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## Operating instructions

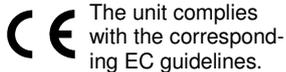


Fig. 1: 09107-99 High Precision Power Supply 1.5 kV DC.

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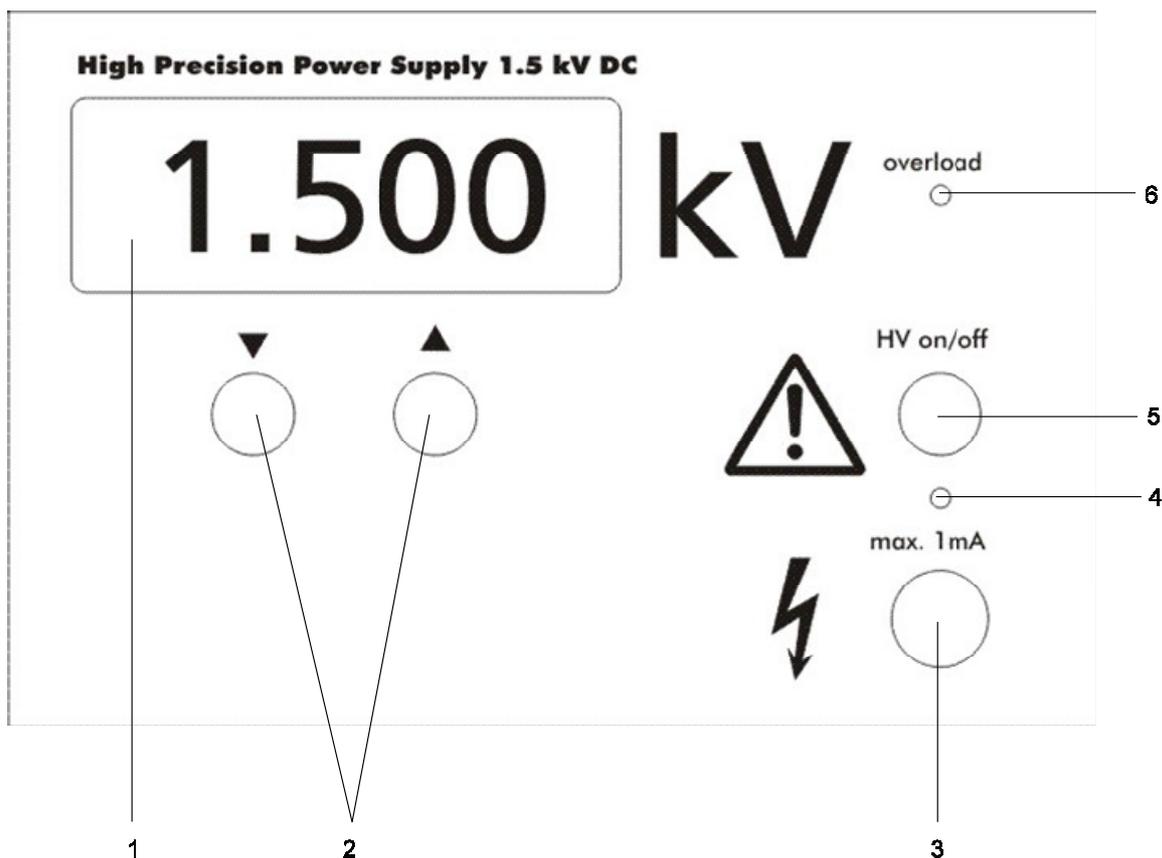
### 1 SAFETY PRECAUTIONS



#### Caution!

- Carefully read these operating instructions completely before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Check that your mains supply voltage corresponds to that given on the type plate fixed to the instrument.

- Install the instrument so that the on/off switch and the mains connecting plug are easily accessible. Do not cover the ventilation slits.
- Take care that no liquids or objects enter in through the ventilation slots.
- Only use the instrument in dry rooms in which there is no risk of explosion.
- Only use the instrument for the purpose for which it was designed.
- Protect the instrument from dust, moisture and vapours. Only clean it in voltage-free state with a slightly moistened, lint-free cloth. Aggressive cleaning agents and solvents are unsuitable.
- Prior to connecting the mains power, ensure that the protective earth conductor of the power supply unit is properly connected to the protective earth conductor of the mains power network. Ensure that the mains socket into which the mains power plug is plugged is equipped with a protective earth conductor. Do not eliminate the protection by using an extension cord without a protective earth conductor.
- Do not operate if there are visible signs of damage to the unit, the connection cord or the measuring lines.
- Do not open the unit.
- Do not connect any devices to the unit other than the ones that are intended for this purpose.
- Only use the mains power cable that is supplied with the unit or an equivalent cable.
- Do not touch the HV output socket when the output has been activated.



## 2 PURPOSE AND CHARACTERISTICS

The PHYWE power supply unit is a highly stabilised DC voltage source. It is particularly suitable for experiments in nuclear physics and particle physics and can be used as a voltage supply for gamma-ray detectors.

Due to the small maximum current, the output voltage is regarded as non-hazardous. However, direct contact should still be avoided. The high-voltage socket is only safe to the touch if it has been connected with the corresponding HV connecting cable.

## 3 EXPLANATION OF THE SYMBOLS



General warning.  
Compliance with the operating instructions is required.



Attention! High voltage!  
Risk of electric shock.

## 4 DESCRIPTION AND HANDLING

### 4.1 Display and control elements

#### 1 Seven-segment display

The display shows the set value of the voltage in Volt when one of the buttons is pressed. In all other cases, the display shows the actual value of the voltage in Volt.

Normally, the display indicates the set voltage value in volts. In order to display the actual value, the output (3) must be enabled by way of button (5).

#### 2 „▲“ and „▼“ buttons

These buttons are used to adjust the voltage. The button "▲" increases the value and the button "▼" decreases the value. If the button is pressed briefly, the value increases or decreases by one unit. If the button is held (0.3 s delay), the value changes by 5 units per second. After another 2 seconds, the value changes by 50 units per second, and after another 2 seconds it changes by 500 units per second. The final value is reached after approximately 10 seconds.

#### 3 High-voltage output

HV socket for the connection of HV connecting cables.

#### 4 LED „HV on“

The green LED indicates that the output voltage is enabled.

#### 5 Pushbutton switch "HV on/off"

This pushbutton switch is used to enable the voltage at the output. When the voltage is enabled, a green LED (4) illuminates.

## 6 LED „Overload“

The red overload LED indicates that the maximum current flow has been exceeded.

### 4.2 Notes concerning the operation of the device

After the device has been switched on, the version number will be displayed briefly. Then, the display shows the value that has been active when the device was used for the last time. In this state, the output is inactive. None of the state LEDs is illuminated. The flashing decimal point of the display indicates that the set value can be varied (buttons (2)).

The output can be activated by pressing the button "HV ON/OFF" (5). The green LED (4) lights up and the ACTUAL value will be displayed. After a brief period of oscillation, the output voltage stabilises. A slight deviation between the set value and ACTUAL value is possible and depends on the connected load.

If the maximum current is exceeded due to the connected load, the red "Overload" LED (6) will light continuously. Depending on the load, the output voltage may break down.

In order to limit the power loss in this fault state, the output will be switched off automatically after approximately 5 minutes. The green LED (4) goes out. The red LED (6) flashes, thereby indicating that the output has been switched off automatically due to high current. The decimal point of the display flashes and indicates that the set value can be varied. The output can be reactivated by way of button (3).

If the display shows "E r r", there is an error. The control circuit was unable to intercept the error in time and, therefore, deactivates the output. The output can be reactivated by way of button (3) or by switching the device off and on again.

We recommend checking the experiment set-up prior to doing so in order to identify any potential problems

## 5 NOTES ON OPERATION

This high-quality instrument fulfills all of the technical requirements that are compiled in current EC guidelines. The characteristics of this product qualify it for the CE mark.

This instrument is only to be put into operation under specialist supervision in a controlled electromagnetic environment in research, educational and training facilities (schools, universities, institutes and laboratories).

This means that in such an environment, no mobile phones etc. are to be used in the immediate vicinity. The individual connecting leads are each not to be longer than 2 m.

The Instrument can be influenced by electromagnetic charges and other electromagnetic phenomena in such way, that it works no longer within the given specifications. The following measures reduce or prevent disturbing influences: Avoid carpeted floor ensure potential equalization, perform the experiments on conductive and grounded surfaces, use screenings and screened cables and do not work with high frequency emitters ( radios, mobile phones etc.) in the immediate vicinity. After a total blackout, carry out a "Reset" (new start) of the complete system.

## 6 TECHNICAL DATA

(typical for 25 °C)

Operating temperature range 5–35 °C  
Relative humidity < 80 %

Output  
High Voltage max. 1 500 V  
Current max. 1 mA  
Line stabilization < 0.1 %  
Special socket MHV

### Main supply

Protection class I  
Connecting voltage 100–240 V AC  
Mains frequency 50/60 Hz  
Housing dimensions (mm) 206 x 130 x 160  
Weight 1.4 kg

## 7 ACCESSORIES

High-voltage connecting cable 09101-10

## 8 WASTE DISPOSAL

The packaging mainly consists of environmentally-friendly materials that should be returned to the local recycling stations.



Do not dispose of this product with normal household waste.

If this unit needs to be disposed of, please return it to the address that is stated below for proper disposal.

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