

Electromagnetic acceptability - information:

When working with high voltage, electrical discharges can always happen, which result in electromagnetic disturbances even if they are not recognized acoustically or optically. Experience has shown that electrical discharges also occur between non-wired high-voltage connections and any points of near-earth potential (table, persons, panel, wall, mains connections, etc.), which can interfere with radio and television reception in the vicinity and impair the proper functioning of other electrical equipment. Likely known and feared are suddenly-appearing, useless values shown on the display of measuring devices.

Ensure that the device does not fall from elevations. If this does happen, have the appliance properly checked or repaired by authorised specialists.

Do not expose the device to dripping or splashing water. Only use a damp cloth or glass cleaner to clean the appliance, never use corrosive substances, abrasive cleaners or organic solvents.

There are no components inside the appliance that require maintenance by the user. If unexpected problems occur during installation or operation of the appliance, switch off the appliance and contact your specialist dealer.

This device may only be operated by qualified persons or persons instructed by such persons.



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DE722-1H

Static voltmeter "inno"



This magnetically mountable measuring device is designed to measure high voltages in the field of electrostatics in demonstration- as well as student experiments.

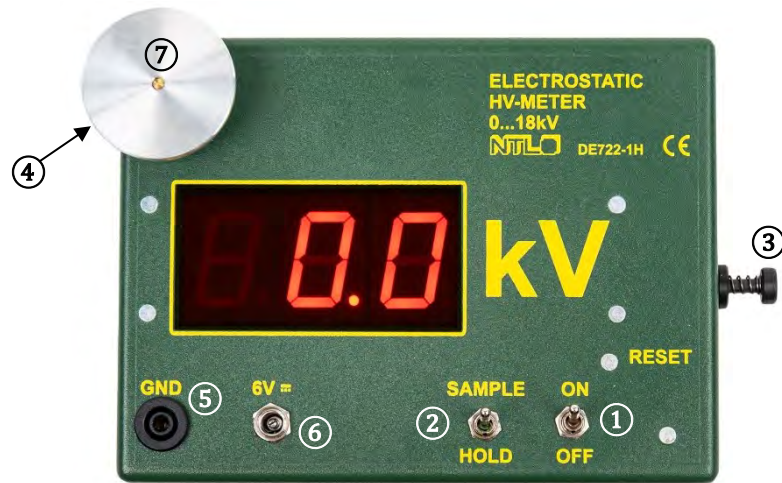
Through its easy usability, the small internal consumption and the possibility to supply the device through batteries, it is a very valuable device in Physics.

Principle of measuring:

A part of the charge (which is attached to an electrostatically charged objective) is transferred through a voltage divider onto a small capacitor.

The voltage applied on this small capacitor is then digitally measured.

Operating elements:



- ① **ON / OFF switch:**
This switch is used to switch the device on or off.
- ② **SAMPLE / HOLD switch:**
With this switch the value shown on the display can be fixed; errors through self-discharging can be avoided in this way. In the position „SAMPLE“ the measurement is done, afterwards it should be switched to hold within the next 10 seconds.
- ③ **RESET pushbutton:**
This button is used to discharge the capacitive voltage divider. It should be pressed before each measurement until the display is zero.
- ④ **Measurement input bush**
- ⑤ **Grounding bush**
- ⑥ **5,5 mm DC-bush for power supply 6V/500mA**
- ⑦ **Metal plate (Capacitor plate)**

Comparison with mechanical, static voltmeters:

- a) If compared to a Kolbe-electroscope, a digital measuring device has the double-sized measurement area.
- a) The digital, static voltmeter can also indicate the polarity of charges, which is not given at mechanical devices.
- a) The duration how long charges can be kept is lower in comparison to mechanical devices. Mechanic devices can keep the charges for several hours if the air in the room is dry, digital devices only for several minutes. This problem was fixed due to the „HOLD“ switch)
- a) The digital device is in case of self-consumption comparable to Kolbe-electroscope, therefore measurements can also be done with weak sources like acrylic rods.

The problem with the grounding bush:

In general the grounding bush is to be connected to the earth wire. When working with weak sources this step is not necessary, since the parasitical capacities to the board, desk or the user are strong enough to keep the potential of the device in the grounding area. If strong sources are used, the device can be subtracted from the earth potential, which can result in measuring errors and discharges on the body of the user. Therefore the grounding bush is always to be used in student experiments!

Performing a measurement:

- Turn on the device.
- Choose the „Sample“-mode.
- Afterwards ground to the device.
- Push the „Reset“-button until the shown value is „0“.
- Put the source into contact with the measurement input bush.
- Then select the „hold“-mode.
- Afterwards interrupt the electric connection.
- Evaluate the displayed value.
- Use the „Reset“-button before turning the device off to avoid unexpected charges!

Accuracy:

Between 0 and +/- 18 kV the device is working better than 2% inaccuracy. Between 10 and 18 kV the device is showing 30% too much. At about 15 kV, spark trails distort the result; at 18 kV a reasonable use of the device is not possible anymore.

Safety information:

The output voltage of the INNO-High-voltage power supply is not to be short-circuited, therefore the voltage measurements is limited between 0 and 10 kV.