

Note on electromagnetic compatibility:

Whenever working with high voltage, electrical discharges may occur which in turn cause electromagnetic interference, even though these discharges are not audible or visible. Experience shows that electrical discharges can also occur between high-voltage connectors not under current and any points close to ground potential (tables, people, boards, walls, mains outlets etc.). These discharges can interfere with radio and television reception or impair the proper functioning of other electrical devices. Specifically, the sudden display by digital measuring instruments of implausible readings is a known and dreaded phenomenon.

Technical data:

Electric power supply:	4x 1,5V - mignon cells (included in delivery) or accu cells or external power supply 6V/500mA, P3120-6N
Display:	LED-display, 3 ½ digit, digit height: 26mm
Tumbler:	ON/OFF
Pushbutton:	Reset for electrical zero position
4mm Safety-connectors:	Measurement input (IN), grounding connector (COM)
5.5/2.5mm-DC connector:	For external power supply
Testing range:	+/-1999 nC
Accuracy:	Better than 1% Drooprate, better than 5 digit/min.
Body:	Plastics, ABS
Dimensions:	approx. 160x120x45 mm
Weight:	approx. 380g

Recommended accessory:

P3120-6N plug power supply unit 6V/500mA for main power supply.

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., Austria



NTL innoSYSTEM

DE722-1C Coulomb Meter „inno“



Coulomb Meter „inno“

This instrument, which is employed especially in electrostatics experiments, is used to measure charges, both in demonstrations as well as students' experiments. The unit is easy to operate, requires a minimum of power internally and is battery-powered, making it a valuable aid in physics classroom instruction.

Working principle:

The charge of an electrostatically charged object is transferred to a relatively large capacitor. The voltage across this capacitor after charge transfer is then measured digitally.



Controls:

“On/Off” switch: Used to switch the instrument on and off.

“Reset” switch: Used to discharge the internal capacitor.
Prior to any measurement, press this switch until the display indicates zero.

Ground connection issue:

In the usual case, a ground lead is connected to the COM socket. Yet with weak sources, such as acrylic or glass rods, this procedure is generally not required, since it has been found that parasitic capacities between the instrument and a board, table or user are sufficient to maintain the meter close to ground potential. Strong sources, for example conductor spheres, may cause the instrument to deviate from ground potential, which may result in measurement error and unpleasant discharges across the user’s body. Students performing experiments should therefore always use the grounding lead.

Taking measurements:

Insert a charge adapter, such as a small conductor sphere or simple plug-pin, into the IN socket. Connect a ground lead to the COM socket. Power on the device. Press the “Reset” switch until the display indicates zero. Make an electrical connection between the charge adapter and the charged object. Read the value from the display.

Measuring accuracy:

The measurement precision of the instrument deviates by less than 1% from the actual value. The droop rate (change in value displayed due to internal leakage current) is continuously less than 5 digits per minute.

Note: The measurement precision rating refers only to the instrument itself. This assumes in practice that the capacitance of the charged object is considerably less than 1 μ F (the capacitance of the meter’s capacitor). Otherwise the loss of potential through charge transfer would need to be taken into account. Experience has shown that the usual experiments involving high voltage meet the condition mentioned above.

Measurement of weak charge sources is known to be highly challenging and requires skill in performing the experiment. These known problems are amplified by the unusual precision and sensitivity of the meter.

Power supply:

The instrument is powered by four alkaline mignon (AA) batteries. The new technology implemented results in a battery life of about 30 hours. The reading is displayed accurately as long as the display is illuminated. For this reason, no LoBAT indicator has been built into the meter. The batteries should be removed from the instrument when it is not used for a longer period. Damage caused by battery leakage is not covered by the warranty!

An external power supply with an output voltage of 6 to 12 volts (e.g. P3120-6N) may also be used to power the meter. This is connected in the normal way using a 5.5/2.5mm DC jack. Outside jacket is the ground, inside tube the positive contact.