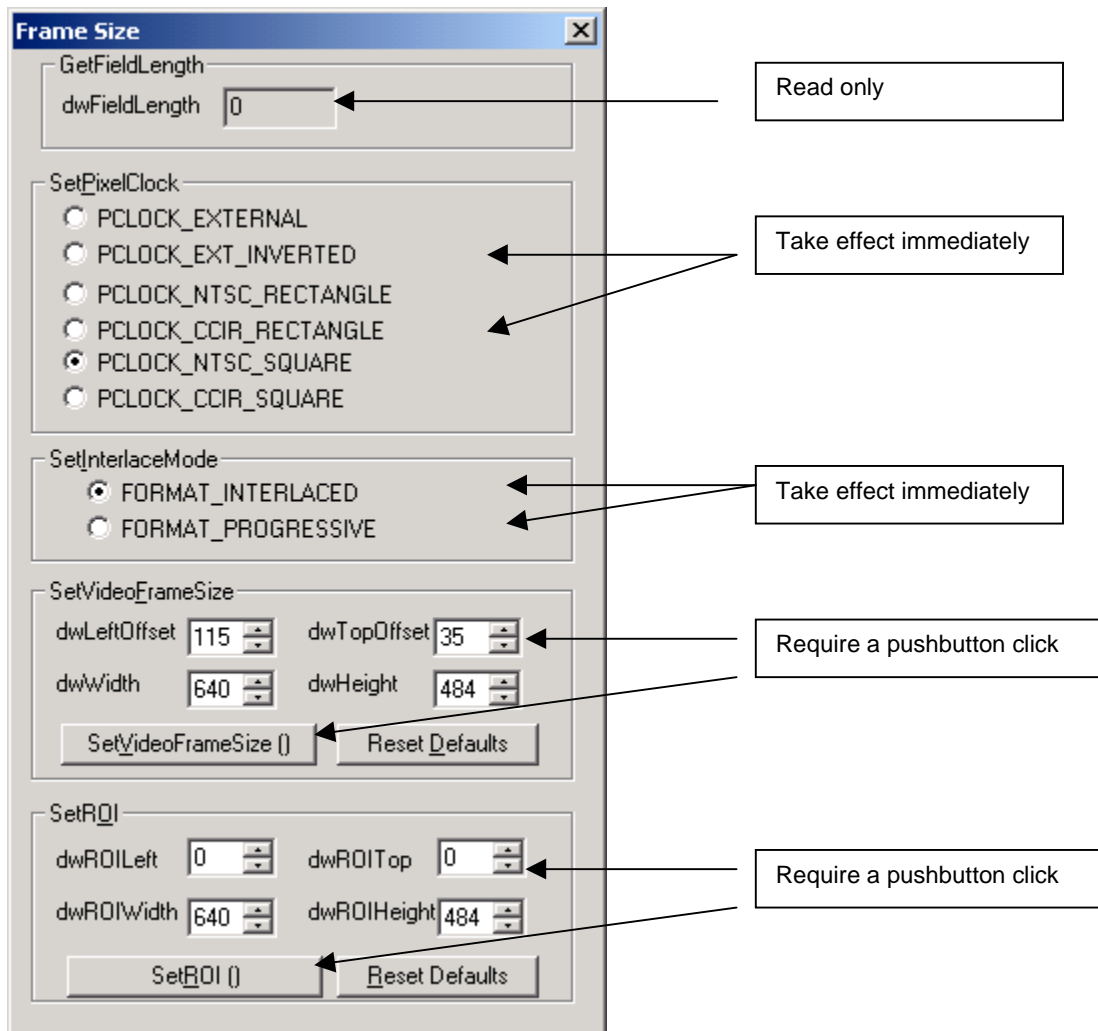


Figure 1: Frame Size Dialog Box

At first glance, there appears to be a difference in the way some API commands are handled in the dialog boxes. Our primary goal was to make the PXR Productivity Tool easy to use. With that in mind, we decided to use the following rule for constructing dialog box controls.

Dialog Box Rule

If an API command has only one parameter, then it will be sent to the PXR800 as soon as it has been changed without the extra step of clicking a pushbutton. However, if an API command has multiple parameters, then we will require the extra step of clicking a pushbutton to verify that the necessary parameters have all been set prior to sending the command to the PXR800.

Dialog Box Rule: An Example

Most API commands that have only a single parameter have been implemented as radio buttons. You click the radio button, the command is sent to the PXR800, and you get immediate feedback. However, there are API commands that have only a single parameter but are better implemented as edit boxes with spinners than as radio buttons. Good examples are shown in Figure 2—the “Gain/Offset” dialog box. The “SetFineGain” and “SetOffset” controls are implemented as edit boxes with spinners but still are sent to the PXR800 and generate feedback as soon as the values change.



Figure 2: Gain/Offset Dialog Box

Saving PXR800 Configurations With The PXR Productivity Tool

The PXR Productivity Tool allows you to save and retrieve previously saved PXR800 frame grabber configurations. The Tool saves:

- Dialog box positions
- Current program state.

Saving The Current Program State

The PXR Productivity Tool will save its current state upon request by clicking the “Save File” button on the Main dialog box, illustrated in Figure 3. You can also load a previously saved file by clicking on the “Read File” button.

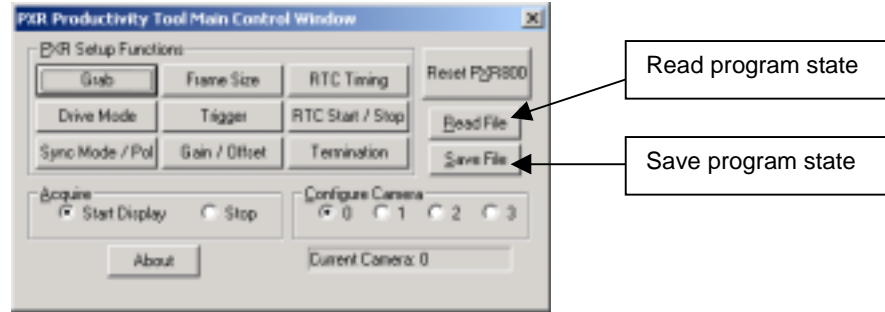


Figure 3: Main Control Dialog Box

The files are saved with a default “.PXR” extension. They are intended to be used for saving important Tool set-up information or work to be finished later.

Loading A Previously Saved Program Configuration

When you load a previously saved state of the PXR Productivity Tool by clicking on the “Read File” pushbutton, you will be setting the PXR800 and all of the dialog boxes in the Productivity Tool to that previous state.

Writing Code And The PXR Productivity Tool

The PXR Productivity Tool does not write or generate code. However, it does show you how the code for your PXR800 software application should be written. Each dialog box implements a small number of API commands. The parameters for each command are implemented as radio buttons, check boxes, or edit boxes. Once you have set up a particular dialog box to do what you want, the code you have to write to do the same thing will be obvious.