Power Supply with Rectifier
14 V AC / 12 V DC, 5 A

13533-93

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Operating instructions

CE The unit complies with the applicable EC-Guidelines

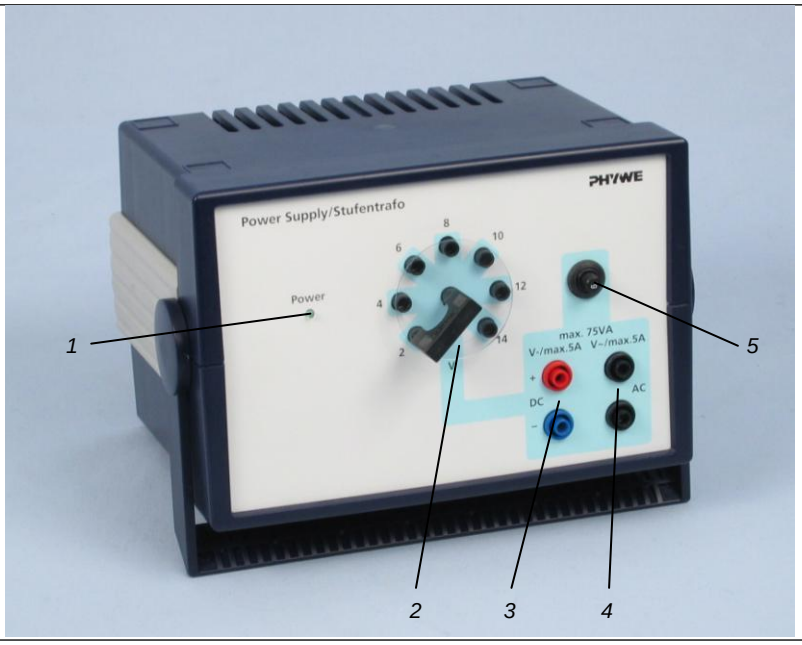

Fig. 1: Front view of the Power Supply with Rectifier 13533-93

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1 SAFETY PRECAUTIONS

Attention!

- 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.
- Do not operate if there are visible signs of damage to the unit or the connection cord.
- Only use the instrument for the purpose for which it is intended.

2 PURPOSE AND CHARACTERISTICS

This robust and practical isolating transformer (Fig. 1) is particularly suitable as a power supply for student experiments. The output voltages are in the low voltage extent of protection. The instrument supplies both an alternating voltage of up to 14 V, which is selectable in seven equal steps of 2 V, and a direct voltage that is obtained by bridge rectification. The direct voltages are about 2 V lower than the alternating voltages, because of the threshold voltage of the rectifier diode. The voltages are also dependent on the load (see the diagrams in Figs. 3 and 4).

3 FUNCTIONAL AND OPERATING ELEMENTS

The unit is accommodated in an impact resistant plastic housing. A retractable carrying handle is recessed into the unit and can be folded down so that the instrument slopes down towards the back. Four rubber feet provide resistance to slipping. The unit can be stacked onto other units of the same design, because the rubber feet fit into cup-shaped re-

cesses of the unit beneath, ensuring that the top instrument does not slide off. The sloped position can only be used for the uppermost unit of the stack.

The supplied connecting cord is used to connect the unit to the AC mains. The cord is inserted into the equipment connector at the back of the unit. The mains switch for operating the unit is situated in the immediate vicinity of the equipment connecting plug at the back of the unit.

The centre of the back plane provides a thread for the attachment of the support clamp for small case (02043-10), which is optional available (see Fig. 2). By use of that clamp, the unit can be fixed to various support rods. Thereby, the visibility will be increased in demonstration experiments.

Attention!

To avoid damage to the inner electrical components of the unit and to prevent people from getting harmed by electric shock, use the provided support clamp 02043-10, only.

You must not use screws with lengths over 16 mm!

Fig. 2: Back plane of a device in the small case with support clamp attached.

All other functional and operating elements are located on the front panel of the unit (see Fig. 1:):

1 Power

On/Off indicator light.

2 Socket ring

For selection of the voltage step at output (*3*) for the alternating voltage tapped and at output (*4*) for the direct voltage tapped. The selection is made by plugging a special short-circuiting plug into the central socket and the appropriate socket in the ring.

3 Output, 2…12 V_{DC} / max. 5 A

Pair of 4 mm sockets for the tapping of a direct voltage; the selection of the size of the voltage is made by means of the socket ring (*2*).

4 Output 2…14 V_{AC} / max. 5 A

Pair of 4 mm sockets for the tapping of an alternating voltage; the selection of the size of the voltage is made by means of the socket ring (*2*).

5 Overload circuit breaker

With thermal triggering for protection of both voltage outputs.

4 NOTES ON OPERATION

This high-quality instrument fulfils 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).

5 HANDLING

Two separate outputs (AC/DC) are available in the form of 4 mm safety sockets. They can be simultaneously used. Each output can be individually loaded up to 5 A: When they are both under load simultaneously, the total load capacity is 75 VA.

Direct voltage output sockets are not to be connected to alternating voltage output sockets, as the two types of output are not galvanically isolated from each other.

All outputs are galvanically isolated from the mains, ungrounded and safeguarded by a circuit breaker. The primary side of the instrument is additionally protected by a G fuse element.

The output voltages are dependent on the load. The curves in Fig. 3 and Fig. 4 show the main courses of the output characteristics $V = f(I)$ for the two outputs. The exact voltage values can differ a little from instrument to instrument; in addition, they are dependent on the grid voltage.

Should the overload circuit breaker (situated above the voltage outputs) be triggered due to overloading of the instrument, a few seconds must pass before it can be pushed in again, to give the bimetalllic switch time to cool down. The cause of the overloading should be previously eliminated, however.

Changing the primary safety fuse

The fuse holder is in the upper part of the mains socket of the instrument, and so is only accessible when the connecting cord is not plugged in. Unplug the connecting cord, open the fuse holder using a screwdriver, take out the defect fuse and replace it with a new one (first check the specification of this against the data on the type plate), then fit the fuse holder back in the mains socket.

Should this fuse blow when the instrument is switched on, never replace it with a more resistant fuse! A defect is indicated and the instrument must be returned to the Phywe service department for repair.

6 TECHNICAL DATA

(typical for 25 °C)	
operating temperature range	5…40 °C
relative humidity	< 80 %
Mains power supply	
protection class	I
connection voltage (+6 % / −10 %)	see type plate
mains frequency	50/60 Hz
power consumption	80 VA
mains fuse (5 mm x 20 mm)	see type plate
secondary fuse	overcurrent protective switch
housing dimensions (mm)	194 x 130 x 140 (WxHxD)
weight	approx. 2.97 kg

Graphs showing the dependence of the output voltage V on the load current I for the seven voltage steps selectable with the short circuit plug:

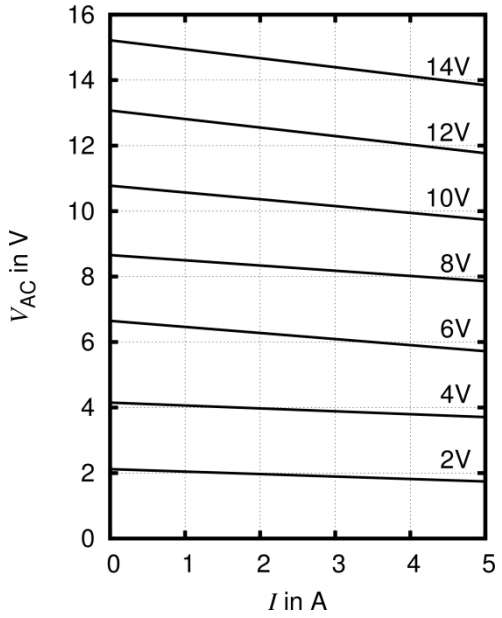

Fig. 3: Alternating voltage depending on the load current

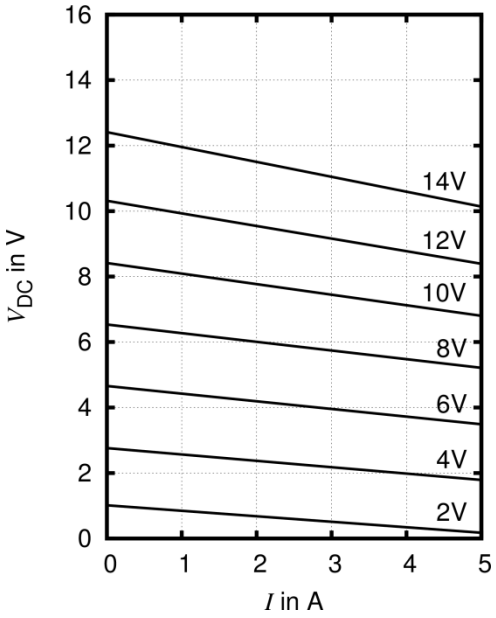

Fig. 4: Direct voltage depending on the load current

7 PARTS SUPPLIED

Items included in delivery:

- Power supply with rectifier 13533-93

8 ACCESSORIES

Optional available items:

- Support clamp for small case 02043-10

9 WARRANTY

We give a warranty of 24 months for units supplied by us inside the EU, and a warranty of 12 months outside the EU. The following is excluded from the warranty: Damage that is due to non-compliance with the operating instructions, improper use, or natural wear.

The manufacturer can only be held liable for the function and safety-relevant properties of the unit, if the maintenance, service, and modifications of the unit are performed by the manufacturer or by an institution that is expressly authorised by the manufacturer.

10 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 dispoal.

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