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Operating instructions

 The unit complies with the corresponding EU guidelines.

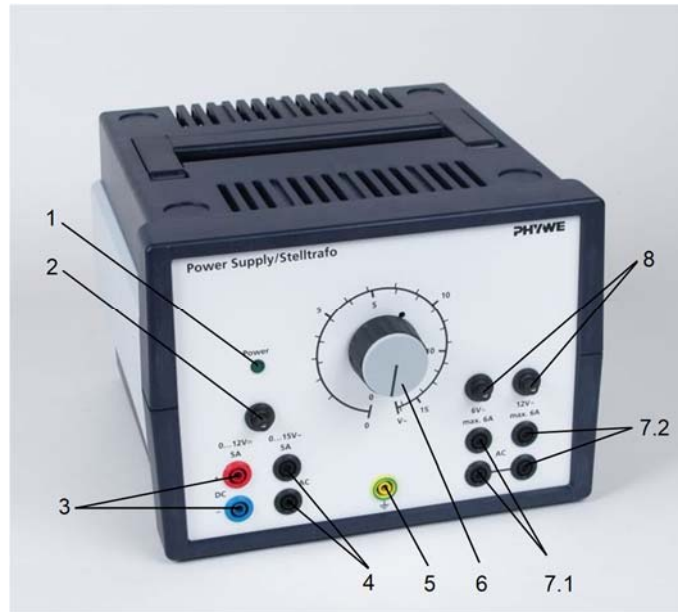


Fig. 1: PHYWE Power supply variable, RiSU 2023, 15 V~/12 V-, 5 A, 13540-93

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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.
- 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.

2 PURPOSE AND DESCRIPTION

This handy power supply unit delivers two low voltages that are practically continuously adjustable. One of these is a 0...12 V DC/5 A direct voltage that pulses at 100 Hz. The other is a 0...15 V AC/5 A alternating current. Also available are two fixed alternating voltages of 6 V AC/max. 6 A and 12 V AC/max. 6 A.

All outputs are galvanically separated from the mains, ungrounded and protected by overload circuit breakers. The 1.5 m long mains lead is supplied with the instrument. It serves to connect the instrument to the AC mains after it has been plugged into the mains connector at the back of the instrument. The rectangular fuse holder integrated below the mains connector can only be opened using a screwdriver or similar after the mains lead has been unplugged from the instrument.

Both conventional 4 mm plugs and safety connecting cables (e.g. 07337-01) fit in the safety output sockets.



Attention - fire hazard!

The power supply is to be exclusively used for supplying suitable experimental set-ups and instruments. The user carries the responsibility for the operational reliability of the set-up to which the instrument is connected. When it is connected to incorrect circuitry, even the relatively low performance provided by the instrument could cause considerable damage (fire hazard!). To avoid unnecessary risks, we therefore recommend that the setup which it is to supply be carefully checked prior to switching the power supply on.

3 EXPLANATION OF THE SYMBOLS



Safety isolating transformer, short-circuit-proof due to special safety measures

4 FUNCTIONAL AND OPERATING ELEMENTS

The power supply is held in an impact-resistant plastic housing. The cover plate of the housing has a carrying handle that can be swung upwards. The base plate has a similar handle, which can be swung out to enable the instrument to stand in an inclined position. Four rubber feet ensure slip-resistance and stability. The instrument can be stacked on other instruments having the same type of housing, whereby the rubber feet stand in the pan-shaped hollows of the instrument below for increased security against displacement. The following functional and operating elements can be found on the front and back plate of the unit (see Figures 1 and 2):

1. On/off indicator light

2. Overload circuit breaker, 6 A

With thermal triggering for protection of outputs (3) und (4).

3. Output 0...12 V/5 A

Pair of 4 mm sockets for picking up the direct voltage that can be adjusted by way of the adjusting knob (6). The output can be subject to an excess load until the associated circuit breaker (6 A) trips without damage to the unit.

4. Output 0...15 V~/5 A

Pair of 4 mm sockets for picking up the alternating voltage that can be adjusted by way of the adjusting knob (6). The output can be subject to an excess load until the associated circuit breaker (6 A) trips without damage to the unit. If the outputs (3) and (4) are used simultaneously, the joint circuit breaker (6 A) trips based on the total current intensity. It is not permissible to use DC and AC outputs within the same electric circuit, since they are internally connected by a bridge rectifier.

5. Earthing socket

With connection to the mains made, this is connected to the earth lead.

6. Adjusting knob with scales

This serves to set the voltage at outputs (3) and (4), whereby the two scales allow quick orientation. At a given setting, the height of the voltage depends to a certain extent on the load; the scale values apply to about half of the rated current (2.5 A) at the rated value of the 230 V AC line voltage. At lower loads, the output voltage is higher, at higher loads it is lower. A voltmeter is to be used for an exact determination of the set voltage.

7. Outputs 6 V~ und 12 V~

Two pairs of 4 mm sockets for withdrawal of the individual fixed alternating voltages, at (7.1) the voltage 6 V AC/max. 6 A and at (7.2) the voltage 12 V AC/ max. 6 A. The two output voltages can therefore not be switched in series by connecting the upper socket of the one output to the lower socket of the other. On the contrary, this would cause a short-circuit, against which the instrument is protected, however.

The height of the voltage at outputs (7.1) and (7.2) is dependent on the load to a certain extent. The 12 V rated voltage is given at the rated value of the 230 V AC line voltage and at half of the rated current (3 A). The rated value is already given at the 6 V AC output at a current of approx. 1.7 A, so that the frequently used overvoltage sensitive 6 V/10 W halogen lamps are not endangered. Outputs (7.1) and (7.2) are each protected by a 6 V over-current switch. When only one output is used, independently of a possible load at outputs (3) and (4), this can be overloaded up to the triggering of the protective switch without harm to the instrument. There is only a drop in the output voltage correspond to the higher load. Should outputs (7.1) and (7.2) be simultaneously used, however, then care must be taken that the total amperage withdrawn does not exceed 6 A.

8. Overload circuit breaker, 6 A

with thermal triggering for protection of the fixed voltage outputs. The reaction of the overload circuit breaker causes the corresponding safety knob to protrude. This can be pressed back in again after the few seconds required for the bimetal to cool. In the meantime, the cause of the failure should be eliminated.

9. Fuse holder

The fuse holder (Fig. 2) in the upper part of the device connector at the back can be accessed once the mains power connecting cable has been removed. It can then be pried out with the aid of a screwdriver.



Fig. 2: Fuse holder

Only mains fuses with the fuse rating stated under "Fuse" on the type plate are permissible.

Do not change the fuse unless the unit has been disconnected from the mains power supply and is absolutely voltage-free. Bypassing the fuse holder or mending the fuse is not permissible.

Prior to replacing a fuse, ensure that the cause of tripping has been eliminated.

Remove the defective fuse from the fuse holder and insert a new one with the correct rating. Then, push the holder back in. Ensure that you can hear it lock into place. If the fuse trips again after the unit has been switched on, do not use a higher fuse rating. This problem indicates a major defect and the unit must be sent to our service department for repair.

5 NOTES ON OPERATION



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



Due to the safe isolation and the safety isolating transformer in accordance with DIN EN 61558-2-6 (as per BG/GUV-SI 8040 "Sicher experimentieren mit elektrischer Energie in Schulen" (Safe experimentation with electrical energy at schools) and SI 8070 "Richtlinien für Sicherheit im Unterricht" (RiSU) (Regulations for safety at school)), this power supply unit is particularly suitable for student experiments and for all age levels ("compliant with the regulations for safety at schools").

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 no mobile phones etc. are to be used in the near vicinity. The individual connecting leads must not 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

Operating temperature range	5-40°C
Relative humidity	<80 %

Mains supply

Protection class	I
Connecting voltage (+6%/-10%)	see type plate
Mains frequency	50/60 Hz

Power consumption	approx. 190 VA
Mains fuse (5 mm x 20 mm)	see type plate
Secondary fuse	0... 15 V~/ 12 V~ overload circuit breaker 6V/ 12 V~ One overload circuit breaker, each
Housing dimensions (mm)	230 x 236 x 168 (W, D, H)
Weight	approx. 7.5 kg

7 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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