Introduction

The purpose of the Configure application is to generate a binary file that is downloaded to the command processor for use in configuring the system. The configuration file is what allows the PaxScan products to be configurable. The configuration file is generated based upon the sales sheet from marketing/sales. Manufacturing/Sales/Marketing executes the Configure application and inputs the appropriate values as indicated on the sales sheet, thus, a binary configuration file is generated and downloaded to the command processor so that command processor is configured to the requirements for that particular customer.

The Configure application will also provide the engineering staff with a means to test new hardware, new configurations, changes to hardware, etc. Engineering use will be separate from the Manufacturing/Sales/Marketing use.

Furthermore, the Configure application can be used by customers to slightly modify parameters through the customer use selection. A configuration file generated through engineering use by a customer is not the responsibility of Varian Medical Systems unless the customer was supervised by approved Varian Medical Systems personnel. Mostly, customer use is provided for customers to verify configuration files.

Engineering use is designed for experimentation and test purposes only. Engineering selection should only be used by VIP engineers or supervised by approved Varian Medical Systems personnel.

The configuration file includes information needed to correctly configure the receptor for acquisition as well as overall system information. Frame rate, binning, recursive filter percentage, version information, etc. are examples of the data within the receptor configuration file.

More specific information about the data contained within the configuration file will be discussed later in this document.

The Configure Application is designed to guide the user through a sequential set of steps which will result in the successful creation of a configuration file. Thus, there are several dialog boxes which require input such that configuration file creation will not be completed until all the necessary information is provided. In general, for all dialog boxes, the data items which are gray are not modifiable while all non-gray data items are modifiable.

There are also several dialog boxes which cannot be revisited in the same instance of the application, i.e. once "OK" is selected, the ability to return to that window may not exist, so you will have to cancel and restart the application to change that data.

In general, if the Cancel button of any dialog box is selected, the configuration file is not considered complete.

Dialog Boxes

Usage

The first dialog box encountered determines how the Configure Application will be used. The application provides three uses: customer, manufacturing or engineering. This dialog box cannot

be revisited within the same instance of the Configure Application so the type of usage chosen will be the same throughout that instance of the application. The Usage dialog box can be seen below.
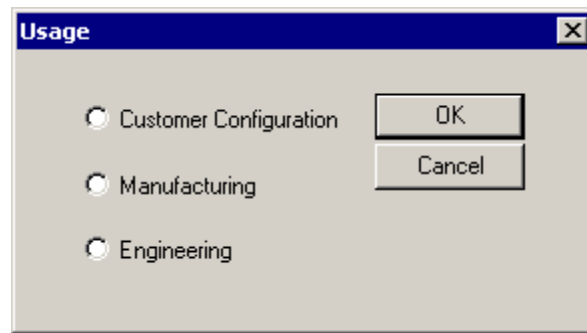

Figure 1: Usage Dialog Box

The purpose of the customer use is to provide the ability to quickly create configuration files for customers. The customer usage provides default values for all parameters.

The manufacturing usage is designed to customize configuration files for shipment. Default values are not provided for manufacturing; instead, all configuration information must be entered by manufacturing based on the manufacturing/sales sheet or the configuration file created in the field, using the "Customer Configuration" selection.

Main Screen

The purpose of the Main Screen is to determine whether the user wishes to create the system configuration file or the receptor configuration file. The user can also use this dialog box to create a new file, open/edit an existing file and/or save a file. The Main Screen dialog box can be viewed below.
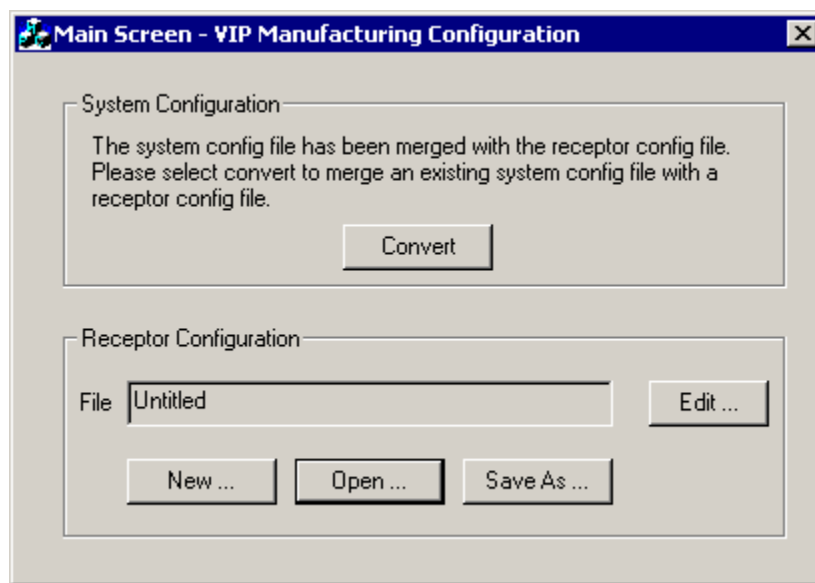
Figure 2: Main Screen

The "New..." buttons will create a new file. Selecting "New..." for System Configuration will display the System Settings dialog box. The Receptor Configuration "New..." button will display the Receptor Configuration Settings Dialog Box. Both of those dialog boxes will be discussed later.

The "Open..." buttons will display an Open dialog box as shown below. The Open dialog box allows the user to open files as in any other application, i.e. by double clicking on the file, or highlighting the file and then selecting the "Open" button. If a file is opened which is not the correct format, default values will be used.
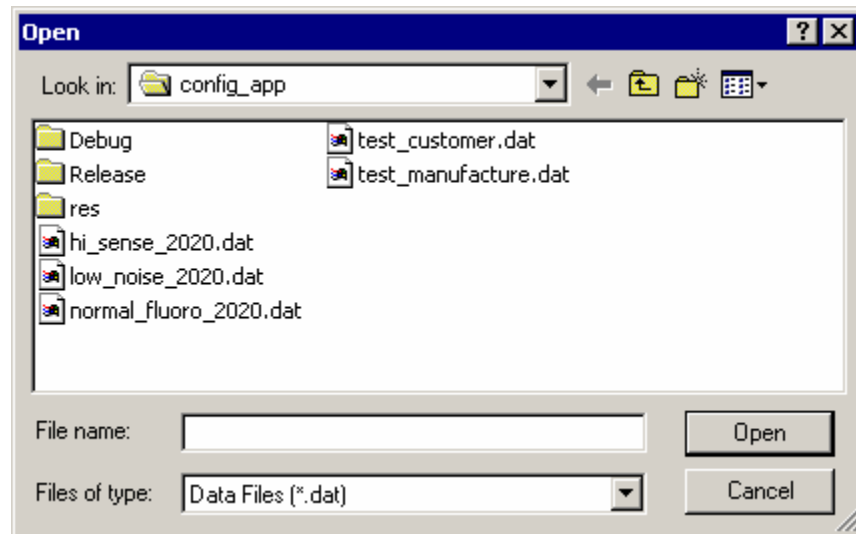

Figure 3: Open Dialog Box

The "Save As..." buttons behave like the "Open..." buttons except the files will be saved to disk rather than opened. Existing files can be overwritten, if "Yes" is selected when asked if you want to overwrite the existing file.

The "Edit..." button requires that data has been entered either through opening an existing file or through creating a new file. If a file has been opened with the "Open..." button, selecting the "Edit..." button will result in the same dialog boxes, but the data will represent the data contained in the opened file.

Note that the "File" field is not modifiable. This field will update to contain the name of the file which was most recently opened or most recently saved.

Receptor Configuration Settings

The System Settings dialog box (seen below) allows the user to configure the values for the system configuration file.
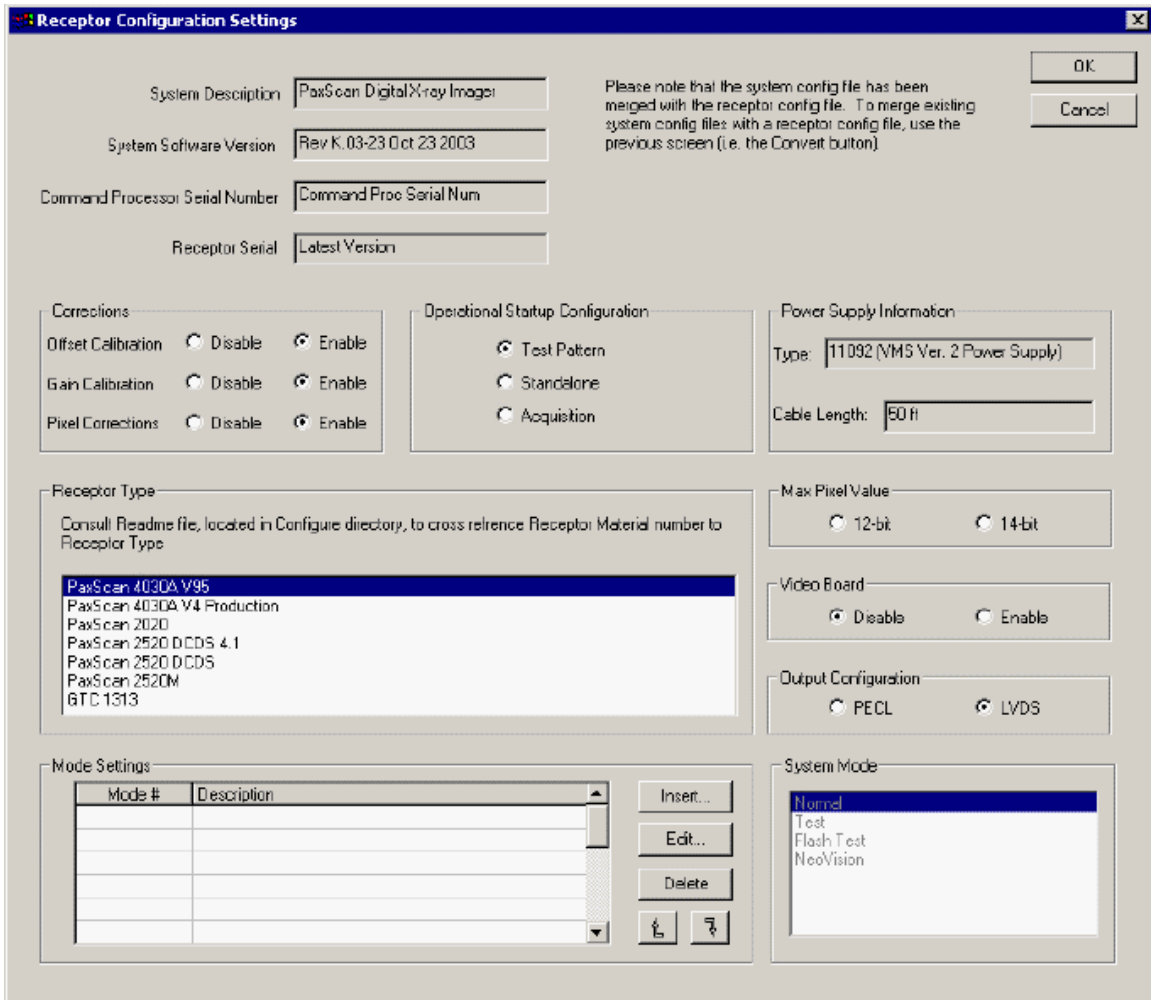
Figure 4: Receptor Configuration Settings Dialog Box

The dialog box will not disappear until all required data is entered or Cancel is selected. The following table describes the data items in the dialog box.

Table 1: Receptor Settings Data Description

System Description	High level description of the system.
System Software Version	The current version of software installed on the system.
Command Processor Serial Number	The serial number of the command processor in the system.
Receptor Serial Number	The serial number of the receptor.
Corrections:	The corrections allow the user to define how the system corrections are configured at system startup.
Offset Calibration	Whether or not offset correction is enabled at system startup.
Gain Calibration	Whether or not gain correction is enabled at system startup.
Pixel Correction	Whether or not pixel correction is

	enabled at system startup.
Operational Startup Configuration	The state of the system after startup processes are complete. • Display Test Pattern – the system will display the test pattern and wait for commands from the host computer. • Standalone – the system will attempt to detect x-rays on/off. • Acquisition – the system will be actively acquiring.
Power Supply Information	The type of power supply installed with the system. This data is not modifiable through these dialog boxes. To changed the power supply type or cable length, the user must select a receptor type and then modify the power supply selection.
Type	The type of power supply currently selected.
Cable Length	The cable length currently selected.
Receptor Type	The type of receptor installed with the system.
Max Pixel Value	Defines whether a system is operating in 12-bit or 14-bit data acquisition mode.
Video Board	Whether or not a video board is installed with the system.
Output Configuration	Defines whether the 16-bit video output is PECL or LVDS.
Mode Settings	Allows the user to define the modes for the system.
Insert…	This button allows the user to insert a new mode. This button serves as add and insert function. If no row in the table is selected, the new mode will be stored in the next available slot. If a row is selected, the new mode will be inserted above the selected row. Modes can be added until the maximum number of modes is reached. This number is based on the size and number of modes created.
Edit…	This button allows the user to edit a

|	mode. To edit a mode, select the row in the table which corresponds to the mode that needs to be edited. If no modes exist (i.e. through the Insert command or a file open operation), an "error" will be displayed.
Delete…	This button allows the user to delete a mode. To delete a mode, select the row in the table which corresponds to the mode that needs to be deleted.
System Mode	The mode the system will operate. • Normal – system operates normally (performs acquisitions). • Test – system operates normally and outputs debug messages via the serial interface. • Flash Test – the system operates in a mode for testing flash. • NeoVision – the system is a NeoVision systems and behaves as such.

The Receptor Type must be selected before enabling a mode. If not, a message box will appear instructing the user to select a Receptor Type before continuing.

Please note that if a mode is not completely configured, i.e. the Cancel button on one of the mode configuration dialog boxes is selected during creation of the mode while performing a "New" operation, the mode will be deleted in the Receptor Configuration Settings dialog box.

All of the fields need to be filled before inserting a mode, otherwise error messages will appear.

Power Supply

When certain receptors are selected (e.g. 2520 product family), a power supply must also be chosen. The following dialog box will appear.
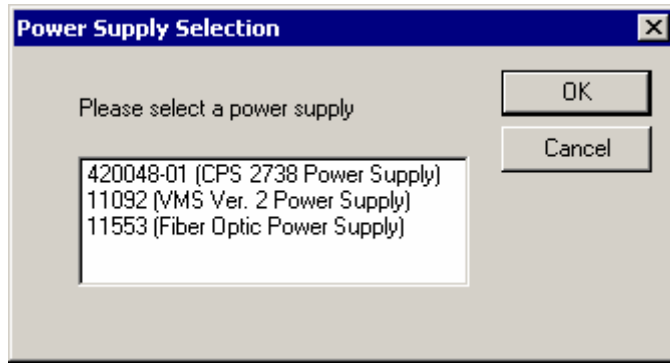
**Figure 5: Power Supply Selection Dialog Box**

If a Power Supply Selection choice of anything except Fiber Optic is made, the following dialog box will appear for choosing the cable length.
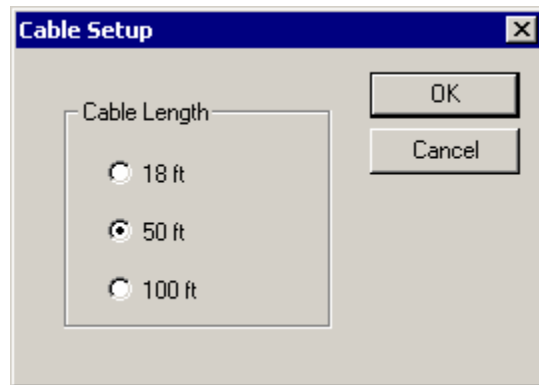
**Figure 6: Cable Length/Voltage Selection Dialog Box**

Mode Selection

The Mode Selection Dialog Box allows the user to choose the mode type. When "Insert..." is selected, if the receptor has the DCDS feature, the following dialog box will appear to allow the user to select the line length desired.
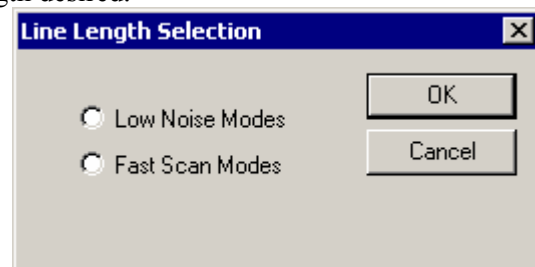
Figure 7: DCDS Line Length Selection

The mode types will vary depending on the receptor type and line length as appropriate. Once a mode type is selected, the Mode Setup dialog box will be displayed. The following dialog box is an example of the Mode Selection dialog box.
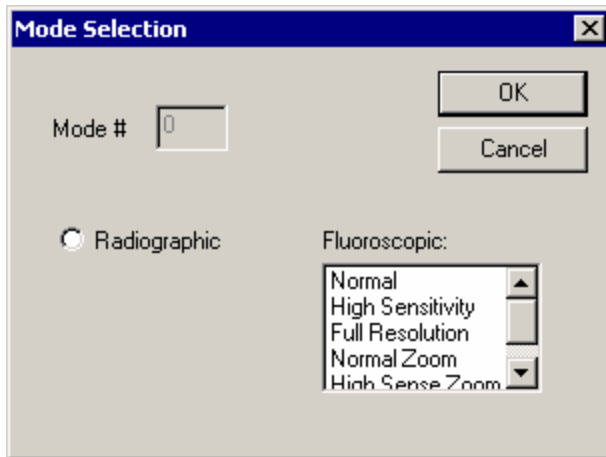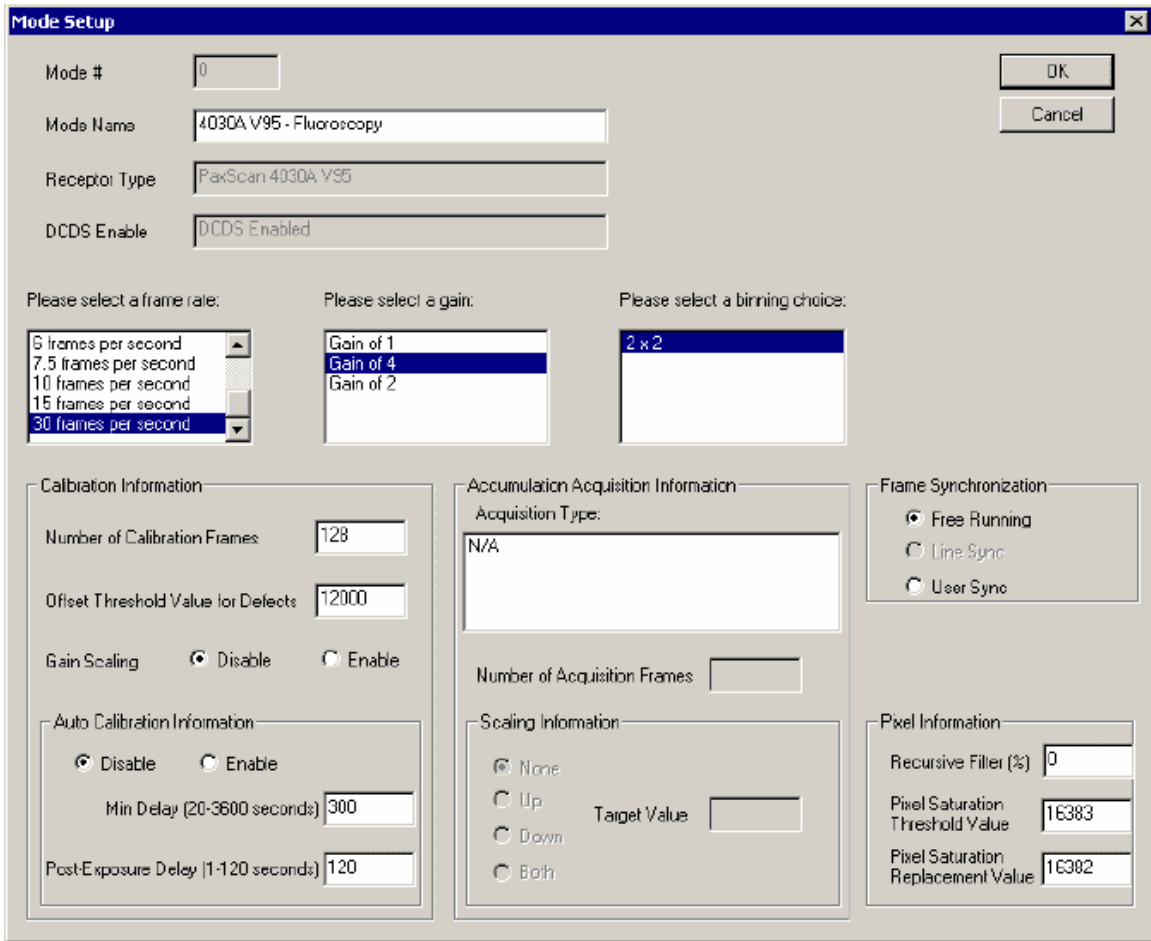
Figure 8: Mode Selection Dialog Box

The gray box at the top left is not modifiable and only provides a reminder as to which mode the user has enabled.

Mode Setup

Manufacturing and Customer Use

The Mode Setup dialog box allows the user to select specific details that pertain to how the system should configure a particular mode. The modifiable data in the Mode Setup dialog box will depend on the type of mode selected, the receptor type and the line length as appropriate.

Figure 9: Mode Setup Dialog Box

The following table describes the data items in the Mode Setup dialog box.

Table 2: Mode Setup Data Description

Mode #	Number of the currently selected mode. Information only, not modifiable.
Mode Name	A high level description of the mode type that has been selected. Information only, not modifiable.
Receptor Type	The type of receptor that was selected. Information only, not modifiable.
DCDS Enable	Whether or not DCDS correction is enabled for the mode selected. Information only, not modifiable.
Frame Rate	The frame rate for the mode. The values in this field will change depending upon the mode and receptor selected.

Gain	The gain value applied to signals before digital-to-analog conversion. The values in this field will vary depending upon the mode and receptor selected.
Binning	The number or receptor pixels which are binned to make one image pixel. The value in this field will vary depending upon the mode and receptor selected.
Frame Synchronization	Defines how frames will be synchronized. • Free Running – The frame start sync pulse and all internal clocks are created from internal circuits. • Line Sync – The frame start pulse and internal clocks are generated internally, but the AC line frequency is used as a reference. This option is not available for certain mode/receptor combinations. • User Sync – Frame start pulse is supplied from the user, all internal clocks are then generated based on the user supplied frame start pulse.
Calibration Information	Information for how a calibration should be performed.
Number of Calibration Frames	The number of frames to accumulate during a calibration.
Offset Threshold Value for Defects	Threshold value used during offset calibrations to bound values.
Gain Scaling	If disable is selected, gain scaling will be off, else if enable is selected, gain scaling will be on.
Auto Calibration Information	Auto offset calibration data, enabled or disabled. If disabled, the other data does not need to be entered.
Min Delay	The minimum time delay between auto offset calibrations.
Post-Exposure Delay	The amount of time delay required after an exposure.
Accumulation Acquisition Information	Information specific to accumulation type ascquisitions.

Acquisition Type	This box will list the various types of acquisitions for accumulation type modes. • Use Valid X-rays On and stop at N frames – accumulation will begin when the valid x-rays on sync signal is received and stop after N frames are collected. • Use Valid X-rays On/Off – accumulation will start and stop based on valid x-rays on/off signals respectively. • Use auto-sense On and stop at N frames – accumulation will begin when x-rays are automatically detected and stop when N frames are collected. • Use auto-sense On/Off – accumulation will start and stop when x-rays are automatically detected and when x-rays are no longer detected.
Number of Acquisition Frames	If the acquisition type is one that stops at N frames, this value will define N.
Scaling Information	Defines how an accumulation type image is scaled.
Target Value	If scaling is defined as anything other than None, this value will be the value around which the data is scaled (i.e. scaled up if up is selected, down if down is selected and as appropriate if both is selected).
Pixel Information	Information pertaining to how pixels will be rounded.
Recursive Filter	The fractional contribution to each output frame by the data already in the recursive filter buffer.
Pixel Saturation Threshold Value	The value at which a pixel is considered to be saturated.
Pixel Saturation Replacement Value	The value with which to replace a pixel that is determined to be saturated.