High Voltage Control Details

High Voltage power supply: Vern Kiebler 6900 +10KV supply (double width NIM module, two HV supplies)

Voltage Monitor Output: -1V = 1KV
Current Monitor Output: 1V = 100 uA
Remote Programming Input: 1V = 2KV

Digital to Analog Converter: Joerger DAC-16 16 channel 12 bit DAC

Configured for 0 - +5V output

Analog to Digital Converter: Lecroy 2232A 32 channel 12 bit ADC

Configured for 0 - +5V input (differential, so voltage monitor can be connected to give a positive reading)

Signal Conditioner: Lecroy 3540.

This module contains 16, 100X amplifiers

The signal conditioner is used with the current monitor, to give an effective full-scale range at the ADC of 0 – 5 uA. (0 – 0x0fff). Resolution is 1.22 nA

Voltage Readback is 0 – 5KV full scale. Resolution 1.22 V

Voltage control is 0 – 10 KV full scale (0 – 0x0fff). Resolution 2.44 V

Conversion Factors:

Voltage Readback: Volts = ADC_reading * 5000 / 4095
Current Monitor: nAmp = ADC_reading * 5000 / 4095
Voltage setting: DAC_data = 4095 * desired_voltage /10,000

Observations:
On the one unit I have(two supplies), the voltage reading is very stable – just 1 count of "noise" at times, depending on the exact voltage setting.

The current monitor is quite noisy, having a spread of 18 counts (20 nA) or so, at any current. The majority of this comes from the HV supply itself, since providing the same voltage from a bench supply through an attenuator only shows a 3 count spread.