

Hellas-LED contact exposure unit

Translation of the original instructions



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Leaflet

Precision vacuum exposure unit for double-sided contact exposure of photocoated base material, print films and more.

Features:

- Equipped with LED pcbs for the top and bottom, each with 84 LEDs.
- Crystal cut glass 8 mm, mounted without tension above the lower exposure area
- Exposure area approximately 570 x 300 mm
- Integrated maintenance-free high performance vacuum (+60%), with display unit
- Special vacuum foil, textured, for uniform, void-free contact
- milky vacuum foil for clichée application optional
- digital timer (1 second - 9 minutes 59 seconds) with count-down, auto-reset and end signal function
- Exposure levels separately selectable via front-mounted illuminated switches
- Maintenance-free all-steel construction
- cover safety switch

Applications:

With the vacuum Hellas unit you can process all photosensitive products with spectral sensitivity in the near UV range (360-400nm). These are especially positive or negative photo-coated pcbs, printing plates made of nylon, aluminum, steel and diazo and transfer films.

Options:

Quick release button for vacuum

Cover safety switch

Technical Data

	Hellas-LED (single and double sided)
Dimension (BxHxT):	620 x 650 x 240 mm ³
Weight:	ca. 40 kg
Electrical connection:	230 V / 50 Hz, ca. 100 W
Max. exposure size:	ca. 570 x 300 mm ²

Technical changes reserved

EG-Declaration of Conformity



EG-Konformitätserklärung/Declaration of Conformity

Hersteller / Supplier:	Bungard Elektronik GmbH & Co. KG Rilkestraße 1 51570 Windeck Germany
Bevollmächtigte Person für die Zusammenstellung der technischen Unterlagen: Person in charge	Jürgen Bungard, Geschäftsführer /general director Rilkestraße 1 51570 Windeck Germany
Produkt:	Exposure Unit Hellas-LED

Hiermit erklären wir, dass die oben beschriebenen Maschinen allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

Die oben genannte Maschine erfüllt die Anforderungen der nachfolgend genannten Richtlinien und Normen:

We hereby declare that the machines described above complies with all relevant provisions of the Machinery Directive 2006/42/EC.

The above machine meets the requirements of the following guidelines and standards:

- **Maschinenrichtlinie 2006/42/EG / Machinery Directive 2006/42/EC**
- **EMV-Richtlinie 2014/30/EG / EMC Directive 2014/10830EC**
- **Niederspannungsrichtlinie 2014/35/EG / Low Voltage Directive 2014/35/EC**
- **DIN EN 60204-1** Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen / Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- **DIN EN ISO 14121-1** Sicherheit von Maschinen - Risikobeurteilung - Teil 1: Leitsätze / Safety of machinery - Risk assessment - Part 1: Principles
- **DIN EN ISO 12100-1** Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze, Risikobeurteilung und Risikominderung / Safety of machinery - Basic concepts, risk assessment and risk reduction
- **DIN EN 55014-1 2012-05** Elektromagnetische Verträglichkeit, Anforderungen an Haushaltsgeräte, Elektrowerkzeuge und ähnliche Elektrogeräte, Teil 1: Störaussendung / Electromagnetic compatibility Requirements for household appliances, electric tools and similar electrical appliances Part 1: Emission
- **DIN EN 55014-2-2009-06** Elektromagnetische Verträglichkeit - Anforderungen an Haushaltgeräte, Elektro-werkzeuge und ähnliche Geräte - Teil 2: Störfestigkeit - / Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity
- **Niederspannungsrichtlinie / Low Voltage Directive 2014/35/EG**
- **Maschinenrichtlinie / Machinery Directive 2006/42/EG/37/EG**

Windeck, 10.1.2023

Jürgen Bungard Geschäftsführer

Please note:

The following operating instructions also apply to the single-sided version of the exposure device called HELLAS-LED-E. In this case, the glass plate was replaced by a black aluminum plate and the LEDs on the lower exposure level are omitted.

Intended Use

Exposure of positive or negative developing photo resist, solder mask and Alucorex (TM) .
All other application need our written consent or happen on risk of the operator.

The Bungard GmbH & Co. KG accepts no liability for damages incurred in non-authorized use or application of the machine.

Safety instructions

Generally

Please read the following text carefully and pay particular attention to the information on occupational safety and commissioning.

Please keep this folder carefully. It contains information that is also important for later maintenance or cleaning work.

The machines are not intended for integration or interconnection with other machines or systems. They may only be operated in rooms equipped for this purpose and may only be operated by qualified specialist personnel. Keep children and pets away!

The Hellas is designed for use in the laboratory. The device may only be serviced by a qualified specialist. The user should never try to do more for the maintenance of his device than is allowed to do according to the operating instructions. He should always consult a specialist for maintenance work that is beyond his authority.

Transport

Use only suitable lifting and transport equipment such as forklifts or pallet trucks. Secure the machine against slipping / tipping. Risk of damage!

Site

The machine needs a flat table of approx. 700 x 800mm. There must be sufficient space around the machine for operation and maintenance.

Do not place the device near heat sources such as radiators, warm air ducts, ovens and the like.

The installation environment is crucial for problem-free work with the Hellas. You must therefore place particular emphasis on a room that is as dust-free as possible and room air free of corrosive vapors in order to ensure that it functions properly.

Electrical

The machine is manufactured using tested parts according to the usual guidelines for electrical safety. However, this does not release the user from his duty of care when handling electrically operated devices. Only connect the device to the power source marked in the operating instructions or on the device. We assume that the power source will be protected on-site. The connection to the power supply may only be carried out by a specialist.

The circuit and the fault circuit must be protected by the customer.

Before starting any work on the machine (cleaning, etc.) and when not in use for a long time, switch off the machine and pull out the mains plug.

LEDs

Due to the high intensity and small band of the emitted UV light, this UV light is dangerous for eyes and will harm and burn your eyes. Intended use is in the closed state to avoid eye injuries

Cleaning

Follow the manufacturer's recommendations when cleaning the device.

Vacuum

The thickness of the workpieces to be processed should not exceed 5 mm, as otherwise the vacuum may be impaired or the vacuum film may even be damaged. For this reason, no sharp objects may lie between the glass plate and the vacuum film when the vacuum is switched on. Also make sure that the vacuum hose, which opens into the glass plate (Hellas-E: aluminum plate) at the front left, is not blocked by objects.

Work safety

Do not look into the UV LEDs ! Intended use is carried out in the closed state to avoid eye injuries.

Wear UV laser protection glass for your personal safety

Protect machine from moisture

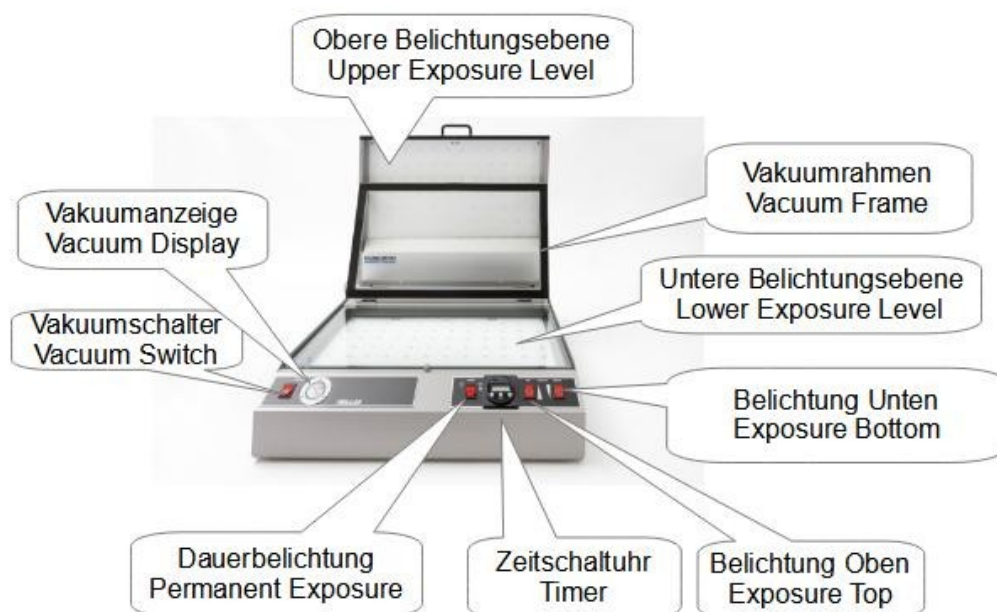
Protect against falling

Only open the lid briefly for loading (prevent it from falling).

Environmental Protection

Attention: LEDs must be handled with care and disposed of as special waste according to the rules of waste disposal.

Composition



Set Up

The unit should be put onto a table in a way that it can be accessed from the front. Please keep a distance of 30 cm from walls, radiators etc. and make sure that the cover can be easily opened up to a vertical position.

If you encounter any transport damages be sure to directly inform us and the carrier.

Remove the tape locking the cover and verify that the fluorescent tubes have not been damaged during transport. To do so, take the cover's handle and lift it so that the cover stands vertically on the rear mounted rubber pads.

Looking onto the lower part of the set, you can see the vacuum frame with its polyester foil spanning over a crystal glass plate. Please check the foil, the frame and the glass plate for any damage. You may lift the frame vertically so that it leans against the upper part of the unit. Using a soft cloth, please remove dirt or rests of packing material from the foil and the glass plate.

To check that the electrical components of the unit work correctly, please follow the operating instructions given here below. The set requires a 230 V, 50 Hz main supply.

Operating

Put the cover and the vacuum frame into a vertical position. Place the board to be exposed onto the glass plate. Be sure to have removed any protective foil from the board. Place the artwork onto the board. For double sided boards, we propose that you mount the top and bottom artwork on an L-shaped carrier so that they superimpose and form a "bag" with lateral stops for the board. You will have best results with the emulsion side of the artwork (film) lying directly on the photoresist. Take care not to enclose dust particles between the board and the artwork.

Now slowly return the vacuum frame into its horizontal position. (If any displacement of the artwork has occurred, reopen the frame and rearrange the artwork.)

Locate the switches, the timer and the vacuum control on the front panel of the unit. All to the left, there is a switch controlling the vacuum pump. Put it into its ON position. The pump will start running and the indicator lamp in the switch will light. Within a few seconds, the pump will have evacuated the air between the frame and the glass plate. The vacuum indicator will show approx. 0.7 bar.

The polyester foil is structured to allow an easy and complete evacuation on the whole surface. Nevertheless, there might remain an air cushion between the artwork and the board. Wipe over the polyester foil with your hand or with a soft cloth to remove any rest of air. Using the handle, smoothly close the cover.

Select single or double side exposure by turning on the appropriate switches for the upper and lower set of tubes. They are located to the right of the timer. Hellas-E: You may switch on only the upper unit.

To start the exposure, follow the instructions below to operate the electronic timer. Alternatively you can operate Hellas in continuous mode. To do so turn on the switch left to the timer. Turn the switch off to stop the continuous operation mode. The indicator lamp in the switch is lit during automatic exposure and continuous operation as well.

Timer

The exposure time is controlled by a digital-read-out and digital-adjustable timer. The range of time is from 1 second to 9 minutes 59 seconds. The device supports easy time pre selection and recall by one hand operation and can be run in stop-and-go turns.

On the timer front panel there are the LCD time display and the three buttons MODE, + and -.

To adjust the desired exposure time, press the + or - buttons accordingly. Keeping one of them down makes the settings change faster.

To start exposure, press the MODE button once. The remaining time is displayed continuously on the LCD display. The process is interrupted and restarted for the remaining time at each time the MODE button is pressed or the lid is opened. The timer beeps several times when exposure has finished.

To redisplay the previous setting, press the MODE button once or close the lid. You may then use the +/- buttons to change the setting or just restart the unit by pressing the MODE button.

Do not switch off the vacuum during exposure! With the artwork losing contact to the board, severe under-cut may result.

When having completed the exposure, open the cover, switch off the vacuum and open the frame. Never lift the frame with the vacuum pump running. Abnormal usage of the frame would result.

The intensity and spectre of the UV light from the fluorescent tubes can be compared to that of skin tanning sets: It may irritate your eyes. You should therefore avoid to look directly into the light for a longer time.

Maintenance

There is only little maintenance necessary for the HELLAS exposure set. The vacuum pump, for instance, is maintenance free. To protect it from dirt and dust, there is a filter put in front of it.




We want to tear your special attention to a careful maintenance of the vacuum foil. It should be cleaned regularly using water and a soft detergent. Do not use solvents.

Be extremely careful not to contaminate the foil with spots of developer or etching liquid.

Do not put pieces with a height of more than about 5 mm under the frame. This could lead to serious deformation or even cuts in the foil.

The foam rubber seals on the underside of the frame should only be treated dry to avoid loosening. Should the vacuum frame become unusable despite care, you can have it re-covered by us.

Spare Part List

640001	HELLAS Vakuumrahmen	HELLAS Vacuum frame	
640002	HELLAS Reparatur Vakuumrahmen	repair of HELLAS vacuum frame	
640003	HELLAS Vakuumpumpe	HELLAS vacuum pump	
640005	HELLAS Glasplatte	HELLAS Glasplatte	
640010	HELLAS Manometer	HELLAS Manometer	
6000	Schaumklebeband für Hellas Glasplatte/Vakuumrahmen 2 m	Foam tape for Hellas glass plate / vacuum frame 2 m	
	HELLAS Reparatur-Kit Vakuumrahmen(Folie+Dichtung)	repair set of HELLAS vacuum frame(black rubber tape & transparent plastic sheet)	

Guarantee

All machines are submitted before distribution to examination on function and continuous operation firmness. On the machine we grant a work warranty of 12 months to our customers starting from purchase date on accuracy in material and processing. We warrant at our choice by exchange of incorrect parts or by repair of the machine in our house. Old parts change into our possession.

Disclaimer of Warranty

Bungard GmbH & Co.KG reserves the right to change or enhance its machines or machine specifications according to its judgement, if necessary. Bungard cannot be held responsible to implement aforesaid changes into machines sold already.

Bungard products and services are liable to the current prices and conditions, which are subject to change.

The instructions and definitions in this document are also subject to change and mark no assurance on the part of Bungard.

This manual contains informations of the Bungard Hellas-LED and is the translated English version.

Please regard the "Sales terms and delivery conditions". These are available after fulfilment of the contract. We don't furnish a guarantee or warranty in cause of damages at material or hurts of people because of

Incorrect use of the machine

Wrong setup, installing and operating of the machine or incapable service

Use of the machine with defective safety equipment

Non-observance of the service manual in regard to transport, stocking, setup, installation and service of the machine

Unlicensed modifications at the machine

Incorrect or incomplete repairs

Destructive force effect at the machine in cause of foreign objects or external use of force

Use of non-original spare parts

normal wear parts.

We cannot accept subsequent claims from damage or destruction of work pieces worked on in the machine, because we have no knowledge or control over the operating conditions at your site. This is valid in a general manner also for requirements from damage to articles, buildings and persons as well as the environment.

We do not warrant that the function of the machine will meet the customer's requirements or that the operation of the machine will to this regard be error free.

In no event will we be liable to the customer for any incidental, consequential, or indirect damages of any kind, including loss of profit and prosecution for environmental pollution, even if we could have been aware of the possibility of such damages.

All information was arranged with great care. We reserve ourselves however mistake and technical changes without previous announcement.

Running the machine in corroding, humid, dusty, extremely hot or explosive atmosphere happens at the operator's own risk and responsibility.

We explicitly exclude any warranty for damages resulting from running the machine in in corroding, humid, dusty, extremely hot or explosive atmosphere.

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