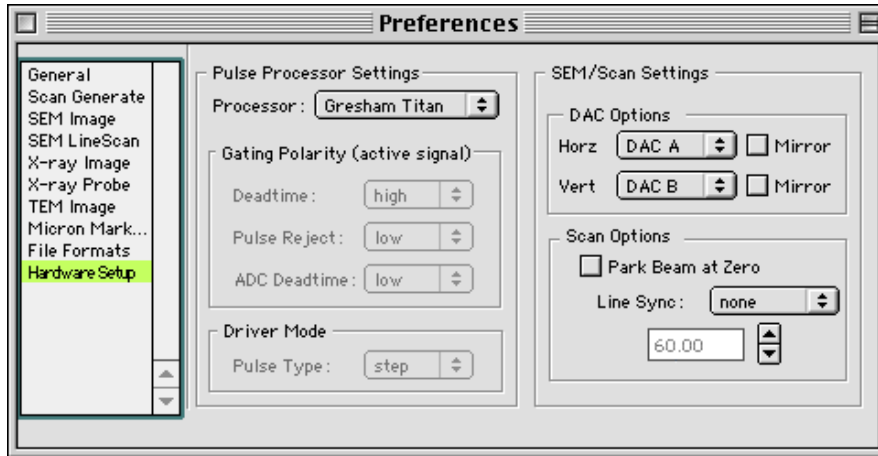


Hardware Setup Preferences

[\[download as pdf\]](#)

current for: v1.5.6

The Hardware Preferences panel is shown below:



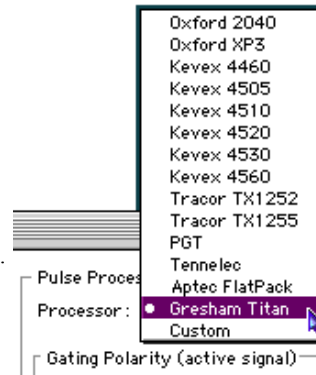
Other Preferences

- [General](#)
- [Scan Generate](#)
- [SEM Image](#)
- [SEM Linescan](#)
- [X-ray Image](#)
- [X-ray Probe](#)
- [TEM Image](#)
- [Micron Mark...](#)
- [File Formats](#)
- [Hardware Setup](#) •**

• *Pulse Processor Settings*

◦ *Pulse Processor*

A list of common pulse processors that the SEII interfaces to are shown to the left. To configure the setup, select the Pulse Processor model via the menu. This selection determines the logic definitions for several hardware signals that are part of the pulse processor interface. The **Custom** setting allows the user to implement his or her own polarity definitions.



◦ *Gating Polarity*

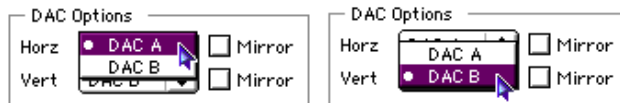
- **Deadtime.** Also referred to as Livetime if the polarity definition is switched, this is a TTL signal **from the pulse processor** indicating that x-ray pulses are not being processed due to a pulse pileup condition. A **real** time clock in the SEII counts off total seconds since the acquisition was started. A parallel **live** time clock increments with the real time but is stopped **by the pulse processor** via this signal whenever deadtime is being accrued. At the bottom of the pulse processor menu appears a **Custom** selection which allows the user to define the Deadtime polarity as desired.
- **Pulse Reject.** A TTL signal **from the pulse processor** indicating that unacceptable pulse pileup has occurred and that the analog signal on the PHA Input line should be considered invalid and ignored. As a general rule, pulse processors with a step-function output (see below) do not send a pulse reject signal. At the bottom of the pulse processor menu appears a **Custom** selection which allows the user to define the Pulse Reject polarity as desired.
- **ADC Deadtime.** Also known as ADC Busy, this is a TTL signal sent **to the pulse processor** by the SEII. It indicates that the MCA is busy and temporarily cannot accept any new pulses. This signal is sent to the pulse processor for deadtime correction. In some cases this line is not present or can be left disconnected with little error. However, for some pulse processors (notably KeveX), this signal acts as a **start-of-conversion** pulse and **must** be present for proper operation. At the bottom of the pulse processor menu appears a **Custom** selection which allows the user to define the ADC Deadtime polarity as desired.

Note: Choosing incorrect polarities will not harm anything, but may cause the system to appear to stop acquiring a spectrum, or lead to results which are not easily interpreted.

- **Driver Mode.** For analog pulse processors the output **pulse type** is either a step function or a quasi-gaussian (no-step) function. For the SEII Rev 2.2 card and above, the software automatically selects the pulse type according to the pulse processor selected. For Rev 2.1 cards (PCI or NuBus) this will be a selectable option if a custom pulse processor is chosen. If your pulse processor is configured in a non-standard fashion, or if your pulse processor does not appear in the dialog list, please consult with 4pi for directions. We do not recommend changing the pulse type without first consulting 4pi. **Incorrect pulse type will lead to spectrum artifacts.**

- **SEM/Scan Settings**

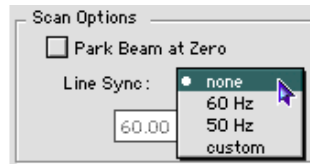
- **DAC Options**



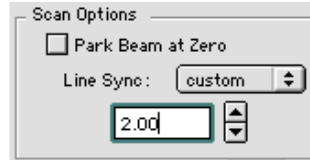
- **Horizontal.** Determines which DAC generates the fast (line) scan. DAC A is default. Swapping to DAC B has the effect of rotating the scan by 90°. Caution: the distinction is important for some microscopes, because there may be limits on how fast the line scan input can be driven. To slow the fast scan down, increase the **Pixel Delay** ([Scan Generate Prefs](#)). The user should select the assignments which cause the preview image to match the microscope CRT image with respect to orientation.
 - **Vertical.** Determines which DAC generates the slow (frame) scan. DAC B is default. Swapping to DAC A has the effect of rotating the scan by 90°. The user should select the assignments which cause the preview image to match the microscope CRT image with respect to orientation.
 - **Mirrors.** Reverses the direction of scan for the given DAC.
- **Scan Options**
 - **Park Beam at Zero.** In the default mode of operation (unchecked), the Spectral Engine positions the electron beam at the start of a line, then acquires the line, and then leaves the electron beam at the end of the line while the data are transferred. Then, after transfer, the beam is retraced. This checkbox causes the beam to retrace **before** the data are transferred. The effect is to create a very large horizontal retrace delay. Some microscopes need this extra time for the beam to settle. If a compression distortion over a large fraction of the horizontal scan appears, turn this checkbox on.
 - **Line Sync.** If noise appears in an image, this menu can be used to synchronize the beam scan to the noise. Any noise in the system that exactly matches the entered frequency will then appear to be absent from the image (in fact, it will not be absent, but it will no longer be apparent to the eye). Depending on the exact

values for dwell and pixel delay, the values selected here may or may not slow image acquisition.

When set to "none" (default), scan generation proceeds normally. If set to 60Hz, each linescan starts on a 16.6667 millisecond boundary. If set to 50Hz, each linescan starts on a 20.0000 millisecond boundary.



User-defined values may be set by selecting "custom" and entering a value from 2.00 to 200.00 in 0.01 Hz increments:



The arrow tools can be used to increment or decrement in steps of 0.01 Hertz:

