

**Technical data:**

Voltage supply:	4 x 1.5 V AA batteries or rechargeable cells or external 6 - 12 V power supply (see accessories)
Display:	LED, 3 1/2 digits, 26 mm in size
Case:	plastic, ABS
Dimensions:	approx. 160x120x45 mm
Weight:	approx. 475 g



The Geiger-Mueller counter requires an external counter tube, which is connected to the BNC jack (2) using a shielded cable with BNC plug. The tube is built into a plastic case with a removable protective cap. This tube features an extremely thin mica window, ensuring accurate detection of alpha, beta and gamma radiation.

With the protective cap on, the tube cannot, of course, detect alpha radiation, while beta detection is limited. On the other hand, when the protective cap is removed, the tube is extremely sensitive since the mica window, easily damaged, is openly accessible. Power is supplied to the tube by the measuring instrument in the form of stabilized high voltage. Contact with the BNC plug should be avoided during measurement, since this induces stray mains voltage which may result in false signals.

**Recommended accessory:**

P3130-1P 12 V transformer as a power supply for the Geiger-Mueller counter with a 230 V AC/50-60 Hz mains outlet

Take care that the device does not fall. In the event that this does occur, have the device examined or repaired by authorized service personnel.

In the event that unforeseen difficulties arise during operation, switch off the device and contact the dealer.

Do not subject the device to dripping or sprayed water.

Use only fuses of the type and current rating indicated.

The device contains no components requiring maintenance on the part of the user (except for replacing batteries).

This device may only be operated by qualified personnel or by persons they instruct in its use.

**NTL** Fruhmann GmbH, 7372 Karl, Austria

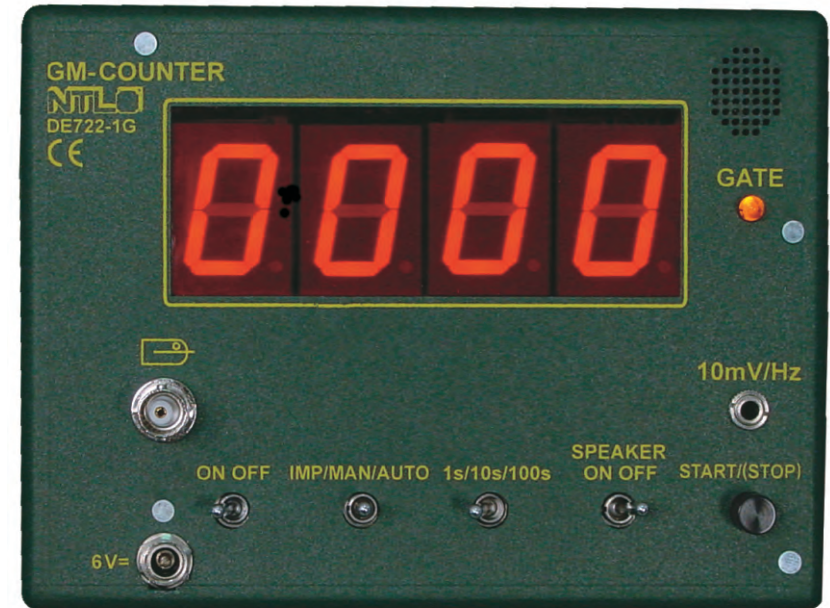


**NTL**  
**INNO**SYSTEM

## Geiger-Mueller Counter, "inno" DE722-1G

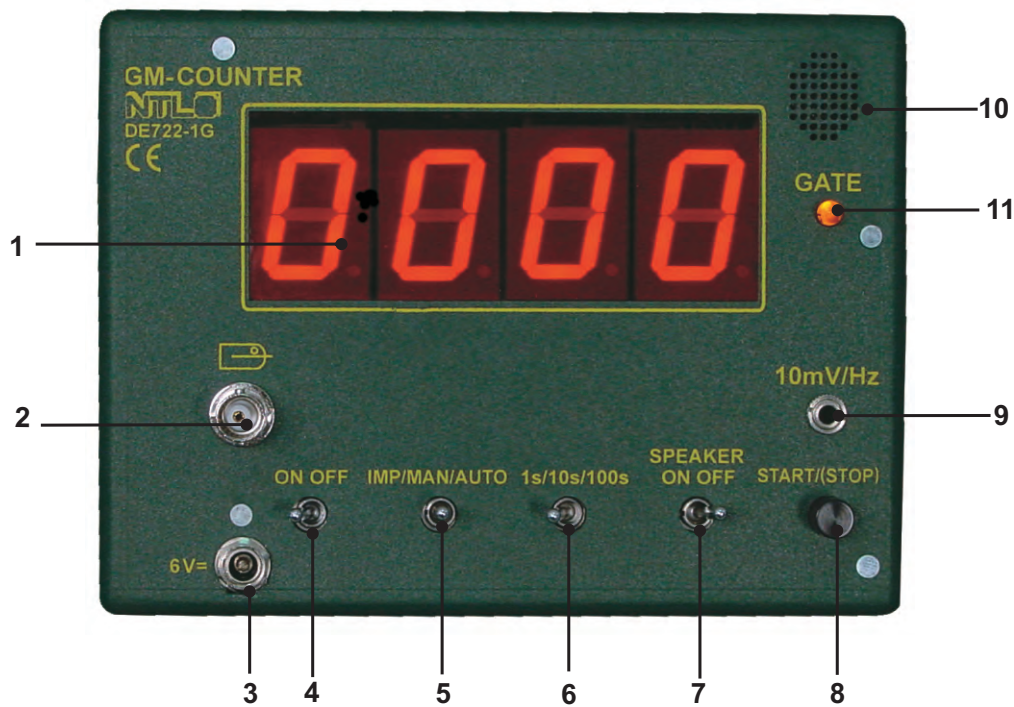
This instrument is used in demonstrations and students' experiments to measure in quantitative terms ionizing radiation. Featuring compact dimensions and a wide array of measurement options, it is easy to operate and battery-powered, making it a valuable aid in physics classroom instruction.

Readings are taken from an LED display, readable even from a distance.

**Required accessory:**

DR291-1Z Geiger-Mueller tube for measuring alpha, beta and gamma radiation





- 1 3 1/2 digit LED display, 26 mm in size
  - 2 BNC jack for connecting the Geiger-Mueller tube
  - 3 2.5 mm jack for an external 6 - 12 V power supply
  - 4 ON/OFF switch
  - 5 Operating mode selection switch
  - 6 Counting time selection switch
  - 7 ON/OFF switch for loudspeaker
  - 8 Start/stop switch for manual selection of measurement period
  - 9 Analogue output for analogue measuring devices or PC interfaces
  - 10 Built-in loudspeaker
  - 11 Display of counter gate state
- 4 magnets on the back for board-mounting

### Operation / technical data:

**POWER SWITCH:** (4) Used to put the instrument into operation.

**MODE SWITCH:** (5) When set to the IMP (impulse) position, the counter gate is opened the first time the START switch (8) is pressed with the display set to zero. The gate is closed when the switch is pressed again. This operating mode, allowing measurement for a user-defined time period, is preferably used together with a stopwatch.

When set to the MAN (manual) position, the counter gate is opened once the START switch (8) is pressed with the display set to zero. The gate remains open for the period selected with the TIME switch (6) and then closes automatically. The display shows the current count. This operating mode is designed for one-time processes and for cases when all students are to view the same reading.

In the AUTO (automatic) position, the counter gate remains open for the period of time selected with the TIME switch (6), with the result then transmitted to the display and the counter set to zero. The cycle begins again from the start. The START switch (8) has no function here. This operating mode allows measurements to be taken continuously, while only the current reading is shown. The user is thus not confused by the counter being incremented continuously.

**TIME SWITCH:** (6) Used in the MAN and AUTO modes for selecting a valid measurement period of 1, 10 or 100 seconds.

**SPEAKER SWITCH:** (7) Used to switch the built-in loudspeaker on or off. With the speaker switched on, each counted impulse is audible as a click or, at higher radioactivity levels, as a buzzing sound.

**START SWITCH:** (8) Used to start and stop counting in IMP mode and start it in MAN mode. It has no effect in AUTO mode.

The GATE LED (11) displays the state of the counter gate. The LED remains lit as long as the gate is open. This is especially useful at lower counter rates and in the IMP position.

The instrument also features an analogue output (9). The 3.5 mm phone jack receives the current signal in the form of 10 mV per Hertz. The output port is protected against short circuiting and up to 10 V of counter-voltage and has an internal resistance rating of 1 kOhm. It is designed for connecting the device to a multi-meter in order to be able to visibly follow the decay characteristics of samples with a short half-life. It also supports further processing of measurement data using computer-assisted measurement systems.

The instrument is powered by AA batteries. When the latest generation of cells, having a capacity of approx. 3 Ah, is used, batteries last long enough for about 6 hours of operation. In order to avoid damage to the instrument through possible leakage, batteries should be removed from the instrument if it is not used for several months.

The device may also be powered using a mains transformer. This may be connected by way of a DC cable and a 2.5 mm DC jack. Using faulty batteries or the wrong transformer result in a weak or dark display.