



Var. Transformer, 25 VAC/20 VDC, 12 A
 Var. Transformer, 25 VAC/20 VDC, 12 A,
 with analogue displays

13531.90... 99
 13532.90... 99

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Operating instructions

The unit complies with the corresponding EC guidelines.

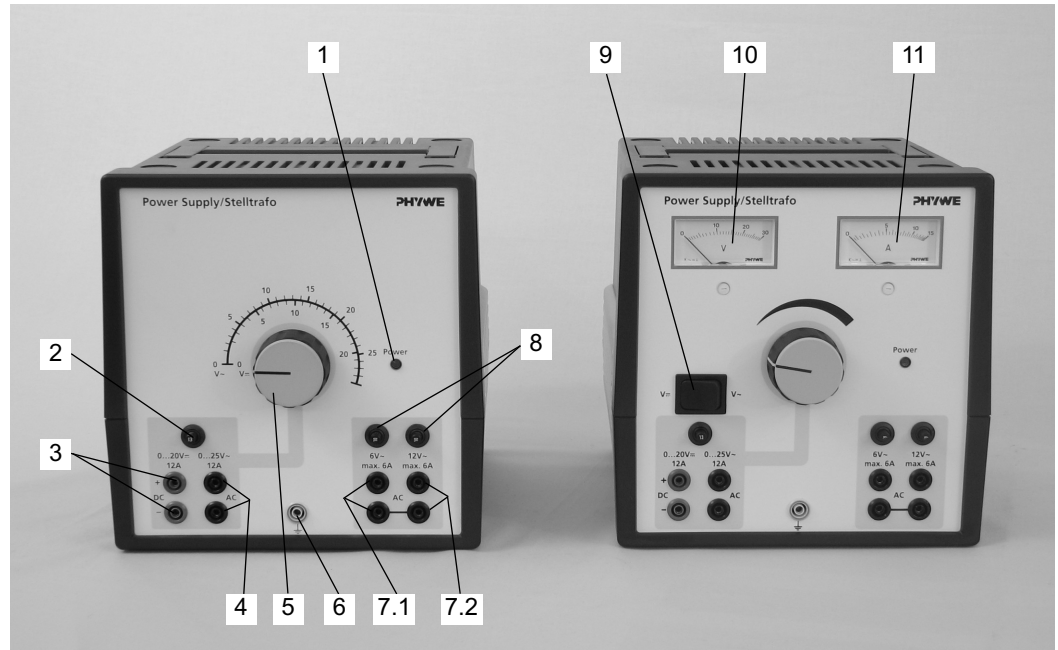


Fig. 1: Front view of the Var. Transformer 25 VAC/20 VDC, 12 A 13531.93 and 13532.93.

1 SAFETY PRECAUTIONS



- 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 slots.
- 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 start up this instrument in case of visible signs of damage to it or to the line cord.
- Only use the instrument for the purpose for which it was designed.

2 PURPOSE AND DESCRIPTION

The practical power supply unit provides two almost continuously adjustable low voltages, one with a 100 Hz pulsating direct voltage 0... 20 VDC/12 A and the other with an alternating voltage of 0... 25 VAC/12 A. In addition to these, two fixed voltages of 6 VAC/max. 6 A and 12 VAC/max. 6 A are also available.

All outputs are galvanic separated from the mains, not earthed and protected by an overcurrent circuit breaker. The 1.5 m long connecting cord that is supplied serves to connect the adjustable transformer to the alternating current mains. For this purpose it is fitted onto the connecting plug at the back of the instrument. The square fuse holder built-in below the instrument connecting plug can only be opened with a screw driver or similar when the connecting cord has been disconnected from the transformer.

Both conventional 4 mm plugs and also safety connecting cords (e.g. 07337.01) fit into the safety output sockets.

3 FUNCTIONAL AND OPERATING ELEMENTS

The adjustable transformer is accommodated in a shock-resistant plastic housing. A carrying handle that can be turned upwards is recessed in the cover plate of the instrument housing. A similar handle is recessed in the bottom plate, but this can be turned to the back to enable the instrument to be set up in an inclined position. Four rubber feet guard against slipping and ensure stability. The adjustable transformer can be stacked on other instruments of the same design in the inclined position, whereby the rubber feet fit in pan-shaped recesses in the top cover of the instrument below it for further resistance to slipping. In stacks of such instruments, it is only permissible to have the one at the top in the inclined position.

The following functional and operating elements (see Fig. 1) are to be found on the front plate of the instrument:

- 1 *On/off indicating lamp*
- 2 *Overcurrent protective switch*
with thermal tripping for fuse protection of outputs (3) and (4).
- 3 *Output 0... 20 VDC/12 A*
Pair of 4 mm sockets for withdrawal of the direct voltage set with adjusting knob (5). This output can be overloaded up to the response of the appropriate protective switch (13 A) without damage occurring to the instrument.
- 4 *Output 0... 25 VAC/12 A*
Pair of 4 mm sockets for withdrawal of the alternating voltage set with adjusting knob (5). This output can be overloaded up to the response of the appropriate protective switch (13 A) without damage occurring to the instrument.
When outputs (3) and (4) are used simultaneously, then the common protective switch responds to the total amperage drawn off (> 13 A).

Direct voltage and alternating voltage outputs are never to be used together in the same circuit, as these are internally connected via a bridge rectifier!
- 5 *Adjusting knob with scale (only for 13531.90... 99)*
This allows the required voltages to be set at outputs (3) and (4), whereby the two scales allow rapid orientation. At a given setting, the height of the voltage is dependent to a certain extent on the load; the scale values are valid at approximately half the nominal current (6 A) at a nominal value of the mains voltage of 230 VAC. With lower loads, the output voltage is less. A voltmeter must be used for an exact determination of the set voltages.
- 6 *Earth socket*
On connection to the mains, this is connected to the protective earthing conductor.
- 7 *Outputs 6 VAC and 12 VAC*
Two 4 mm pairs of sockets for withdrawal of the fixed alternating voltages, i.e. a voltage of 6 VAC/max. 6 A at (7.1) and 12 VAC/max. total current 6 A at (7.2).
These two output voltages can so not be switched in series by connecting the upper socket of the one output with the lower socket of the other output. This would rather result in a short circuit, against which, however, the instrument is fuse protected.
The height of the voltage at outputs (7.1) and (7.2) depends to a certain extent on the load. The 12 V nominal voltage is given at the mains voltage nominal value of 230 VAC and at half the nominal current (3 A). At the 6 VAC output, the nominal value is already given at a current of approx. 1.7 A, so that the frequently used 6 V/10 W halogen incandescent lamps, that are sensitive to overvoltage, are not endangered.
Outputs (7.1) and (7.2) are each protected by a 6 A overcurrent protective switch. When only one output is used, then this can be - independently of a possible loading of outputs (3) and (4) - overloaded up to the response of this protective switch without damage occurring to the instrument. Only the output voltage drops correspondingly with the higher load. Should

outputs (7.1) and (7.2) be simultaneously used, however, then care must be taken that the total current intensity withdrawn is limited to a maximum of 6 A.

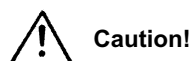
The fixed voltage outputs are suitable, for example, as voltage suppliers to lamps with 6 V or 12 V nominal voltage and a nominal current intensity of up to 6 A.

- 8 *Overcurrent protective switch*
With thermal tripping, for fuse protection of the fixed voltage outputs.
The tripping of the overcurrent protective switch effects the emergence of the appropriate safety button; this can be pressed back in after a some seconds, which are necessary for the bimetal to be able to cool. The cause of the fault should be eliminated in the meantime.

Only for adjusting transformers with analogue displays, 13532.90... 99:

- 9 *Instrument change-over switch*
This allows the switching over of the voltmeter to the adjustable direct voltage or alternating voltage output (3, 4).
- 10 *Voltmeter*
Moving iron instrument for the display of the voltage ready at direct voltage output (3) or at alternating voltage output (4): The output is selected with the instrument change-over switch.
- 11 *Ammeter*
Moving iron instrument for the display of the current withdrawn at direct voltage output (3) or at alternating voltage output (4). (The ammeter shows the total current of the two outputs).

The display instruments are moving iron instruments. These instruments show the correct effective value, not only in alternating voltage measurements but also in measurements of pulsating direct voltage and direct current at output (1). In contrast, customary moving-coil instruments with rectifier measure the mean value, which is about 11% lower than the effective value at output (1).



The power supply is to be exclusively used for the supply of appropriate electrical experimental set-ups and instruments. The user carries the responsibility for the operational safety of set-ups that he or she connects to it. Should incorrect circuits be connected, then even the relatively low performance provided by the power supply can cause considerable damage (fire hazard!). To avoid unnecessary risks, it is therefore recommended that you carefully check the set-up that is to be supplied to prior to switching the power supply on.

4 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.

5 TECHNICAL SPECIFICATIONS (typical for 25°C)

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

Mains supply

Protection class I
Connecting voltage see type plate
(+6%/-10%)
Mains frequency 50/60 Hz
Power consumption approx. 375 VA
Mains fuse see type plate
(5 mm x 20 mm)

Outputs

Galvanic separated from the mains and not earthed, fixed voltage outputs also galvanic separated from the adjustable outputs. No galvanic separation between adjustable direct voltage and alternating voltage outputs!

Fixed voltage 6/12 V~
Nominal current max. 6 A
(total current for both outputs)
Overload protection Overcurrent circuit breaker

Adjustable voltages
Alternating voltage 0... 25 V~
Direct voltage 0... 20 V-
Ripple 48%
Nominal current max. 13 A
(total current for both outputs)
Overload protection Overcurrent circuit breaker

Housing dimensions (mm) 230 x 236 x 250 (W, D, H)
Weight approx. 10 kg

6 NOTES ON THE GUARANTEE

We guarantee the instrument supplied by us for a period of 24 months within the EU, or for 12 months outside of the EU. This guarantee does not cover natural wear nor damage resulting from improper handling.

The manufacturer can only be held responsible for the function and technical safety characteristics of the instrument, when maintenance, repairs and changes to the instrument are only carried out by the manufacturer or by personnel who have been explicitly authorized by him to do so.

7 WASTE DISPOSAL

The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.



Should you no longer require this product, do not dispose of it with the household refuse. Please return it to the address below for proper waste disposal.

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