

Geiger-Müller Box 1000574

Instruction Sheet

10/15 Hh



1. Safety Instructions

The Geiger-Müller Box is only designed for educational purposes. Any counting rates determined by using it may never be taken as a basis for a quantitative assessment of a potential health risk from radioactivity.

- Avoid any unnecessary exposure to radiation or radioactive contamination of people or of the environment!
- Any unavoidable exposure of people or of the environment to radiation or radioactive contamination must be kept below the statutory limits and as low as possible, taking into account the latest scientific and technical knowledge as well as all the circumstances in the particular instance.

2. Description

Sensor box that can be connected to a Geiger-Müller counter tube such as 1001035 (also required: HF Cable, 1 m, 1002746).

Radioactive decay events are counted by

outputting a digital TTL signal to the “Digital Input” socket of the 3B NET/log™ unit.

The sensor box can also be used by connecting to the analog input of the 3B NET/log™ unit.

The sensor box is recognized automatically by the 3B NET/log™ unit.

3. Equipment supplied

- 1 Geiger-Müller box
- 1 miniDIN 8-pin connector cable, 600 mm long
- 1 Instruction sheet

4. Technical data

Counter tube voltage: 500 V via 1 MOhm
Sensor connector: BNC socket

5. Operation

- Connect the Geiger-Müller box to the digital input of the 3B NET/og™ unit.
- Connect a Geiger-Müller counter tube (not supplied) to the BNC socket using an HF cable and remove its protective cap.
- Set up the Geiger-Müller counter tube in the beam path of a permitted radiation source such as the ²²⁶Ra 4 kBq radiation cartridge (1006797).
- Start the 3B NET/lab™ unit and select digital input A.
- Select the time-scale and the number of data points.
- Start the measurement and read off the number of pulses per unit of time.
- For low count rates, take note of the background count.
- For high count rates, take the lag time of the counter tube into account.
- Replace the protective cap on the Geiger-Müller tube before it is stored.

6. Applications

Measurements of radioactive radiation in the natural environment and from weak radioactive sources.

7. Sample Experiment

Frequency distribution of decay events in the beam from a radioactive source

Apparatus required:

1 3B NET/og™	1000539 / 40
1 3B NET/lab™	1000544
1 Geiger-Müller box	1000574
1 Geiger-Müller counter tube	1001035
1 HF cable, 1 m	1002746
1 Radiation cartridge, ²²⁶ Ra, 4 kBq	1006797

- Set up the experiment as shown in Figure 1. Handle the Geiger-Müller tube and the radiation cartridge with care.
- On the 3B NET/lab™ unit, open the application (template) for the experiment on the frequency distribution of decay events in the beam from a radioactive source.
- Start the application program and record the decay events.
- Then count the number of decay events within a defined time interval (Fig. 2).
- Repeat the measurement(s) and evaluate the data.
- From the results of the measurements, draw the frequency distribution curve and compare it with a Poisson or Gaussian distribution.



Fig. 1 Experiment set-up for recording decay events in the beam from a radioactive source

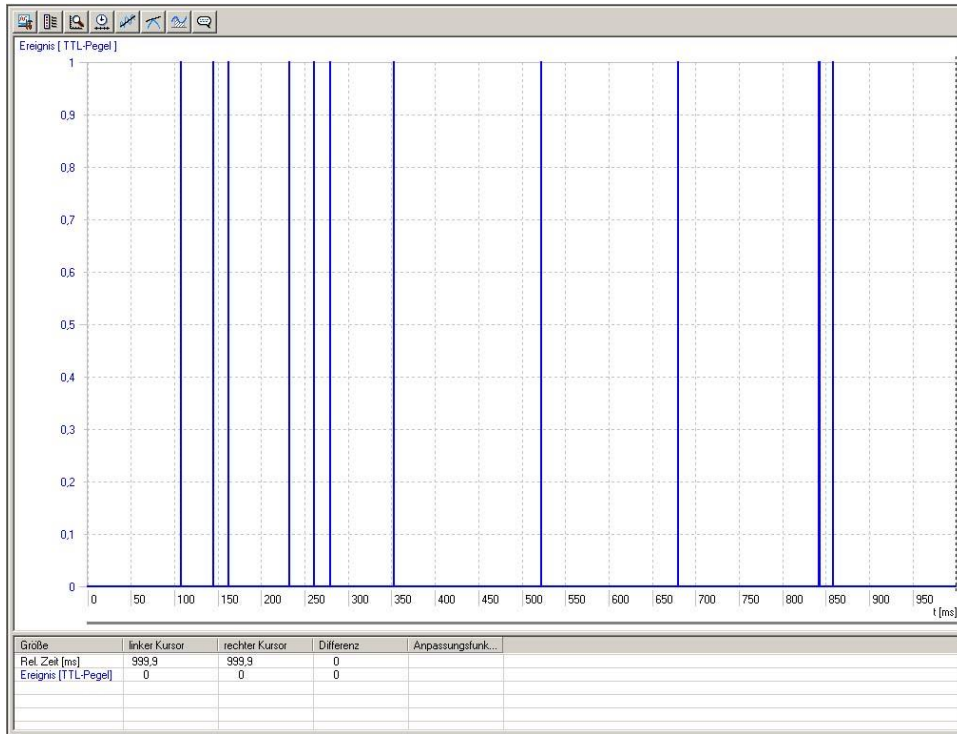


Fig. 2 Measurement of the number of decay events displayed on screen in 3B NET/ab™

