

# **RadGen Random Number Generation Software**

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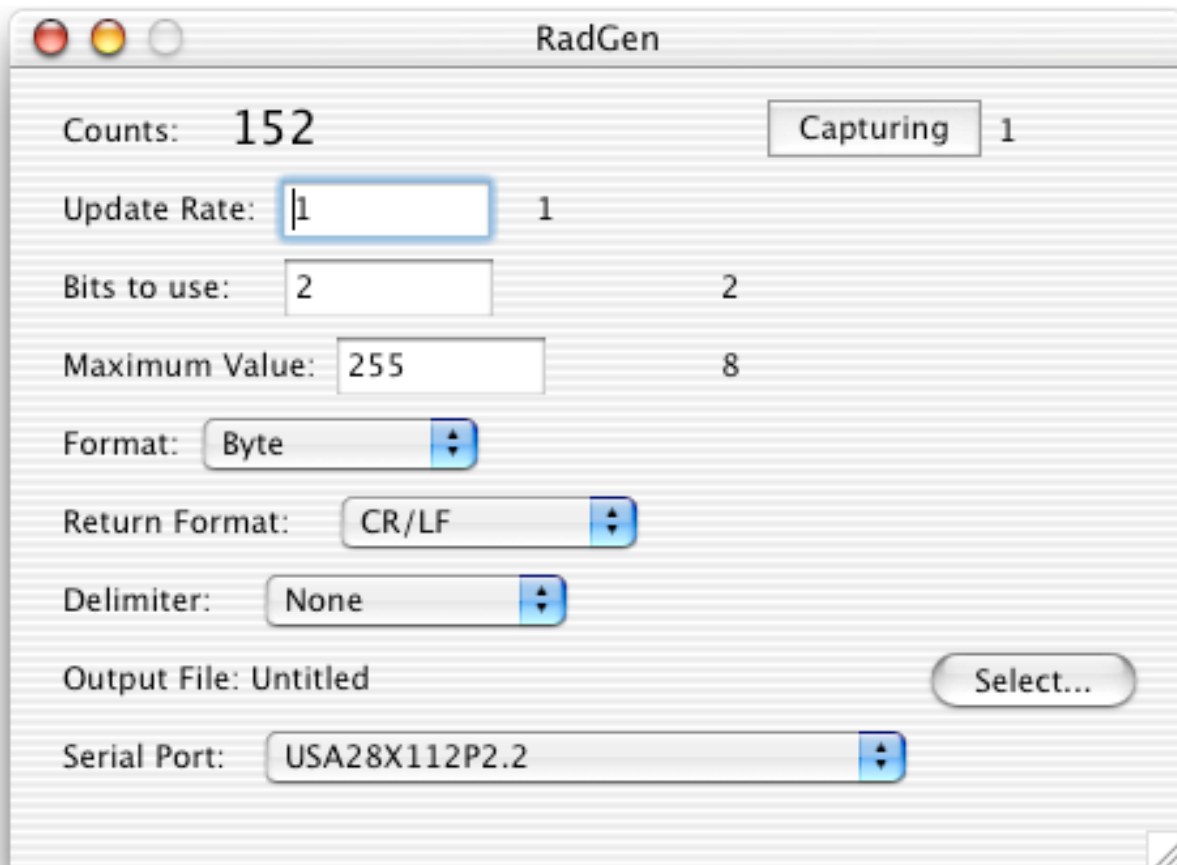
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## Overview

RadGen will allow you to generate a sequence of random numbers, using your GM-10 or GM-45 radiation detector from Black Cat Systems. It works with both the USB and RS-232 versions. The random numbers are stored in a file.

Here's a screenshot of the program running:



There are many settings that control the generation of random numbers, each is explained below:

**Update Rate:** This is the number of seconds between readings. The software will accumulate the counts from the radiation detector during this time period. Shorter periods will allow random numbers to be generated more quickly, at the possible loss of randomness. The value chosen will depend on the count rate. In this case, several of our vaseline glass beads were placed above a GM-45 detector window. This lead to a very high count rate, about 7500 CPM. As a result, we felt comfortable taking one second readings. If only background radiation was used, much longer periods would be necessary, perhaps even 60 seconds.

**Bits to use:** This specifies how many bits from the reading to use. The more bits, the faster

random numbers can be generated, but the more likely that non-random numbers will be generated. In this case, due to the high counting rate, the lower 2 bits are used.

**Maximum Value:** This specifies the maximum value of the random numbers generated. The minimum is always zero, and all numbers must be integer. The largest allowed maximum value is 65535, allowing for 16 bit numbers to be produced. If you need larger numbers, you can perform post processing using smaller random numbers to generate them.

**Format:** This allows the choice of format for storing the random files in the file. The choices are:

**Decimal:** Stored as an ASCII decimal number, good for reading into a spreadsheet or other program.

**Hex:** Stored as an ASCII hexadecimal number.

**Byte:** Stored as a raw byte. If this option is chosen, be sure to set the maximum value to 255.

**Return Format:** If returns are selected as the delimiter, specifies if they should be just a Carriage Return (usually used with Unix), just a Line Feed (usually used with Macintosh) or both (usually used with Windows/PC)

**Delimiter:** Specifies what is stored between each random number in the file. Choices include: Return, Space, Tab, Comma, or None. Be sure to select None if you are storing bytes (binary data) in the file.

**Output File:** Click on the Select button to specify the file to write to. If the file already exists, data will be appended to the end of it.

**Serial Port:** A popup menu of all of the serial ports on your computer. Select the one the GM-10/45 is connected to.

**Capturing:** Click on this button to start capturing data and generating random numbers. The number to the right shows how many numbers have been generated so far.

**Num:** The number of random numbers to generate. Leave this blank to continuously generate them.

The current counts per reading is also displayed, in the upper left corner of the window. This is a handy way of making sure you are getting data from your radiation detector.

## Revision History

**April 29, 2003 - Version 1.0.1 released**  
Initial release.

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