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DOSE RATE PROBES

Geiger-Mueller Probes – Concept

The Dose Rate Probe type 70 091 is a detector for measuring the ambient dose equivalent rate $\dot{H}^*(10)$ and the ambient dose equivalent $H^*(10)$ both in the area of environmental radioactivity and in intensive radiation fields. It is equipped with up to four energy-compensated GM counter tubes.
A new operating method independent of dead time is applied. It is distinguished from usual operating mode due to excellent linearity up to the upper limit of the measuring range.
The output value of the probe results from the dose rate data of the individual channels, considering their statistical accuracies. This value is used to calculate the cumulative dose since the beginning of the measurement. By default, a dynamic algorithm is applied, in which a so called “peak finder” identifies statistically significant changes and controls the data integration. Switching off the “peak finder” results in static measurements related to the total integration time.
Various devices equipped by different types of GM counter tubes are offered. This allows the user to find optimal solutions in terms of dose rate ranges and counting statistics.
The electronic of the probe is either implemented in a common housing (with IP65 protection level) or connected to the GM counter tubes by up to 20 m long cables. The modular design enables to locate the highly integrated electronic circuits behind suitable shieldings in a place well protected from irradiation.
A Dose Rate Probe of modular design, for example, is deployed for the management of radioactive waste: up to 16 detectors are simultaneously in operation, controlled by an 8x2-channel processor unit. Various Dose Rate Probe KITs (without housing) are designed for individual customer applications.

Technical data

Measured quantities:	Ambient dose equivalent rate $\dot{H}^*(10)$ Ambient dose equivalent $H^*(10)$
Measuring range, dose rate:	depending on the used GM counters, min. 150 nSv/h ... max. 100 Sv/h
Minimum dose value:	5 nSv
Energy range:	determined: 25 keV ... 10 MeV according to IEC 60846-1: 35 keV ... 4.5 MeV
Linearity error:	< 5 %
Method:	independent of dead time
Operating voltage:	DC 10 ... 30 V, <2W (nominal: DC 24 V) DC 5 V, 95 mA (operation via USB)
Operating temperature:	- 40 °C ... + 70 °C
Protection rating:	IP 65
Available Interfaces:	RS-485 with switchable termination resistors, USB 2.0
Alarm-relay contacts:	AC/DC 30 V, 500 mA, potential-free
Accessories:	Interface converter/power supply

Dose Rate Probes in aluminum housing

- Measuring value: ambient dose equivalent rate Ḣ*(10)
- Plug Binder Series 723-5p stereo
- Power supply: DC 10 ... 30 V
- Data Interface: RS-485
- Energy range: 25 keV ... 10 MeV

091 00 04	091 00 06
· Measuring range Ḣ*(10): 0.3 µSv/h – 2.5 Sv/h · GM tubes 13/17	· Measuring range Ḣ*(10): 0.25 µSv/h – 2.5 Sv/h · GM tubes 13/13/17
091 00 09	**091 00 10**
· Measuring range Ḣ*(10): 0.3 µSv/h – 100 Sv/h · GM tubes 13/18	· Measuring range Ḣ*(10): 0.15 µSv/h – 100 Sv/h · GM tubes 31/31/18

Multi channel processor unit for remote detectors

- Measuring range depending on the connected detectors
- Geiger-Mueller detectors in aluminum housing

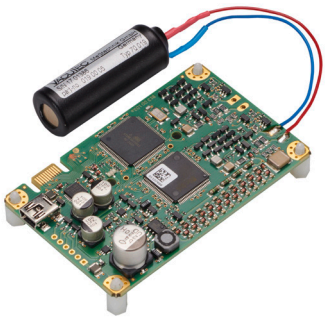
091 00 02	091 00 11
· 2-channel processor unit for 2 separate detectors	· 8x2-channel processor unit for up to 16 separate detectors

Geiger-Mueller KITs without housing

- Measuring value: Ambient dose equivalent rate Ḣ*(10)
- USB mini (5 V power, 100 mA)
- Energy range: 35 keV ... 4.5 MeV
- Cable USB, DRMoni

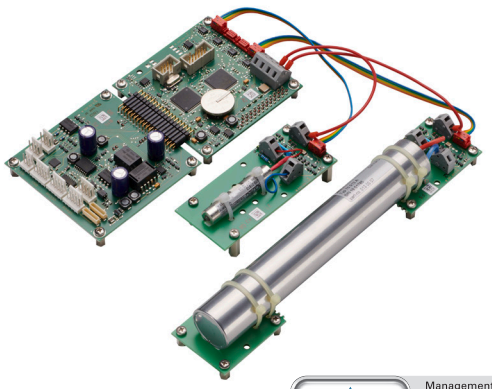
- Processor Unit: 913 00 61
- Data Interface: UBS 2.0, UART, 3.3 V Logic
- Power Supply: USB, DC 3.3 V ... 12 V

091 00 22	091 00 26
· Measuring range Ḣ*(10): 0.3 µSv/h – 2.5 Sv/h · GM tubes 13/17	· Measuring range Ḣ*(10): 0.15 µSv/h – 40 mSv/h · GM tubes 31/31
091 00 29	**091 00 30**
· Measuring range Ḣ*(10): 0.25 µSv/h – 80 mSv/h · GM tubes 13/13	· Measuring range Ḣ*(10): 0.2 µSv/h – 100 Sv/h · GM tubes 31/18



- Processor Unit: 913 00 22 + 913 00 31
- Data Interface: UBS 2.0, RS-485, RS-232
- Power Supply: USB, DC 10 V ... 30 V

091 00 28	091 00 32
· Measuring range Ḣ*(10): 0.3 µSv/h – 2.5 Sv/h · GM tubes 13/17	· Measuring range Ḣ*(10): 0.2 µSv/h – 100 Sv/h · GM tubes 31/18



Further combinations of processor units and Geiger-Mueller tubes upon request.

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