

GAMMA-RAD5 QUICK START GUIDE

Equipment List for an Amptek Gamma-Rad system:

- Gamma-Rad5 X-Ray and Gamma-Ray Spectrometer.
- USB cable.
- +5 VDC power supply (included but not needed when USB is used)
- Amptek Installation CD.
- A PC (supplied by the user) with Windows XP SP2 or higher.

NOTE: The Amptek Gamma-Rad5 contains other Amptek products. The digital pulse processor inside the Gamma-Rad is the DP5G, and the power supply and connector board is the PCG. Please refer to the user manuals and specifications of those products (included on the CD) for more complete information.

Software Installation

1. Install the WINUSB Driver. Please see the “WINUSB Driver Installation Instructions” for this procedure.
2. Copy the DPPMCA display and acquisition software to the local PC. Locate the directory called “DPPMCA” on the Amptek Installation CD under the “DP5 X-123 Gamma-Rad5\DP5 FW6” directory and copy the entire directory onto your computer. In that directory is the “DPPMCA.exe” file. Open this file to start the software. You can right-click on the DPPMCA.exe file and create a shortcut which can be placed on your desktop for easy access.

Gamma-Rad5 Connection Instructions

1. Verify that the Gamma-Rad5 is unplugged (both USB and power).
2. Use the USB cable to connect the Gamma-Rad5 USB connector to the PC USB connector. The Gamma-Rad5 is fully powered by the USB port. There is no need to use the power adapter when connected with USB.

NOTE: Grounding is critical to obtaining the best performance. Specifically, we strongly recommend using a single point ground for the system. To ensure this, use a 3-prong to 2-prong adapter on the power supply of any notebook computer. This prevents the notebook from introducing a second ground into the system.

Quick Use of the Gamma-Rad5

1. Connect the Gamma-Rad5 and PC as described in the previous section.
2. Launch the DPPMCA software by opening the DPPMCA.exe file.
3. When the “Select Communications Port” box appears, select the interface you want to use and click OK. The unit should now be connected to the software. To verify this, confirm that a serial number is shown at the top right corner of the software.
4. The Gamma-RAD5 remembers the last configuration used. Out of the box, this will be the configuration used to generate the test sheet included with the unit. If that configuration has been lost then load a configuration file. To select a configuration select “DPP Setup” under the “DPP” dropdown list in the software or by clicking the “acquisition setup” button on the toolbar.
5. Now that the Gamma-Rad5 has the appropriate configuration, an acquisition can be started. Place a source in front of the detector. To start an acquisition, press the space bar. The space bar will also stop an acquisition which is in progress.
 - It may be necessary to adjust some of the thresholds which prevent low-end noise and other unwanted counts from affecting the spectrum. Please see the Notes and Troubleshooting section at the end.
6. A common adjustment is to change the gain of the Gamma-Rad5. This can be changed in the “Gain & Pole Zero” tab of the properties dialog box. It is necessary to readjust the thresholds whenever the gain is changed. The Gain of the system can also be adjusted by changing the High Voltage on the photomultiplier tube inside of the Probe itself. This can be done on the power tab of the DPP properties by setting the High Voltage Bias.

Notes and Troubleshooting:

- By default, the software accumulates the counts (MCA mode). During set-up it may be convenient to use “DELTA” mode, where counts are not integrated but are updated every second (i.e. only one second’s worth of data are displayed every second). Click the toolbar icon marked “MCA/DELTA Mode” to toggle between DELTA and MCA mode.
- If no spectrum appears, check that the system is acquiring data. The “Status” on the right hand Info Panel should read “acquiring.”
- Sometimes no spectrum will appear if PUR is enabled and the Fast Threshold is set improperly (in the Properties-Shaping tab). Turn PUR off and check if the spectrum appears. If it does, then the Fast Threshold needs to be set correctly as described below.
- The Fast and Slow Thresholds must be adjusted manually in the Gamma-Rad5. First turn off PUR as described above. Then click the cursor to channel 1 and press F8. This will set the Slow Threshold (LLD) to channel 1. This will show the noise of the system. Click the cursor just to the right of the noise and then press F8. Press the “A” key to clear. There should be no noise counts accumulating. Note that since the NaI detector is very efficient it will produce counts due to the normal background radiation from the Earth environment. Put the device into “Delta” mode by clicking the Delta button on the toolbar. On the right hand info panel make a note of the Counts. Open the DPP properties and go to the Shaping tab. Adjust the Fast Threshold until you get slightly more Input Counts than Counts. Now turn on PUR and click OK. Click the Delta button to get back to normal MCA mode and put the source back in front of the detector. The Input Counts should slightly exceed the Counts.
- If problems persist, there may be a communication or configuration problem. Unplug the Gamma-Rad5 USB cable (and power adapter if being used) and close the software. Then open the software and plug in the Gamma-Rad5 USB cable. In the bottom left-hand corner of the software you should see a “1 Detected” for the USB connection. Then go to the DPP Properties page and reload the appropriate default configuration as discussed above and try the acquisition again.

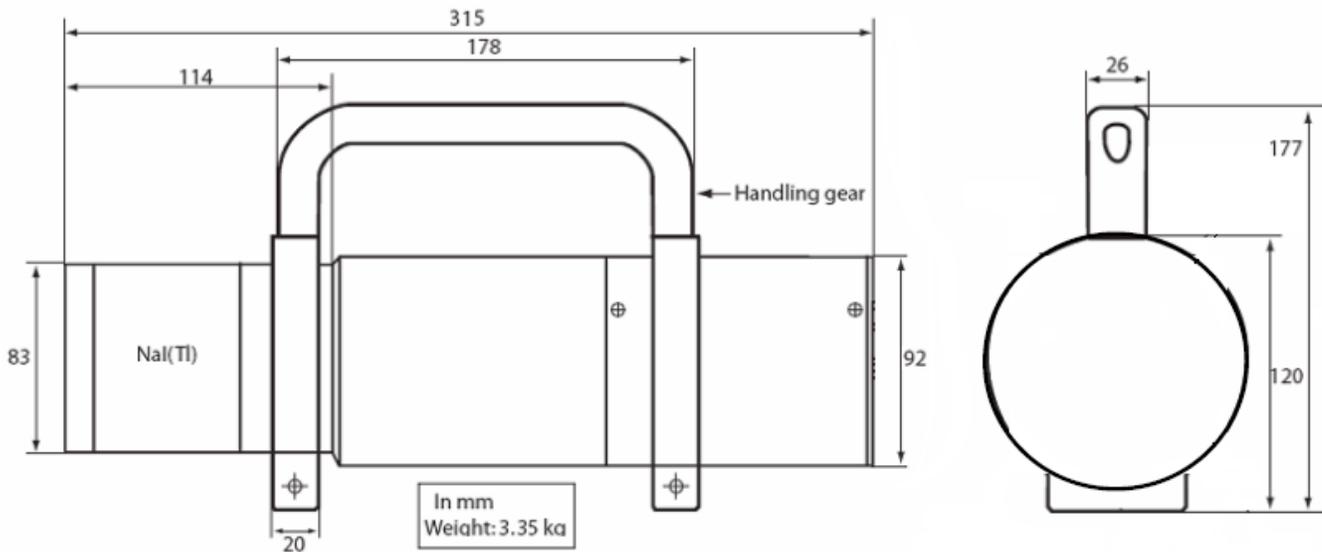


Figure1. Gamma-Rad5 Mechanical Dimensions.

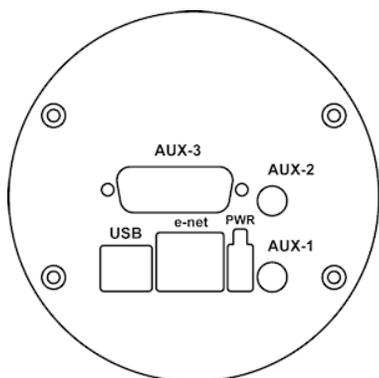


Figure 2. Gamma-Rad5 Connectors.