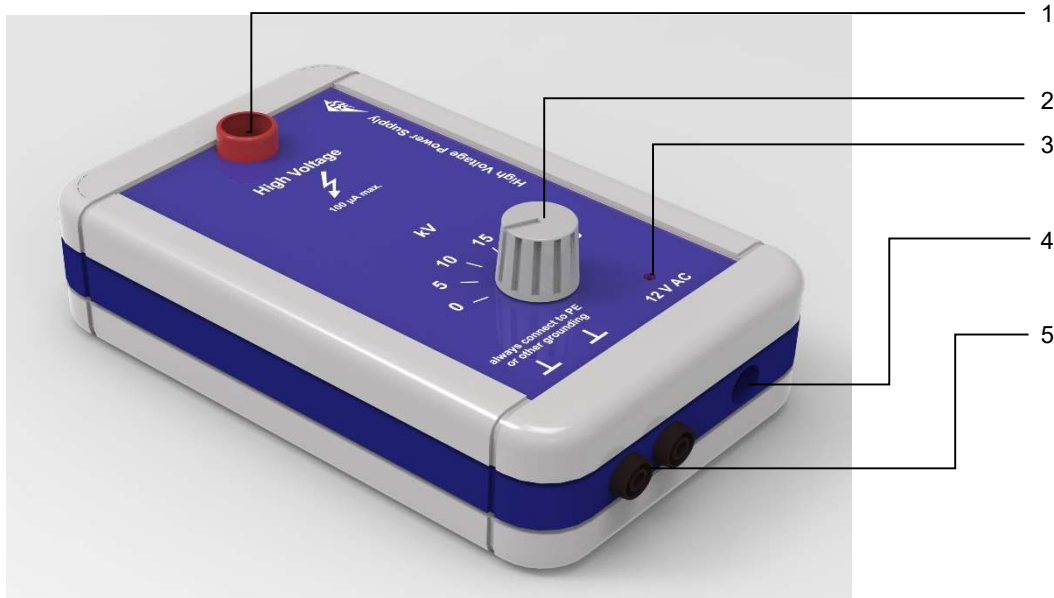


High-Voltage Power Supply 25kV (230 V, 50/60 Hz) 1023406 High-Voltage Power Supply 25kV (115 V, 50/60 Hz) 1023789

Instruction Manual

03/23 TL



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|-------------------------------------|----------------------------------|
| 1 High voltage output (positive) | 4 Connection for AC power supply |
| 2 Switch for voltage output, On/Off | 5 2 x Ground socket |
| 3 Power indicator | |

1. Safety instructions

Plug-in power supply 230 V (1001014)/ 115 V (1009545):

- Operation only with the mains voltage according to the imprint.
- Do not use the device if there is visible damage to the housing, plug or cable.

High-voltage power supply 230V (1023406) and 115V (1023789):

- Operate the high-voltage power supply only in dry rooms and do not expose it to liquids.
- Do not operate the device without earthing (see 5.3).
- Danger of ignition due to arc discharges - do not use flammable substances in the experimental environment.
- Do not short-circuit the high-voltage socket to ground (5).

- Switch the device to "0" after use or disconnect the power supply unit.
- The high-voltage output should not be touched. Touching it can cause shock reactions and should be avoided by careful handling.
- When connecting external capacitors, ensure that the stored energy W does not exceed $W = 350 \text{ mJ}$ ($W = 0,5 \cdot C \cdot U^2$). At 25 kV, C_{max} is thus approx. 1.1 nF.
- When transmitting high voltages $>1 \text{ kV}$ by cable, the laboratory cable should not rest on metal parts (possibly insufficient dielectric strength of the cable insulation).

2. Description

The high-voltage power supply provides a stabilized, positive high voltage selectable in five steps from 5 kV to 25 kV for experiments in electrostatics.

To apply charges to components such as condenser plates, conductor spheres, charge carriers, etc., the 1023416 charge storage device (820pF /25 kV) is recommended. It can be used to apply charges of both polarities.

3. . Scope of delivery

- 1 High-voltage power supply
- 1 Plug-in power supply 230 V (1001014) or 115 V (1009545)

Recommended products:

Charge storage device (1023416)

4. Technical data

High-voltage:

Stabilized, positive high voltage between voltage output (1) and ground socket (5) selectable in five steps from 5 kV to 25 kV.

Precision: $\pm 2.5\%$

Current max. 100 μA

Voltage stable up to max. 25 μA

Supply voltage: 12 V AC

Switch (2):

„0“: device switched off

„5“, „10“, „15“, „20“, „25“: voltage in kV

Connections:

1 x high voltage output (1)

1 x hollow socket (4), supply voltage

2 x ground socket (5)

Dimensions: 110 x 170 x 30 mm³

Weight: 350 g

5. Operation with charge storage device

- The ground sockets (5) are internally connected and reference potential for the high voltage. One of the sockets (5) has to be connected to PE or basic ground of the experiment (see 5.3).
- Connect the second ground socket (5) via laboratory cable to the blue side of the charge storage device (see (6) in Fig. 1).

- Connect 12V /AC plug-in power supply to high-voltage power supply via socket (4).
- Select high voltage with switch (2) (e.g. 10 kV).
- Plug the red side of the charge storage device into the high-voltage output (1) for a few seconds.
- Remove the charge storage device and switch off the high-voltage power supply unit with (2).

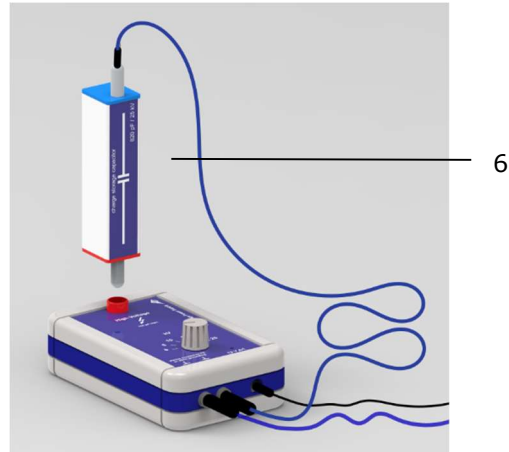


Fig. 1: High voltage power supply with charge storage device

5.1 Positive Charge

- Do not disconnect the ground connection between the charge sensor and the ground socket (5).
- The contact pin on the red side can be used to apply positive charges to e.g. charge carrier spheres by making a brief contact.

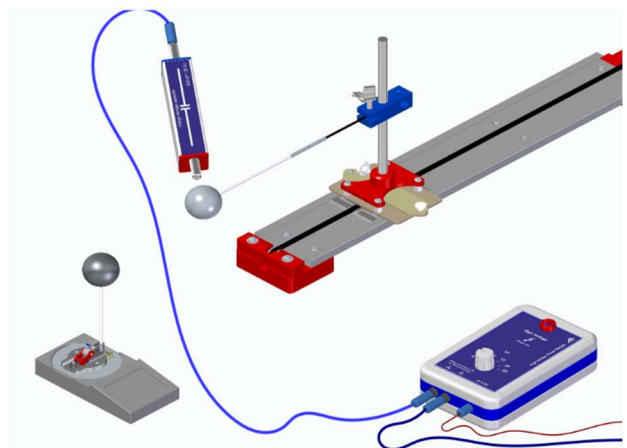


Fig.2: Application of positive charges to a charge carrier sphere in the Coulomb experiment.

5.2 Negative charge

- Charge the charge storage device as described section 5.
- Carefully disconnect the ground cable from the blue side and connect it to the red side of the charge storage device.
- The contact pin on the blue side can be used to apply negative charges to e.g. charge carrier balls by making a brief contact.

5.3 Ground connection (PE)

- The ground connection prevents the unintentional electrostatic charging of parts of the experimental setup or the environment and the person performing the experiment. Such charges can interfere with the experiment and contribute to measurement errors.
- Establish ground connection with grounding plug: Insert the grounding plug into a correctly installed grounding contact socket (type F according to CEE 7/3) and connect it to the ground socket of the high-voltage power supply unit (5) via the 4mm socket and a laboratory cable. Alternatively, the ground connection can be made via laboratory cable from a 4mm ground socket on the power supply block of the physics laboratory or from the PE socket of a connected laboratory device.
- Note: Electrostatic charges are also generated by clothing, shoe soles, etc. and should be discharged before each measurement by briefly touching a PE contact pin.

6. Disposal

The packaging should be disposed of at local recycling points. Should you need to dispose of the equipment itself, never throw it away in normal domestic waste. Local regulations for the disposal of electrical equipment will apply.

