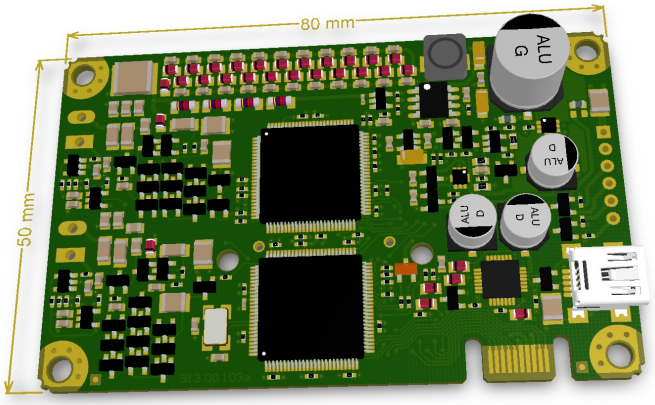
GM-Probe – OEM module 913 00 61

The Geiger-Müller OEM module is the embeddable version of our dose rate probe type 70 091. It is also intended to be an evaluation kit to operate the Geiger-Müller tubes easily on your PC or notebook. The module contains all electronic parts which are necessary for operation – High voltage generation, signal conditioning, microcontroller with integrated measuring software and finally a USB interface for easy connection to the PC. It provides two ports for the operation of two different Geiger-Müller tubes. Simply connect the counter tubes and then enter the sensitivity as a parameter into the microcontroller. The measurement software then provides in addition to the count rate, the dose rate in Sv/h, the accumulated dose in Sv, and the statistical accuracy of the measurements.

For those who want to integrate the module in your application it is also possible to connect an external power supply of 3.3 … 12 VDC. The communication can be directly connected to the microcontroller via UART with 3.3V logic level.



So you can easily create instruments for determining the dose rate, both in the field of environmental radioactivity and in radiation fields caused by radioactive sources or X-ray equipment.

The use of energy compensated Geiger-Müller tubes in accordance with IEC 60846-1 makes it suitable for measuring ambient dose equivalent rate $\dot{H}^*(10)$ and ambient dose equivalent $H^*(10)$.

The modular design allows very well the adaption of the overall system to the respective measuring task. It is possible to connect up to two independently operating Geiger-Müller tubes. These counter tubes can be of different types. This makes it possible to define the measuring range, the measuring time and if necessary the energy response of the system (other than $\dot{H}^*(10)$). Sophisticated statistical methods of calculation in connection with a dead time independent measuring method then determine a total value from these up to 4 independent measurements, weighted by the respective statistical accuracy. The statistical accuracy of the measurement is also available for further processing.

Combination of GM – tubes	Low dose High dose	1 x 70 013 1 x 70 017	1 x 70 031 1 x 70 017	2 x 70 031
Measuring range dose rate		300 nSv/h - 5 Sv/h	100 nSv/h - 5 Sv/h	50 nSv/h - 10mSv/h

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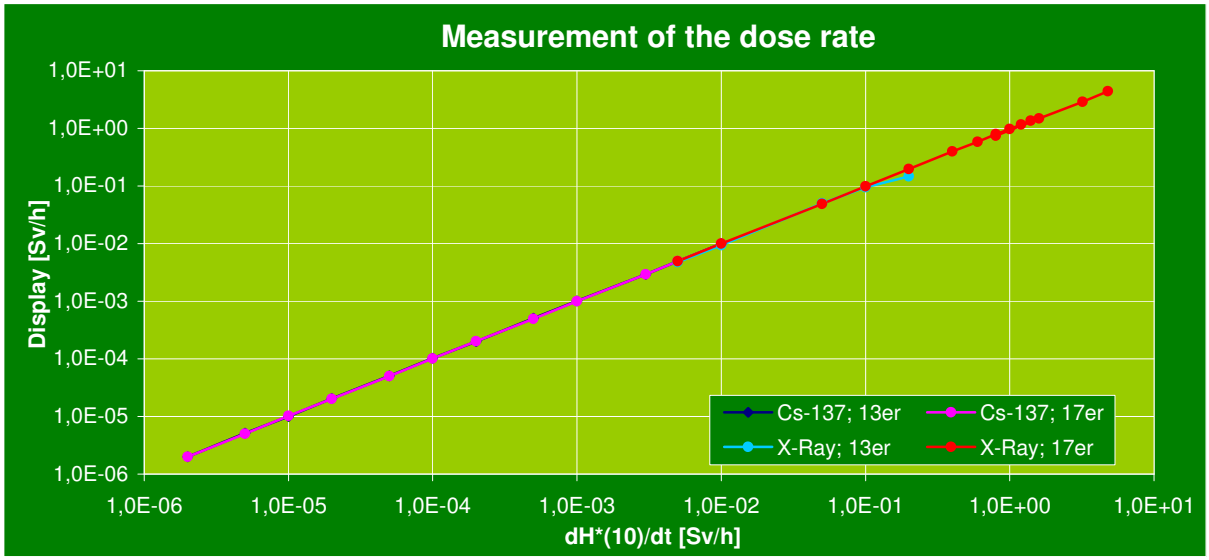
The OEM module has an integrated alarm system. The alarm conditions can be parameterized by the software. In addition, the alarm signals can be queried via the serial interface. Three algorithms allow alarm conditions to be detected:

- **Dose rate alarm limit:** If a predefined limit is exceeded, an alarm is triggered. The alarm limit can be set via the software interface.
- **Peak-Finder:** If the dose rate increases significantly, an alarm is triggered. The greater the statistical precision of the measurement, the smaller the changes in the dose rate that can be registered (number and size of the counter tubes). The sensitivity of the Peak-Finder can be set via the software interface.
- **Dose alarm limit:** If a predefined limit is exceeded, an alarm is triggered. The alarm limit can be set via the software interface.



Technical data:

Measured quantities:	Ambient dose equivalent rate $\dot{H}^*(10)$ Ambient equivalent dose $H^*(10)$
Measuring range, dose rate:	depending on the used GM-counters,
Measuring range, dose:	15 nSv ... 184 MSv, up to $2.14 \cdot 10^9$ s
Energy range:	depending on the used GM-counters
Linearity error:	< 5% of the specified rated operating ranges
Method of measurement:	independent of the dead time
Power supply:	• 3.3 ... 12 V DC, 50mA • 5 V DC, 50 mA (operation by USB)
Operating temperature range:	-30 °C ... +60 °C
Available Interfaces:	• UART, 3.3V-Logic level • USB 2.0

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