

PHYWE Systeme GmbH & Co. KG
Robert-Bosch-Breite 10
D-37079 Göttingen

Telefon +49 (0) 551 604-0
Fax +49 (0) 551 604-107
E-mail info@phywe.de

Operating instructions



The unit complies
with the applicable
EU-guidelines.

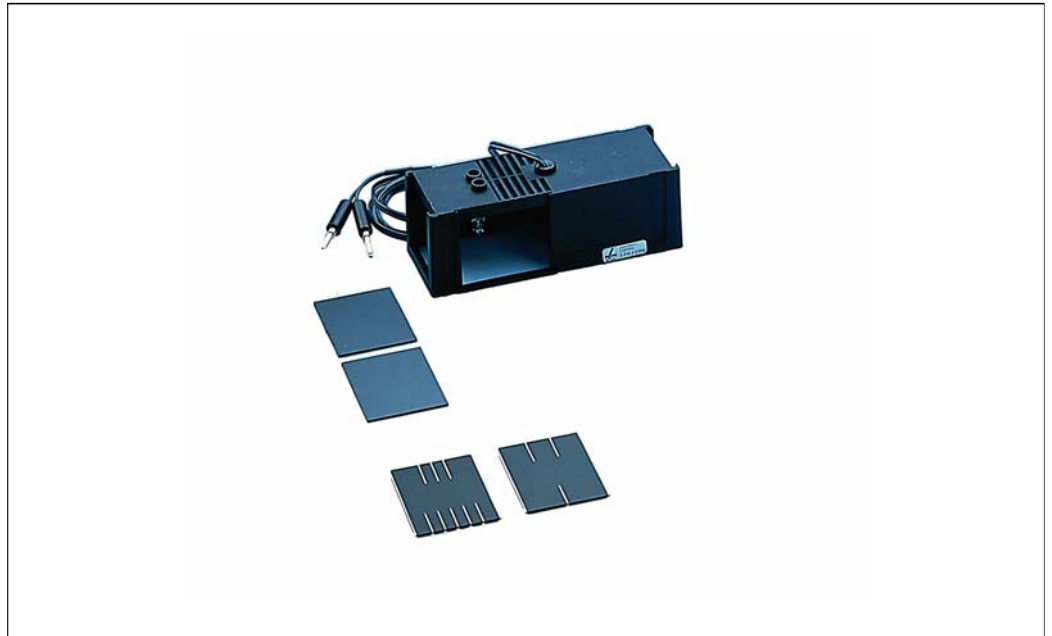


Fig. 1: 09801-10 Light box, halogen, 12 V / 20 W

INHALTSVERZEICHNIS

- 1 SAFETY PRECAUTIONS
- 2 PURPOSE AND CHARACTERISTICS
- 3 FUNCTIONAL AND OPERATING ELEMENTS
- 4 NOTES ON OPERATION
- 5 LIST OF EQUIPMENT
- 8 TECHNICAL DATA
- 9 WARRANTY
- 10 WASTE DISPOSAL

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 the voltage and performance of the power supply unit used are suitable for the light box, i.e. the power supply used must provide 12 V direct or alternating current. Do not use higher voltages or currents!
- 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.
- Only use halogen bulbs 12 V/20 W with an axial filament.
- Do not touch the halogen bulb with the fingers.

2 PURPOSE AND CHARACTERISTICS

Student experiments on geometrical optics and on color theory can be carried out using the Light box (order no. 09801-00). To use it, a piece of paper is placed on the bench and the light box is laid on it so that the paths of light beams can be simply traced out by drawing. With the aid of a supplementary bottom with a stem or with magnets, the light box can also be used for experiments on the optical bench or for experiments with the magnetic board (see 5. List of equipment).

3 FUNCTIONAL AND OPERATING ELEMENTS

The light box has a number of light exit apertures. The apertures not required are closed off with covers opaque to light.

- A condenser lens is situated at the front end of the light box producing a parallel beam of light. By using collimating slits 1, 2, 3, or 5 narrow light beams can be produced. The height of the slit is matched to a model element of 15 mm thickness.
- Divergent light is produced out of the back of the box.
- This aperture is mainly used for experiments on the optical bench. The screen holders at the front and back are 3 mm wide which means that screens can be employed together with colour filters.
- The two side apertures act as receptacles for mirror holders (from order no. 09806-00). In this manner wide light beams are produced which are superimposed on the divergent light beam emanating from the back. The mirror holders are used such that the light is reflected to the back and the clamps for the colour filters are open at the top. For the experiment on additive

Fitting a bottom

A bottom part, with a stem or with magnets, is attached to the light box such that its ventilation slits are situated below the filament lamp. In this position the four hooks on the bottom lock into the corresponding grooves in the light box. For the bottom with the integral stem, the stem is then situated exactly beneath the lamp.

Bulb replacement

The lamp should be isolated from the mains before the bulb is replaced. If a bottom is fitted, it should be removed.



Important!

- Only use halogen bulbs 12 V/20 W with an axial filament (order no. 08129-09) in which the bulb filament is positioned parallel to the slits in the screens.
- Do not touch the halogen bulb with the fingers.

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 research, educational and training facilities (schools, universities, institutes and laboratories).

5 SCOPE OF DELIVERY

Light box	09801-00
consisting of:	
1 Housing with fixed 110 cm cable with two 4 mm plugs	
3 tight sealing screens (covers)	09801-22
1 Screen with 1 and 2 slits (1 mm)	09801-24
1 Screen with 3 and 5 slits (1 mm)	09801-23
1 Halogen lamp 12 V/20 W	08129-09

6 ACCESSORIES

Bottom with stem for light box	09802-20
---------------------------------------	-----------------

Light box with magnetic base	09804-00
-------------------------------------	-----------------

consisting of:	
Light box	09801-00
Magnetic base	09804-10

Light box accessories for colour mixing	09806-00
--	-----------------

Colour filter set, additive colour mixing	09807-00
--	-----------------

consisting of: 1 each red, blue and green filter

Colour filter set, subtractive colour mixing	09808-00
---	-----------------

consisting of: 1 each yellow, cyan, purple filter

PHYWE Power supply	13506-93
Mini – power supply, 1,5 - 15 V / 2 A DC	EAK-P-6220
Lamp transformer, 6 und 12 Volt~, 100 W, 230 V	07473-93

6 TECHNICAL DATA

- fixed 110 cm cable with two 4 mm plugs
- Dimensions H x W x D (mm): 60 x 65 x 170
- Weight: 160 g

7 WARRANTY

We give a warranty of 24 months for units that we have supplied 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.

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.

PHYWE Systeme GmbH & Co. KG
Customer Service
Robert-Bosch-Breite 10
D-37079 Göttingen
Germany

Telephone +49 (0) 551 604-274
Fax +49 (0) 551 604-246